MID-CURRITUCK BRIDGE STUDY

STAKEHOLDER INVOLVEMENT FOR FINAL ENVIRONMENTAL IMPACT STATEMENT TECHNICAL REPORT

Volume 1

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CURRITUCK COUNTY
DARE COUNTY

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Stakeholder Involvement for Final Environmental Impact Statement Technical Report

A Final Environmental Impact Statement (FEIS) that addresses the full range of alternatives and issues important to the selection of a Preferred Alternative can be accomplished only in consultation with those who have a stake in the decision. The *Stakeholder Involvement for Draft Environmental Impact Statement Technical Memorandum* (Parsons Brinckerhoff, 2009) described the scoping process, agency coordination process, and public involvement activities, as well as the key issues and pertinent information received through these efforts during preparation of the Draft Environmental Impact Statement (DEIS). This technical report presents agency and public involvement activities and comments received since the publication of the DEIS in March 2010, including:

- Agency involvement activities, beginning on page 1-1;
- Agency comments on the DEIS and responses, beginning on page 2-1;
- Non-governmental organization comments on the DEIS and responses, beginning on page 3-1; and
- Public comments on the DEIS and responses, beginning on page 4-1.

Appendices in this report include agency involvement materials; agency, non-governmental organization, and public written comment correspondence; public hearing transcripts, and public hearing materials.

1.0 Agency Involvement

1.1 Local Officials Meetings

Local officials were briefed on the DEIS and its findings on May 18 and 19, 2010 prior to public hearings on the same days. Local government comments on the DEIS and responses are presented in Section 2.3 of this report.

The North Carolina Turnpike Authority (NCTA) met with Currituck County representatives on July 16, 2010 to coordinate with the county on several issues raised in

agency and public comment on the DEIS. Key points of discussion were:

- Issues raised during the DEIS phase to be addressed in the FEIS, including fill in Maple Swamp, choice of Outer Banks terminus location C1 and C2, concerns with infiltration strips for drainage on NC 12, traffic congestion and various movements at critical intersections, and options to manage stormwater runoff.

- Currituck County supports a new bridge across Currituck Sound. Currituck County has no preference of whether Maple Swamp is crossed by bridge or fill. They are not in favor of removal of Aydlett Road and the toll plaza location in Aydlett under Option B. They want full left turn movements provided at Waterlily Road.

- The public as a whole had no preference on the C1 bridge corridor versus the C2 corridor. The primary issues raised related more to the NC 12 widening alternatives on the Outer Banks rather than the bridge terminus.

- If selected as a part of the Preferred Alternative, the C2 terminus just south of the TimBuck II Shopping Center could to be revised to avoid business displacements.

- Project preliminary designs assume infiltration strips to accommodate NC 12 drainage and their size and function should be communicated better to the public to clear misunderstandings regarding their size and function.

- NCTA was continuing to evaluate options to manage bridge runoff. Frequent bridge sweeping to remove bridge pollutants before they are suspended by rainwater would be the better option than capturing and treating bridge runoff.

- NCTA should discuss with the North Carolina Wildlife Resources Commission (NCWRC) the potential for them to plan, develop, and fund a new public access boat ramp at a bridge terminus.

- NCTA was preparing a detailed traffic and revenue study. As part of this effort, NCTA will consider possibilities for discounting tolls for local residents and other users.

- The preliminary design of NC 12 provides adequate space to accommodate a multi-use path along NC 12 and marked pedestrian crossings will reflect local plans.

- The impact of a Mid-Currituck Bridge on the number of drivers on the beach was discussed and that the reaction by most commenters to beach traffic congestion was based on existing peak summer time traffic. Residents are interested in a permit program for beach traffic.

- The County Commissioners are tough on development proposed in areas designated as conservation in the land use plan. However, the property owned by the Audubon

Society being considered for development allows for the commercial development proposed.

- It was noted that the 2035 population forecast and densities provided for the county land use plan would result in land designated in the plan for agriculture preservation being needed for development by 2035.

- The county has a farmland preservation program, but it currently has no participants because participation in the program is irrevocable (since the county purchases the development rights).

- A water line on the bridge would provide water from the mainland for use on the Currituck County Outer Banks during emergency or drought conditions. But the county already has the capacity to provide for existing and forecast water needs on the Currituck County Outer Banks.

- It was noted that NCTA was in the process of setting up a meeting with various emergency management officials to discuss the best hurricane evacuation alternative. The outcome of this meeting is described in Section 1.5 of this report.

1.2 Turnpike Environmental Agency Coordination (TEAC) Meetings

The project was adopted by NCTA in 2006. NCTA prepared a Section 6002 Project Coordination Plan under the terms of Section 6002 of the Safe, Accountable, Flexible Transportation Equity Act-Legacy for Users (SAFETEA-LU). The Project Coordination Plan establishes a process by which NCTA and the Federal Highway Administration (FHWA) will coordinate with agencies and the public throughout the project development process. Under the terms of the Project Coordination Plan, agencies are invited to participate in regular coordination meetings called Turnpike Environmental Agency Coordination (TEAC) meetings to identify any issues of concern during the project development process that would result in substantial delay or denial of a permit approval. The project's final Section 6002 Project Coordination Plan, as well as invitations and agreements to participate, were included in Appendix A of the *Stakeholder Involvement for Draft Environmental Impact Statement Technical Memorandum* (Parsons Brinckerhoff, 2009). The following sections summarize the TEAC meetings held for the Mid-Currituck Bridge Study since completion of the DEIS. The minutes of these TEAC meetings and associated handouts and other meeting materials are included in Appendix A of this document.

1.2.1 March 9, 2010 Meeting

The purpose of the meeting was to provide an overview of the DEIS just prior to its release and explain what the DEIS would look like (reader-friendly format); and to discuss the potential construction methods in Currituck Sound should a Mid-Currituck Bridge be selected as the Preferred Alternative. The meeting was also to discuss the applicability to the Mid-Currituck Bridge of a construction moratorium in Currituck Sound, as well as recent and future public involvement activities and schedules. Specific items discussed were:

- The format of the DEIS and its presentation, design options presented in the DEIS, and the required public review process and schedules.
- Various Mid-Currituck Bridge construction methods and their advantages, including cost and time savings. There were some questions regarding dredging requirements and their implications for permitting, cost, and long term impacts.
- Public involvement materials.
- If and how Maple Swamp could be restored and preserved given recent logging.
- Schedule for the DEIS, Preferred Alternative Report, selection of a Preferred Alternative, FEIS, Record of Decision (ROD), Concession Agreement, and opening of project to traffic.

1.2.2 August 10, 2010 Meeting

The purpose of the meeting was to discuss a Preferred Alternative Identification Information Package and "practicable" as it relates to project funding and selection of Preferred Alternative and Least Environmentally Damaging Practicable Alternative (LEDPA). Items discussed were:

- NCTA's responses to substantive comments on the DEIS that relate to the selection of the Preferred Alternative.
- Project funding options, that the toll would be a variable scheme, and that the revenue forecasts would consider increases in toll rates and traffic over time.
- The benefits of the two hurricane evacuation options.
- Practicable design and construction avoidance, minimization, and mitigation strategies as they related to mainland design Option A and Option B.
- The agencies' need for more information on bridge construction impacts before eliminating ER2 from consideration as the LEDPA.

- Agreement to eliminate MCB2 from further consideration because it would have the greatest impacts, had the least public support, and could not be funded at this time. Also, the C2 corridor was eliminated from further consideration because its natural resource impacts were greater than the C1 corridor and because with corridor C2, bridge traffic would enter the Outer Banks in an area carrying notable local traffic generated by a concentration of businesses.

1.2.3 September 8, 2010 Meeting

The purpose of this meeting was to discuss agency comments on materials distributed at the August 10, 2010 TEAC meeting, as well as bridge stormwater management, bridge construction, and the practicability of ER2. Items discussed were:

- A recap of the discussion and conclusions of the August 10 meeting.
- NCTA's plans to reduce the amount of four-lane NC 12 included with a bridge project to reduce community impacts and project cost.
- Stormwater discharge from the Mid-Currituck Bridge, including a report completed by NCDOT, the US Geological Survey, the North Carolina Department of Environment and Natural Resources, Division of Water Quality (NCDENR-DWQ), and NC State University on the impacts of stormwater runoff from bridges and mitigation options. The option of using a vacuum sweeper to clean the bridge deck frequently, including its reliability and efficiency was discussed in detail.
- Construction using dredging, barges, trestles, and top down techniques in terms of their advantages and disadvantages.
- Funding parameters established by the North Carolina General Assembly and their relation to the practicability of ER2 under Section 404 of the Clean Water Act.

1.2.4 November 2, 2010 Meeting

The purpose of the meeting was to discuss new studies of groundwater and surface water hydrology in Maple Swamp and a proposed Preferred Alternative documented in a *Preferred Alternative Report* (Parsons Brinckerhoff, October 2010). Items discussed were:

- The October 1, 2010 meeting between NCTA and NCDENR-DWQ held to discuss stormwater management (see Section 1.3 for a summary of that meeting).
- With a Maple Swamp crossing design that maintains surface water hydrology, groundwater flows and levels would not be affected by fill in Maple Swamp.
- Revised Maple Swamp floodplain studies based on a more detailed location survey, recent logging in the swamp, and a range of bridge and fill length alternatives

indicate that a minimum 2,500-foot bridge in the central to eastern part of Maple Swamp would result in no impact on floodwater elevation.

- A recommended Preferred Alternative consisting of MCB4/C1 with refinements to respond to agency and public comments on the DEIS alternatives, as well as to avoid and minimize impacts. A hybrid Maple Swamp crossing that bridged Maple Swamp for 2,640 feet, placed a linear toll plaza in the swamp, used the Option B interchange, and left Aydlett Road in place was included in this Preferred Alternative.

- Construction procedures with the recommended Preferred Alternative.

- Various community and natural resource impacts of the recommended Preferred Alternative, including impacts from dredging during construction and stormwater management. Reductions in proposed dredging from that presented at the September 8 meeting were discussed.

- Dredging impacts associated with a (then proposed) bridge construction supply dock.

- Submerged aquatic vegetation (SAV) impacts associated with a refined bridge corridor C1 alignment.

- North Carolina Marine Fisheries Commission (NCMFC) and NCDENR, Division of Marine Fisheries (NCDENR-DMF) rules that could be applied to construction dredging.

- Wetland impacts of the recommended Preferred Alternative and a clarification of the wetland acreage calculation methodology and the use of slope-stake lines (edge of earthwork) plus 25-feet as a means of calculating wetland impacts.

- Cost savings associated with fill in Maple Swamp and construction dredging.

- Project width and height in Maple Swamp and the use of water level equalizer pipes in fill.

- Mid-Currituck Bridge vertical clearance as it relates to maintenance of existing navigation uses in Currituck Sound.

The agencies were requested to submit written comments within 30 days regarding the *Preferred Alternative Report* (Parsons Brinckerhoff, October 2010) findings. NCTA said that the *Preferred Alternative Report* would be revised based on those comments and comments provided during the November meeting.

1.2.5 January 20, 2011 Meeting

The purpose of this meeting was to affirm the Preferred Alternative, establish it as the LEDPA, and to discuss responses to comments on the October 2010 *Preferred Alternative Report* as reflected in changes presented in a January 2011 *Preferred Alternative Report* (Parsons Brinckerhoff, January 2011). The January 2011 Preferred Alternative Report is included on the compact disc (CD) that accompanies the FEIS. Items discussed were:

- A change in the recommended Preferred Alternative to MCB4/A/C1, including a bridge across Maple Swamp in addition to refinements made to respond to agency and public comments on the DEIS alternatives, as well as to avoid and minimize impacts.
- Further refinements to Mid-Currituck Bridge construction methods proposals, including less dredging and the use of an open construction trestle.
- That the recommended Preferred Alternative could be determined a LEDPA if issues of construction techniques, stormwater management, and SAV mitigation could be resolved. Agencies felt that NCTA was moving in the right direction with defining the preferred bridge alternative. NCTA indicated its intent to continue to work with the agencies during the permit process to resolve stormwater management, in-water construction impacts, and SAV mitigation issues.
- Migratory bird-vehicle collisions and potential means for mitigating these impacts.
- The results of October 2010 SAV surveys and the area of SAVs found in surveys made during the past decade (2003, 2006, 2007, and 2010).
- There were no additional studies or information necessary or being requested by the agencies for ER2.
- NCTA was going to proceed with the following:
  - Focus additional design efforts, impact assessments, and FEIS preparation on their Preferred Alternative (MCB4/A/C1).
  - Further discussions with the agencies on suitable measures for addressing bridge construction techniques, stormwater management, and SAV mitigation related to driving piles during construction and temporary and long-term shading.
  - Announce to the public that MCB4/A/C1 is the Preferred Alternative and that additional coordination is on-going with the agencies related to the items mentioned in the previous bullet.

1.3 North Carolina Department of Environment and Natural Resources—Division of Water Quality Meetings

NCTA met with NCDENR-DWQ on October 1, 2010 and March 21, 2011. The US Army Corps of Engineers (USACE), National Marine Fisheries Service (NMFS), and NCDENR-DMF also attended the meeting on March 21, 2011. The purpose of the meetings was to gain collectively an understanding of what could be reasonable and permitable approaches to stormwater management for a Mid-Currituck Bridge project that employs the best management practices (BMPs) to meet the provisions of NC Session Law 2008-211 to the maximum extent practicable. The minutes of these meetings are included in Appendix A of this technical report.

The items discussed at the October 1, 2010 meeting were:

- The (then proposed) NCTA stormwater management plan for the Mid-Currituck Bridge project. It included frequent (weekly during the summer) deck cleaning of the entire bridge, capture of stormwater over wetlands adjacent to the east side of the sound with treatment in an infiltration BMP, and direct discharge into the sound outside of coastal wetlands.

- Potential Outer Banks and mainland infiltration BMPs and discharge of road runoff from the Maple Swamp crossing.

- The potential impact of runoff from a bridge over Currituck Sound.

- The practicability of capturing the first 1.5 inches of runoff from a bridge over Currituck Sound.

- Proposed stormwater management and other potential approaches to minimize stormwater impacts from the Mid-Currituck Bridge, including the NCDENR-DWQ interpretation of "maximum extent practicable," Currituck County's strategy for water quality enhancement, impacts to SAV from runoff, infiltration basins, Maple Swamp impacts, and the timing and process for finalizing a stormwater management plan.

- Potential additional indirect and cumulative effects comments from NCDENR-DWQ.

Items discussed at the March 21, 2011 meeting were:

- January 20, 2011 TEAC meeting.

  – Stormwater management was raised as one of four potential issues of concern for the project from a permitting perspective.

- Three of the potential issues of concern were a fisheries moratorium, SAV impacts/mitigation, and dredging. Dredging is no longer being considered for the project.

- A stormwater management briefing paper was distributed in advance of the meeting.

- Proposed stormwater management plan for Mid-Currituck Bridge project.

  - 72 acres of additional impervious surface (33 acres of roadway, parking, buildings, etc.; 11 acres of bridge over Maple Swamp; and 28 acres of bridge over Currituck Sound).

  - 56 acres of capture and treatment of the first 1.5 inches of rainfall (33 acres of new roadway, parking, buildings, etc.; 1 acre of bridge over Maple Swamp [500 feet on each end]; 4 acres of bridge over Currituck Sound [4,000 feet on the east end]; and 18 acres of existing impervious surface).

  - 16 acres remaining from bridges with deck cleaning at 90 percent effectiveness.

- Potential impact of runoff from bridges over Currituck Sound and Maple Swamp.

  - Traditional bridge deck capture and treatment system utilizing a stormwater wetland treatment facility removes roughly 85 percent of total suspended solids (TSS) and 40 percent of total nitrogen (T-N) and total phosphorus (T-P).

  - Bridge deck cleaning is 90 percent effective (or greater) with all three pollutants.

  - Capturing/treating stormwater for 5,000 feet or 1 mile of the 6.2 miles of bridge length results in 13 percent effectiveness for TSS and 6 percent for T-N and T-P.

  - A combination of bridge deck cleaning and capturing/treating stormwater for 5,000 feet or 1 mile of bridge length results in 91 percent effectiveness for all three pollutants.

- There were questions and discussion of the issues presented. NCDENR-DWQ had several comments (see minutes in Appendix A), but indicated they were comfortable with the proposed stormwater management plan. NMFS and NCDENR-DMF had no other concerns or comments. USACE indicated support so long as NCDENR-DWQ is satisfied with the proposal.

- It was agreed that NCTA would provide additional information on bridge deck cleaning protocols, baseline water quality assessment (for one year prior to construction), capture and treatment of stormwater over Maple Swamp, and erosive energy from bridge scuppers.

1.4 Agency Meeting to Discuss Submerged Aquatic Vegetation Impacts and Construction Moratoriums for the Preferred Alternative

NCTA met with USACE, NMFS, NCWRC, NCDENR-DWQ, NCDENR-DCM, and NCDENR-DMF on April 6, 2011. The purpose of the meeting was to continue agency coordination on what could be reasonable and permitable approaches to construction of the Mid-Currituck Bridge with the Preferred Alternative that would minimize or mitigate impacts on fisheries and SAV. The minutes of this meeting are included in Appendix A. The items discussed at the meeting were:

- At the January 20, 2011 TEAC meeting, the environmental regulatory and resource agencies raised SAV impacts and construction related fisheries impacts as two of four potential issues of concern for the project from a permitting perspective. The two other potential issues of concern were dredging (which is no longer being considered) and stormwater management. Since the last TEAC meeting, NCTA has worked with NCDENR-DWQ to address agency comments relative to stormwater management.

- In response to the January 20, 2011 TEAC meeting and based on previous discussions and correspondence relative to SAV and construction related fisheries impacts for the project, NCTA prepared two briefing papers on these subjects (see copies in Appendix A). The goal of the meeting was to review these briefing papers, receive agency comments on the general construction plans, have a clear understanding of the fisheries moratorium for the project, confirm SAV impact calculation methods, discuss preferred methods for SAV mitigation, and identify any remaining issues that might substantially delay or result in denial of issuance of permits.

- The briefing paper that related to construction related fisheries impacts and the potential for a time of year moratorium on bottom disturbing activities was discussed (a copy of the briefing paper is included in Appendix A). Based on the information contained in the briefing paper on existing SAV conditions in Currituck Sound within the bridge corridor, as well as proposed bridge construction methods, it was decided that the agencies would confer over several days and get back to NCTA relative to the likely imposition of a fisheries moratorium for the project, including when and where it would apply. There was agreement that the moratorium would apply in SAV habitat and SAV beds on the east side of the sound, but the agencies were unsure of the application of a moratorium in potential SAV habitat in the middle and west side of the sound.

- It was discussed that top-down construction is no longer being considered for the project because of the subsurface geology of the area, the assembly line nature of the construction method, and the limited width of the proposed bridge. It was also

discussed that the potential fisheries moratorium also added to the impracticability of top down construction.

- The briefing paper that related to construction related impacts on SAV was discussed (a copy of the briefing paper is included in Appendix A). Based on the information contained in the briefing paper on estimated impacts to SAV as a result of construction of the proposed bridge, as well as proposed bridge construction methods, the following issues were discussed with respect to SAV impact mitigation:

  - NMFS indicated that potential SAV habitat had to be treated the same as SAV habitat. The mitigation ratios could be different, but both would be permanent impacts.

  - A 2:1 mitigation ratio should be considered as the lowest ratio for impacts to SAV habitat. Impacts to potential SAV habitat may be a lower ratio.

  - The agencies prefer in-kind mitigation close to the affected area, particularly impacts to SAV habitat. Other mitigation options could be considered for some portion of the mitigation. Some of the other methods could have larger ratios for mitigation.

  - Methods to create SAV habitat through wave energy dissipation and planting could be a method to convert potential SAV habitat to SAV habitat.

  - USACE suggested that the USACE group handling the Currituck Sound Ecosystem Restoration Project should be contacted about possible SAV mitigation. The problem is that this group may be several years from having active projects in Currituck Sound for SAV restoration. However, early discussions could still take place.

  - It was noted by the agencies that Bonner Bridge would have about 3 acres of SAV impacts to mitigate. Coordination with NCDOT would be appropriate on SAV mitigation approaches as both projects are considering options at this time.

  - Liz Brinker at Elizabeth City State University has done some work in the area of SAV restoration. Joe Luczkovich at East Carolina University may be another source for SAV restoration ideas.

  - Generally the mitigation should be within Currituck Sound. The closer to the project site, the better. A reasonable expectation for success is most important.

  - NCWRC indicated that SAV are important for waterfowl usage in Currituck Sound. For this reason, NCWRC would prefer in-kind mitigation rather than other possible mitigation that would not benefit waterfowl.

- NCWRC asked if potential in-kind SAV mitigation sites had been identified. This effort had not been undertaken at that time. The agencies prefer larger sites over several smaller sites.

- NMFS noted that there is a time lag between when an impact occurs and when mitigation sites would be fully functioning. NMFS offered the assistance of their experts at the Beaufort Lab in discussing possible approaches for in-kind mitigation.

- Based on the discussion at the meeting, the agencies agreed that although there are additional details that need to be resolved as the project proceeds through design and permitting (such as identifying appropriate SAV mitigation methods and sites), the project is heading in the right direction in order to be able to receive permits. NCDENR-DCM indicated that these areas could become issues of concern in the future depending on the resolution of details. NCTA clarified that the goal of the two meetings that have taken place with the agencies since the January 20, 2011 TEAC meeting was to discuss and agree with the agencies whether the Mid-Currituck Bridge is a permitable project by resolving the four potential issues of concern discussed above. These efforts will continue throughout the permitting process.

- USACE and NCWRC acknowledged that eliminating dredging as a construction technique and agreeing to bridge Maple Swamp were major concessions by NCTA.

1.5 Emergency Management Officials Meeting

A meeting was held with Currituck and Dare county emergency management and NC Department of Crime Control and Public Safety, Division of Emergency Management officials on August 19, 2010. The purpose of the meeting was to solicit input from local emergency management officials on the hurricane evacuation options presented in the DEIS and what to select as the hurricane clearance time improvement component of the Preferred Alternative. The minutes of this meeting are included in Appendix A. Items discussed were:

- Bridge study background, status, and various evacuation alternatives studied in the DEIS.

- Mid-Currituck Bridge.

  - It alone would not change clearance times (time from start of evacuation to the last vehicle being evacuated).

- It would help with earlier reopening of the Currituck County Outer Banks because that currently depends on Dare County's decision to reopen its Outer Banks.

- It would simplify problems with hurricane evacuation operations at the US 158/ NC 12 intersection.

- Clarifications in terms of assumptions in estimating evacuation volume and clearance times.

- It would provide substantial benefit to the local transportation network because it would provide an alternative evacuation and/or access route.

- Third Outbound Lane Option.

  - Enforcement of its use during normal daily traffic operations could be difficult. It would be sitting idle during normal times and thus not a good use of funding.

  - It might be preferable to build a bicycle lane that also could be used as an evacuation lane.

  - It could be accommodated within the county's traffic signal system.

  - It would not be needed for 10 to 15 years.

- Reverse Center Lane Option.

  - For ER2, the meeting attendees agreed that the reversible center lane for 25 miles is not a feasible solution. It was suggested that if ER2 is selected as the Preferred Alternative that the third-outbound lane not be implemented immediately. Rather at such time as local emergency management representatives feel an improvement is needed, that a new alternatives study be conducted that could consider additional demand management solutions, such as forcing some evacuees that would prefer to evacuate via US 158 to use US 64, in addition to a physical improvement to US 158.

  - A shorter section (5-miles) allowed by the construction of a Mid-Currituck Bridge received more support than adding a third outbound lane. NCDOT indicated that they had the manpower and the equipment for a shorter section (5 miles) but not a 25-mile corridor.

  - For MCB2 and MCB4 to the north of the Mid-Currituck Bridge interchange, the meeting attendees' preferred hurricane evacuation treatment for US 158 was to reverse the center turn lane north of the Knapp Bridge to the US 158/NC 168 intersection in Barco.

- Recommended Evacuation Option with a Mid-Currituck Bridge.
  - Reversing the center turn lane to get three northbound lanes is the best option but only when necessary based on the nature of the storm and the future population needing evacuation.
  - Additional improvements such as another lane on the Knapp Bridge and widening US 158 to Elizabeth City would be needed in the future.
- Recommended Evacuation Option without a Mid-Currituck Bridge—Neither the option of reversing lanes nor adding a third outbound lane was considered desirable and additional studies would be needed if ER2 were the Preferred Alternative.
- Study's assumption of Category 3 hurricane, 75 percent tourist occupancy, and a 2035 forecast year was acceptable to the various agencies present at the meeting.
- The public's feeling that technology for hurricane forecasting is good enough that improvements are not needed is incorrect. Hurricane tracking has not improved enough to affect local decisions and the public does not want to leave as long as the weather appears good regardless of how much advance notice is provided.
- Virginia has closed its border with North Carolina only once. Virginia would likely provide at least 4-hours warning before the border is closed. Local emergency management officials coordinate with Virginia when a storm is approaching, and communication is open enough for North Carolina to adjust plans based on Virginia's planned actions.
- For MCB4 to the west of the US 158/NC 12 intersection, the meeting attendees' preferred hurricane evacuation treatment for US 158 was to provide a merge area for approximately 1,000 feet west of the Juniper Trail/Wal-Mart and Market Place/ Cypress Knee Trail signals (Duck Woods Drive area) to allow for merging from three lanes to two lanes on US 158 westbound. These improvements are needed to attempt to maximize the merge capacity on US 158 westbound to eliminate or forestall any future long-term need for reversible flow lanes on the Wright Memorial Bridge.
- Proposed roundabouts on NC 12 would not cause operational problems during an evacuation.

2.0 Agency Comments on the Draft Environmental Impact Statement and Responses

2.1 Federal Agencies

2.1.1 US Army Corps of Engineers—June 7, 2010

1. **Comment:** Page xx, Table S-1, **Indirect and Cumulative Effects.** With all the bridge alternatives it states "the extent of development on the Outer Banks by 2035 would be the same with or without the bridge." In reviewing the 1998 DEIS signed on January 28, 1998 for the same project it states "without the bridge, traffic congestion would cause development on the Outer Banks to taper off at 60 percent of planned development (from Southern Shores to the Virginia line) and in the road-accessible portion of the Currituck Outer Banks, 39 percent of planned development would occur." It also states "the additional road capacity provided by the bridge would allow about 3,000 additional housing units on the Outer Banks, primarily occurring along the road-accessible portion of NC 12 in Currituck County and that it would equate on the Currituck Outer Banks to 72 percent of planned development in the road-accessible areas." Why are the two analyses for the same project saying two different things?

   Response: *The difference between the 1998 DEIS and the 2010 DEIS reflect changed conditions. Changes include:*

   – *Changes in national traffic analysis guidance (Highway Capacity Manual) finds that the hourly capacity of a two-lane road is greater than was considered appropriate by the then current version of that guidance when the traffic forecasts included in the 1998 DEIS were made. This increased the assumed ability of a two- or three-lane NC 12 to carry traffic with both No-Build and Build Alternatives, reducing the potential constraint on development. In fact, the quantity of housing in Currituck and Dare county communities has already exceeded the No-Build Alternative limit forecast for 2020 in the 1998 DEIS. The number of housing units (homes and hotel rooms) in 2007 was 9,036 from Southern Shores north to the Virginia line. The maximum number of units with the No-Build Alternative was found to be 8,422 in 2020 in the 1998 DEIS.*

   – *Developers have chosen to finalize development plans associated with approved planned unit developments with fewer units than allowed by general planned unit development guidelines. Lots have been consolidated in the non-NC 12 accessible Outer Banks. Thus, assumed build-out numbers are lower in the 2010 DEIS and this FEIS than the 1998 DEIS. Total build-out (homes and hotel rooms) from Southern Shores to the Virginia line was 16,871 in the 1998 DEIS. As of 2007, total build-out will be 15,418.*

As a result with a Mid-Currituck Bridge, although there would remain congestion on parts of the project area's thoroughfare network, it is not expected to rise to the level where it would act as a constraint on expected and planned development. As indicated in the DEIS, the most likely scenario with a No-Build Alternative would be for some expected and planned development not to occur because the capacity of NC 12 could not accommodate the travel demand of expected and planned development. This is particularly the case considering that project traffic forecasts for 2035 assume full build-out of planned development of the NC 12-accessible Outer Banks. ER2 also could constrain development because of inadequate NC 12 capacity in comparison to the travel demand of expected and planned development. These findings are quantified and discussed in more detail in Sections 3.6.1.4 and 3.6.2.2 of this FEIS, Sections 4.2.3 and 6.2 of the revised Indirect and Cumulative Effects Technical Report, and the response to your Comment 18.

2. **Comment:** Page xxii, **What State and Federal Regulatory Requirements must be Considered when Comparing the Alternatives.** Need to add a section and discussion about Essential Fish Habitat in regards to the Magnuson-Stevens Fishery Conservation and Management Act.

   Response: *This discussion was added to this section of the summary (What State and Federal Regulatory Requirements must be met by the Preferred Alternative?) of this Final Environmental Impact Statement (FEIS).*

3. **Comment:** Page xxv, **What Alternative do NCTA and FHWA Recommend at this Time.** Need to change the language in this section that this recommendation is made by taking into account "funding mechanisms (or the term financing mechanisms)" instead of the word "cost" for the project as it is anticipated and discussed later in the DEIS that the only way the project can be financed is through North Carolina's first venture into the world of Public Private Partnerships (PPP). If cost alone were considered, ER 2 costs 269.2 to 292.8 million less than the MCB4 alternative and it meets the purpose and need of the project. ER 2 also has less impact to the natural environment and its community impacts are comparable to the MCB4 alternatives. Later in the DEIS it states "if ER2 were selected as the Preferred Alternative, the project would be implemented by NCDOT with traditional financing, as indicated in Section 2.3. If this were done, it is not known when the project would be implemented because there is no state funding for construction of road improvements in the project area listed in the 2009 to 2015 State Transportation Improvement Program (STIP)." Based on recent trends in funding shortages and the need for NCDOT to replace two (Bonner Bridge and Alligator River Bridge) currently existing deficient bridges in Division 1, it seems highly unlikely that any excess funding will be available in the near future to fund the Mid-Currituck project.

   Response: *The section to which this comment was addressed does not appear in the FEIS. Section 2.6 was revised in this FEIS to reflect the Preferred Alternative and the reasons behind this selection. Financing and not cost are discussed in the reasons presented there. Financing is described in the summary under "How much would each alternative cost, how would those costs be funded?". Section 2.3 of the FEIS describes in detail the financing*

mechanisms that will be used. With respect to traditional sources of highway project funding, the US Army Corps of Engineers (USACE) is correct when it states "it seems highly unlikely that any excess funding will be available in the near future to fund the Mid-Currituck project."

Finally, based on state law (Session Law 2011-145), state appropriations or "gap funding" cannot be used to fund ER2 or other significant non-bridge portions of alternatives for the following reasons. First, the gap funding is allocated to NCTA. Pursuant to state law (G.S. § 136-89.183), NCTA is only authorized to construct certain projects, including, "A bridge of more than two miles in length going from the mainland to a peninsula bordering the State of Virginia, . . " ER2 does not meet the definition of a bridge and therefore NCTA could not construct ER2. Second, the gap funding can only be used to pay debt service or related financing expenses on revenue bonds or notes issued for the construction of the Mid-Currituck Bridge. Again, ER2 does not qualify as the "Mid-Currituck Bridge." Third, since NCTA is not authorized to build ER2, if ER2 was to be built, it would have to be built by NCDOT. The gap funding is not available to NCDOT, only NCTA. State law would need to be modified to make the gap funding available for ER2. However, even if NCDOT received the same amount as the gap funding, the additional funds would be subject to the equity formula as defined in state law (G.S. § 136-17.2A). Being subject to the equity formula would dilute the effectiveness of the funding, especially in NCDOT Division 1 where the cost of the Bonner Bridge replacement would likely dominate the funds allocated to Division 1 for a significant period of time, leaving minimal funds available for other projects, such as ER2. Without substantial unencumbered funds, it is unlikely NCDOT would be able to construct ER2.

4. **Comment:** Page 2-15, Number 1. Paragraph states "as discussed in Section 2.2, three lanes on NC 12 (ER2 and MCB2) would not eliminate congestion on the summer weekday." There is no discussion of this in Section 2.2 that we could find. However, there is a Table (2-3) that shows data relating to travel benefits of detailed study alternatives. It appears based on Table 2-3 in the congested annual millions of vehicle-miles traveled (VMT) that MCB4 is also congested. Should MCB4 be included in the parentheses along with ER2 and MCB2 in this section? If you look at the miles of road operating with traffic demand at or above road capacity during the summer weekday (SWD) in the table, it appears ER 2 and MCB4 exceed zero but MCB2 is zero. So if this is the case should MCB2 not be in parentheses in this section and MCB4 be included in parentheses?

   Response: *Based on this comment, the text referenced has been revised to read:*

   "With ER2, three lanes on NC 12 would not eliminate congestion on the summer weekday. However, as discussed in Section 2.5, four lanes in areas of Southern Shores, Duck, and Currituck County where NC 12 has only a 60-foot right-of-way would cause substantial displacement of homes and businesses. Such levels of displacement were not considered prudent or practicable by NCTA, FHWA, or environmental resource and regulatory agencies as discussed in the Alternatives Screening Report (Parsons Brinckerhoff, 2009). MCB4, which includes only limited improvements to NC 12, also

would not eliminate congestion on NC 12 on the summer weekday. With MCB2, the combination of three lanes and the diversion of traffic to the Mid-Currituck Bridge would eliminate summer weekday congestion in 2035."

5. **Comment:** Page 2-17, Section 2.1.3. **How many lanes would a Mid-Currituck Bridge include, and how tall would the bridge be?** This section states "the preliminary designs, however, assume the purchase of sufficient right-of-way to allow additional lanes to be constructed, if needed, at some future date. Why would NCDOT buy additional right of way when it states that the time saved by a three or four lane bridge is not substantial enough (based on year 2035) to warrant the cost and effort required? This question is based on the facts presented in the Indirect and Commutative [sic] Effects Report where it states on page 1-5, "The design year for Mid-Currituck Bridge improvements is 2035, so the year 2035 will generally be used as the outer limit of the indirect and cumulative effects assessment. The population forecasts used in the traffic forecasts for 2035 assume full build out of the road accessible portion of the Outer Banks in the project area." Additionally, on page 7-2 of the report it states, "section 6.1 indicates that Currituck County has 34,435 acres of available high and medium suitability rated land, with 32,988 acres that are anticipated for development by 2035. On the Outer Banks, assumptions used in the impact assessment were that full build-out would occur before 2025 in the NC 12-accessible areas, with some development continuing to occur in the non-road accessible areas."

   Response: *NCTA no longer anticipates purchasing additional right-of-way on the mainland to accommodate additional bridge lanes in the future.*

6. **Comment:** Page 2-35, Table 2-3, **Travel Benefits of Detailed Study Alternatives.** Based on the table, the 2035 travel time benefit traveling from Aydlett Road to Albacore Street on existing highway, MCB4 would only save someone 18 minutes when compared to ER2 for someone who could not afford or chose not to pay the necessary toll to use the bridge. Additionally, the difference between MCB4 and ER2 in miles of road operating with traffic demand at or above road capacity on a summer weekday is insignificant (5.7 miles vs. 5.9 miles) and does not substantially improve traffic flow on the project area's thoroughfares (US 158 and NC 12) when compared against each other. Both alternatives however substantially improve summer weekday travel versus the No-Build alternative. When you take the weighted average of summer weekday and weekend the difference becomes more significant between the two alternatives.

   Response: *USACE is correct in its observations. The purpose of the project as presented in Chapter 1 is to "substantially improve traffic flow" and "substantially improve travel time" irrespective of when the improvements occur. Therefore, the notable differences in the weighted average of summer weekday and weekend figures were important to the decision on a Preferred Alternative. Regarding travel time, ER2 offers a 19 percent reduction in travel time compared to the No-Build Alternative for all travelers. MCB4 offers a 31 percent*

reduction in travel time for travelers remaining on the existing route and additional savings for those traveling to Currituck County via a Mid-Currituck Bridge.

7. **Comment:** Page 2-39, Section 2.4, **Explain how each Alternative will be built.** We have major concerns should dredging be necessary during Mid-Currituck Bridge construction in areas with less than 6 feet of water depth in the Currituck Sound. Based on past history of projects proposed for the Currituck Sound, dredging has been a major concern of the resource agencies and typically permits have been difficult to obtain for such activities. The DEIS states that anywhere from 21 to 29 acres would be proposed to be dredged so low draft barges could be used to construct the bridge where less than 6 feet of water exists. These impacts are significant and this type of activity could weigh heavily in how each alternative is evaluated in the ultimate selection of the Least Environmentally Damaging Practicable Alternative (LEDPA)/Preferred Alternative. It is imperative that this issue be discussed with the resource and permitting agencies so all parties involved know the possible consequences and expectations before the selection of the LEDPA and ultimately before a permit is applied for. It is recommended that the Preferred Alternative be developed to a higher level of detail (construction details known) in the Final Environmental Impact Statement (FEIS), in accordance with procedures specified in FHWA/FTA guidance for the Section 6002 process. As allowed under Section 6002, the higher level of design may be prepared for the purpose of developing mitigation measures and for complying with permitting requirements.

   Response: *Additional details on construction, including dredging, were discussed in meetings with environmental resource and regulatory agencies between the DEIS and this FEIS as a part of the environmental resource and regulatory agency meetings process. These meetings included several additional Turnpike Environmental Agency Coordination (TEAC) meetings conducted with environmental resource and regulatory agencies. All of the agency coordination meetings for the proposed project, including the TEAC meetings since the DEIS was released, are listed in Appendix A of this FEIS. A summary of the TEAC and other agency meetings since the DEIS was released is included in Chapter 1.0 of this technical report. In addition, the meeting agendas, slide show presentations, and minutes for these recent meetings are included in Appendix A of this technical report. Based on the outcome of this additional coordination with environmental resource and regulatory agencies between the DEIS and FEIS, additional information on construction is presented in Section 2.4 of this FEIS and associated impacts are discussed in Section 3.3. Based on the outcome of this coordination, it was decided that there would be no dredging with the Preferred Alternative.*

8. **Comment:** Page 2-41 - 2-42, Section 2.6**, What Alternative is Recommended by NCTA and FHWA at this Time.** Same comment as item # 3 above. Replace the word "cost" with the term "funding mechanisms or financing mechanisms" in the first paragraph. On page 2-42 in the section titled "Cost and Design Considerations" change the title to the same. In the section titled cost and design considerations, bullet number 3, we don't agree with the last part of the statement that it reduces cost and environmental impact. Even with 25 miles of improvements to NC 158

[sic], alternative ER2 still costs less and has less environmental impacts than alternative MCB4.

Response: *This section of the summary (What State and Federal Regulatory Requirements must be met by the Preferred Alternative?) has been replaced by a description of the Preferred Alternative, the reasons it was selected, and the outcome of the environmental resource and regulatory agency meetings process that was important to the selection of the Preferred Alternative. "Financing" is used instead of cost. The Preferred Alternative has less wetland impacts than ER2.*

9. **Comment:** Page 2-42, **Community Impact Considerations.** The 1st bullet states MCB4/C 1 would physically divide the Corolla Bay subdivision. While we agree it will divide what are currently platted lots in Corolla Bay subdivision, we disagree at this time that it should be listed as a community impact because technically a community does not exist in this location. The potential exists that there could be community impacts in the future if the lots are developed prior to construction of the proposed project. Bullet # 2 states that MCB4 would have the fewest displacements and relocations. While we agree with the statement, it should be noted that permanent resident displacements for alternatives ER2 and MCB4 are similar (6 versus 5 or 7) and that the major difference between the 2 alternatives are the displacement of 10 vacation rental units for alternative ER2.

   Response: *The impact at Corolla Bay was reduced substantially, including the avoidance of impacts to installed infrastructure, platted lots, and homes) with the design refinements made to MCB4/C1 as a part of its selection as the Preferred Alternative. Even though it has not yet been fully developed, the impact on the ability for Corolla Bay to function as a developed community after the bridge is built is an important consideration. The community impact section addresses impacts to the human environment and thus the Corolla Bay impact was included there and in the summary referenced here by USACE. USACE is correct in their observation that the major difference between MCB4 and ER2 is the displacement of 10 vacation rental units for ER2.*

10. **Comment:** Page 2-42, **Natural Resource Impact Considerations.** In this section it should also be noted that MCB4 would have the greatest potential impacts to environmental fragile areas, have the greatest potential to cause impacts to critical natural areas which would impact the productivity of the county's ocean and estuarine environments, and would have the greatest potential to effect water quality in the coastal waters of Currituck County. Three of Currituck Counties Land Use Planning Goals include: to avoid taking or approving actions related to infrastructure and the provision of services that could induce intensive development in environmental fragile areas; to preserve critical natural areas as the source of biological diversity and productivity of the county's ocean and estuarine environments; and to preserve and improve water quality in the coastal waters of Currituck County. MCB4 has the greatest potential to conflict with these goals.

    Response: *This section has been replaced by a description of the Preferred Alternative and the reasons it was selected. USACE observations in the comment are correct. However, the*

objective of this section was to list the reasons why MCB4 was recommended and not to present a comprehensive comparison of impacts. The comparison of key impacts is presented in the Summary (Table S-1).

11. **Comment:** Page 3-11, Section 3.1.4.1, **Relocations.** 1st paragraph states "the relocations associated with MCB2 and MCB4 would be associated with the US 158/ NC 12 interchange. The MCB4 alternative doesn't include an interchange at US 158/NC 12. ER2 and MCB2 are the two alternatives that involve an interchange at that location.

    Response: *This statement is corrected in this FEIS to refer to the US 158/Mid-Currituck Bridge interchange.*

12. **Comment:** Page 3-14, Section 3.1.6, **Would the Detailed Study Alternative be Compatible with Local Land Use Plans.** In the first paragraph remove the town of Duck from the second sentence. ER2 and MCB2 don't include provisions to widen NC 12 through Duck. Add a bullet that MCB2 and MCB4 would be inconsistent with Currituck County's Land Use Plan as described in # 10 above.

    Response: *ER2 and MCB2 both widen NC 12 through Duck. The municipal boundaries of Duck begin just south of Jay Crest Road and extend approximately 6.1 miles to the Currituck County line. ER2 and MCB2 do not widen to three lanes within Duck's commercial district (approximately 1.1 miles within Duck) because it is currently three lanes. Additional coordination with the North Carolina Department of Environment and Natural Resources, Division of Coastal Management (NCDENR-DCM) was conducted during preparation of this FEIS to obtain their determination of the compatibility of the detailed study alternatives, including the Preferred Alternative, with area plans. These findings are reflected in this FEIS's Section 3.1.6. The three Currituck County land use planning goals listed in USACE comment 10 were not listed as concerns related to NCDENR-DCM's basis of determination of compatibility with the Currituck County land use plan in NCDENR-DCM's Draft Environmental Impact Statement (DEIS) comment letter on page 19 of 36.*

13. **Comment:** Page 3- 17 and 3-18, Section 3.1.11. **Could Crime Rates Increase.** This section states that "crime rates are not anticipated to increase with any of the detailed study alternatives, including MCB2 and MCB4, which would provide a direct connection between the mainland and the Currituck County Outer Banks." In the 1998 DEIS it states "despite the shortcomings of crime rate analysis, a reasonable conclusion remains that Currituck County would experience an increase in crime under both the No-Build and Bridge Alternatives. Because of the higher level of development under the Bridge Alternative, the crime rate would be expected to be higher than the No-Build." According to the 1998 DEIS, the problem with crime rate statistics is that the method of calculating crime rates does not include seasonal populations and therefore this omission skews results for areas with a substantial seasonal population towards higher crime rates. Why are the two analyses saying two different things?

Response: *The 1998 DEIS might have better referred to the amount of crime as opposed to the crime rate. The 1998 DEIS is stating that because population increases, the amount of crime is increasing as opposed to the number of crimes per capita (the rate). This remains true today. The current DEIS and FEIS, however, focused instead on the question of whether the bridge by shortening the travel time from urban areas, which are perceived as having more people with a disposition to commit crimes, would attract thieves to the homes on the Currituck County Outer Banks, which are vacant much of the year. Attracting outside criminals would increase the crime rate. The conclusion was the bridge would not attract outside criminals. The DEIS focuses on this aspect of crime change because that was the focus of public concern during public involvement activities used to scope the DEIS.*

14. **Comment:** Page 3-32, Section 3.3.2.4, **Impacts to Biotic Communities.** The last bullet on the page appears to have information missing. It says and . . . but there is nothing written after the word "and." Can we assume "dredging" was inadvertently left out of the sentence as dredging is discussed later in the section?

    Response: *The "and" refers to the final bullet on the list, which appears at the top of page 3-38 in the DEIS.*

15. **Comment:** Page 3-38, Section 3.3.2.4, third paragraph, **Impacts to Biotic Communities.** In the first sentence add "/ and or permanent" after the word additional. Dredging impacts may be considered permanent or temporary based on the restoration methods utilized in these areas.

    Response: *Dredging is not proposed with the Preferred Alternative. The paragraph referenced does not appear in this FEIS.*

16. **Comment:** Page 3-48, Section 3.3.7, **Would Coastal Area Management Act Areas of Environmental Concern or Essential Fish habitat be Affected.** Need to add "dredging" along with shading as an impact in this section if dredging is going to be considered in the construction of this project.

    Response: *Shading was added to this section. Dredging is not proposed with the Preferred Alternative.*

17. **Comment:** Page 3-79, Section 3.5.3, **How Would Waste be Disposed.** Add a sentence to 2nd paragraph saying waste disposal in US Army Corps of Engineers jurisdiction areas would most likely not be authorized and any such impacts for this type of activity would be considered in the overall impacts for the project.

    Response: *The requested statement was added to the end of the second paragraph in this section.*

18. **Comment:** Pages 3-81 - 3-99, **Indirect and Cumulative Effects.** When comparing the Indirect and Cumulative Effects analyses of 1998 DEIS (called secondary actions in this document) to the 2010 DEIS, it appears there are substantial differences and differing conclusions between the two documents. Some of the major differences are

the 1998 analysis states: a) the average rate of development on the Outer Banks would continue under the assumption that the bridge is going to be built and in the No-Build alternative, the rate of development would slow down and taper off as the Outer Banks road system approached capacity. b) The road-accessible Currituck Outer Banks would reach 72 percent of full build-out if the bridge were built, compared to 39 percent of build-out if the bridge were not built. c) The bridge, at least initially would attract potentially thousands of day-visitors to the Currituck Outer Banks and that availability of parking, restrooms, and support facilities could limit this potential. A bridge that would provide quick access to un-crowded (or otherwise desirable) beaches potentially could attract many day trips. The bridge alternative would provide an opportunity for resident of Hampton Roads metropolitan area to visit the Currituck County Beaches in a reasonable amount of travel time for a day trip. Based on the share of persons making day trips to Wrightsville Beach from metropolitan areas one to two hours away, an estimate of 10,000 to 15,000 day trips to Currituck County can be derived. As the Outer Banks approaches build-out, congestion would increase on the new bridge and along NC 12. Thus, the total number of day trips would likely decline over time, because they would have less tolerance for congestion and a longer travel time to the beach than weekly renters. The 2010 analysis states: a) The potential for increase in the number of day trips to the Outer Banks would be no increase or negligible increase for ER2 and some potential for an increase over the No-Build Alternative with the potential higher in the non-road accessible area for MCB2 and MCB4. b) Today, given the complex network of streets and roads that now exists, and that much of the NC 12 accessible Outer Banks has been subdivided, transportation improvements have little effect on the demand for and rate of development. Transportation improvements could, however, influence the location of development that occurs first. c) The lack of transportation improvements and associated growing congestion could constrain development under the No-Build Alternative. What factors have changed since the 1998 document that has altered the conclusions contained in this section of the 2010 DEIS?

Response: *As indicated in the response to USACE comment 1, the differences between the 1998 DEIS and the 2010 DEIS reflect changed conditions, including increased capacity of two-lane roads (as defined by the year 2000 Highway Capacity Software [HCS]) and lower planned development (i.e., build-out) numbers. The year 2000 HCS includes updated capacity equations. These equations are considered more accurate and indicate a higher hourly capacity for NC 12 than was assumed in the 1998 DEIS. A higher capacity means more vehicles can use a road in a single hour. Furthermore, the rate of subdivision development even with no bridge has occurred more quickly than was estimated in the 1998 DEIS. The quantity of housing in Currituck and Dare county communities has already exceeded the No-Build Alternative constrained forecast in the 1998 DEIS. The number of housing units (homes and hotel rooms) in 2007 was 9,036 from Southern Shores north to the Virginia line. The maximum number of units with the No-Build Alternative was found to be 8,422 in the 1998 DEIS. Also, the total number of units at build-out has dropped. Total*

build-out from Southern Shores to the Virginia line was 16,871 in the 1998 DEIS. As of 2007, total build-out is 15,418. As such, this area was at 59 percent of build-out in 2007.

The 1998 DEIS concluded that a maximum of 23,400 vehicles per day (vpd) could pass through central Duck on NC 12. This limit could constrain demand for new housing north of that point since build-out would result in greater travel demand than 23,400 vehicles per day. The maximum volume in 2006 was estimated to be approximately 28,800 vpd, reflecting that the number of units built exceeds the previous estimate of the maximum number of units and the increased capacity of two-lane roads assumed by the year 2000 HCS. The current traffic forecasts assume the maximum NC 12 could carry on the summer weekend is 35,000 vpd. Like in the 1998 DEIS, this maximum daily capacity assumed NC 12 was operating at full capacity for 10 hours a day and high levels of traffic for an additional 8 hours per day. This could constrain development at 70 percent of current build-out from Southern Shores to the Virginia line with the No-Build Alternative and 75 percent with ER2. Development at higher percentages would generate travel demand greater than 35,000 vpd. With MCB2, MCB4, and the Preferred Alternative, road capacity would not act as a development constraint. Without a road capacity constraint, 86 percent of current build-out is forecast for 2035, the project's design year.

With respect to day trips, both DEIS's contend that a bridge option has the potential of increasing day trips to the beaches by shortening the travel time to a potentially large market in the Hampton Roads Regions. The potential demand of 10,000 to 15,000 trips to the Currituck Beaches reported in the 1998 analysis was not carried forward because it was a coarse approximation that did not look at the existing day trips to the county or, more importantly, to the capacity for the communities of the Outer Banks to accommodate this demand. The current analysis did find that a bridge would reasonably increase the demand for day-trips. Both studies do assert that there are significant limiting factors in the capacity for day trip visitors, the most important of which are lack of parking, beach access, and visitor facilities. Parking is limited in the towns although more readily available in the roadless area. Visiting here would require a four-wheel drive vehicle. Nonetheless, traffic on the roadless beaches could get to the point where beach driving access would need to be regulated. Increased day visitors because of a bridge could accelerate this event. Both DEISs, but especially the current one, considers bridge tolls as a factor reducing day trip visitors. The issues of day trip visitors to Currituck County's beaches have received expanded analysis in Section 4.2.2 of the revised Indirect and Cumulative Effects Technical Report.

19. **Comment:** As we progress in determining the Least Environmentally Damaging Practicable Alternative (LEDPA)/Preferred Alternative for this proposed project, there are many factors that are considered in determining such. Several issues dealing with practicability (cost, logistics, technology) will factor in this decision process. Two issues pertaining to practicability that will weigh heavily in this decision process are the funding aspect for this project and the construction techniques discussed in number 7 above. Please be aware that these issues will need to be discussed and resolved before we can proceed with the selection of the LEDPA.

It will be incumbent upon you to demonstrate that using non-toll financing is infeasible if during the process for identifying the Preferred Alternative, NCTA wishes to select an alternative that involves tolling based on the mere fact that non-tolling alternatives cannot be financed or funded in the short or long term. Simply stating a preference for constructing toll roads instead of public roads will not be adequate to meet NEPA or Section 404 b (1) guideline standards. This information can be included as part of the preferred alternative report that NCTA will prepare in accordance with Section 10 (Selection of Preferred Alterative/LEDPA) of the Section 6002 Coordination Plan for the STIP R-2576.

Response: *The information requested by USACE in this comment related to the funding aspect of the proposed project and construction techniques was provided to environmental resource and regulatory agencies in the Preferred Alternative Report, as well as in handouts used for discussion of the Preferred Alternative at environmental resource and regulatory agency meetings held prior to the selection of the Preferred Alternative. Handout 24 provides a financial feasibility assessment of the Mid-Currituck Bridge project, and Handout 27 discusses several potential construction methodologies for the proposed bridge that were under consideration at the time the handout was prepared. Both of these handouts are included in Appendix A of this technical report. In addition, Section 2.3 of this FEIS discusses how much each detailed study alternative, including the Preferred Alternative, would cost and how it would be paid for. Finally, based on the outcome of additional coordination with environmental resource and regulatory agencies between the DEIS and FEIS, additional information on the construction approach that as was finally decided upon is presented in Section 2.4 of this FEIS and associated impacts are discussed in Section 3.3.*

2.1.2 US Department of Agriculture—Natural Resources Conservation Service—April 6, 2010

1. **Comment:** The NRCS does not have any comments at this time.

   Response: *Acknowledged.*

2.1.3 US Department of Commerce—National Oceanic and Atmospheric Administration, National Marine Fisheries Service—June 4, 2010

1. **Comment:** Regarding the need for a new bridge across Currituck Sound, pursuit of Alternative ER2 would damage less costal habitat than any of the alternatives that require construction of a new bridge. Alternative ER2 uses improvements to existing roads to address the purpose and need for the project rather than relying upon a new bridge over the Sound. Alternative ER2 would have the least adverse impact to EFH and other NOAA trust resources. A new bridge should be considered only if it is determined that improvements to existing highways would not meet the purpose and need for the project.

   Response: *All of the detailed study alternatives evaluated in the DEIS would meet the project purpose and need to varying degrees. ER2 would meet the purpose and need of the*

project, but not as well as MCB4. Differences between the alternatives exist in terms of meeting the purpose and need for substantially improving traffic flow and substantially reducing travel time presented in Section 1.2 of the DEIS and FEIS. MCB4 would achieve more than twice the reduction in these two factors from the No-Build Alternative as ER2. The National Marine Fisheries Service (NMFS) participated in environmental resource and regulatory agency meetings that led to the ultimate decision to include a Mid-Currituck Bridge in the Preferred Alternative.

2. **Comment:** If a new bridge is required and without taking construction methods into consideration, MCB4/A/C1 would damage less costal habitat than other alternatives requiring a bridge. Alternative MCB4/A/C1 would require construction of a new section of US 158 on the mainland and use of a new bridge across Maple Swamp rather than filling wetlands. Maple Swamp is an important wetland hydrologically connected to Currituck Sound and contributes to maintenance of water quality and the estuarine food web. Bridging Maple Swamp should be a component of any bridge alternative chosen. Also, in view of the value of Maple Swamp, NMFS recommends that NCTA and FHWA develop a plan for preserving the remaining un-impacted areas of Maple Swamp, and NMFS would support appropriate inclusion of such preservation in the project's compensatory mitigation plan.

   Response: *MCB4/A/C1, with additional refinements to reduce natural resource and community impacts was selected as the Preferred Alternative. The current land purchase proposals for stormwater management focus on the possibility of acquisition of land parcels identified in Currituck County as having a potential to improve water quality through land conservation and restoration (see Section 2.1.7.3 of this FEIS). NCTA is committed to protecting from future logging land-locked parcels purchased in Maple Swamp and Great Swamp. This land would be set aside as a conservation area and allowed to retain or return to its natural state. (See Section 3.3.6.4 of this FEIS.)*

3. **Comment:** Taking construction methods into consideration, it is not clear if MCB4/A/C1 or MCB4/A/C2 would have the lesser impact on EFH. The DEIS describes four different techniques for constructing a new bridge across Currituck Sound. Of these, three would require temporary structures to facilitate construction but would only require limited dredging. However, the fourth technique involves using shallow-draft barges during construction. Minimizing disturbances to the sea bottom should be a priority; this cannot be accomplished if barges are used for construction in the manner described in the DEIS or if large amounts of dredging would be required. NCTA and FHWA estimate that the C1 alignment would require dredging 25 acres of unvegetated estuarine bottom; the C2 alignment would require dredging 17 acres of unvegetated estuarine bottom. While the C2 alignment has 8 acres less impact to the estuarine bottom from construction activities, the tradeoff of this damage versus the damage that might result from the larger footprint of the C2 alignment over SAV habitat is not clear and not discussed in the DEIS. Adverse impacts to EFH, even if temporary, require compensatory mitigation because of the diminution of ecological services to fishery resources.

Response: *MCB4/A/C1 was selected as the Preferred Alternative in part because its shorter length would reduce impacts to submerged aquatic vegetation (SAV) habitat, existing SAV beds, and potential SAV habitat. In addition, the C1 alignment was straightened, reducing the length of the C1 bridge by approximately 250 feet. The revised location also would bridge fewer areas of Currituck Sound less than 6 feet deep (potential SAV habitat if it has suitable substrate). There would be no dredging with the Preferred Alternative.*

4. **Comment:** The areal extent of impacts to EFH will vary based on various decisions related to bridge design and construction techniques. From section 2.4 and tables 3-5, 3-6, 3-7, 3-8, and 3-12, the amount of EFH that could be impacted (permanently or temporarily) is on the order of 55 acres (adding the permanent impacts listed in Table 3-12 and to the construction impacts listed in section 2.4). The DEIS acknowledges the amount of SAV within these acres is not clear, but appears to a minimum of 4.3 (C1 alternatives) to 5.5 (C2 alternatives) acres. Additional study is needed of the areas the DEIS describes as probable SAV, potential SAV, and unlikely SAV to determine exact acreages based on a current survey suited to the area of the proposed bridge. Detailed surveys for SAV also should include the areas where dredging may occur and barges may impact the sea bottom.

   Response: *New SAV and bathometric studies were conducted in the Preferred Alternative's bridge corridor and are reflected in the assessment of essential fish habitat (EFH) impacts presented in this FEIS. There would be no dredging with the Preferred Alternative.*

5. **Comment:** Regardless of whether the impacts to EFH are permanent or temporary, including the impacts from shading, compensatory mitigation is required. We recommend the amount of the mitigation be based on a functional assessment. As noted elsewhere in this letter, NMFS would accept improvements to water quality as a portion of the migration strategy for offsetting impacts to estuarine habitats.

   Response: *Mitigation for shading and pile impacts to SAV habitat (including existing bed) would be a part of the Preferred Alternative. A mitigation plan would be finalized in association with environmental resource and regulatory agencies to reach an acceptable agreement of type, amount, and location. NCTA's current proposals are presented in Section 3.3.7.2 of this FEIS. NMFS's recommendation for basing mitigation on a functional assessment and interest in water quality improvements as a portion of the mitigation strategy is noted and would be considered during the development of a final mitigation plan.*

6. **Comment:** The DEIS should more thoroughly discuss the indirect and cumulative effects of the proposed highway improvements so they may be adequately addressed during the permitting process. The DEIS acknowledges that a new bridge is likely to increase the rate of development on both the mainland and barrier island. NMFS is concerned that this result would further degrade water quality, including water clarity in Currituck Sound. Changes in the Sound over the past 20 years have increased salinity resulting in expanded use of the sound as habitat for estuarine dependent fish and invertebrates. However, during this time period, overall water quality in Currituck Sound has degraded due to alterations in historical water flow patterns, increased development and associated storm water runoff from heavily

populated areas in southeastern Virginia, and rapid development of Currituck County beaches. Further degradation of water quality and its associated impacts to SAV should not be accepted.

Response: *The FEIS and the revised Indirect and Cumulative Effects Technical Report reflect revisions made in response to comments on the DEIS' indirect and cumulative effects assessment. This assessment meets the needs and requirements of the National Environmental Policy Act (NEPA) and the adopted procedures of NCDOT for such assessments. If required, NCTA would prepare a separate Indirect and Cumulative Impacts Technical Report during the 401 permitting process per NCDENR-DWQ's Cumulative Impacts and the 401 Water Quality Certification and Isolated Wetland Permit Programs. At this time, it is not expected that a quantitative assessment will be required. The DEIS and this FEIS do not say that the project would increase the rate of development or the total amount of development, but rather change the order in which it is projected to occur. NCTA is committed to preparing a stormwater management plan to mitigate the Preferred Alternative's potential impact on water quality (see Section 2.1.7 of the DEIS). In addition, future development in the project area must meet the requirements of NC Session Law 2008-211 (An Act to Provide for Improvements in the Management of Stormwater in the Coastal Counties in Order to Protect Water Quality), including capturing and treating the first 1.5 inches of runoff from new impervious surfaces.*

7. **Comment:** The EFH Assessment provided by NCTA and FHWA, which is dated November 2009 and summarized in the DEIS, provides an adequate identification of the EFH within the project area and fishery species that utilize those habitats. The EFH Assessment, however, does not provide a sufficient discussion of the impacts to EFH from the various alternatives considered.

   NMFS is unable to complete the EFH consultation based on the information provided in the DEIS. To complete our evaluation of the project, please provide an assessment of the degree to which the function of SAV and shallow-water habitat within the shadow of the proposed bridge would be impaired. NMFS recommends this assessment begin by estimating any changes in the area of SAV and the aboveground biomass of SAV within the shadow. This assessment should be done for both the C1 and C2 alternatives. NMFS also requires an evaluation of the rate that benthic communities are expected to recover from the dredging and other impacts to the sea bottom from the construction process. This assessment also should be done for both the C1 and C2 alternatives taking into account sediment textures, landscape position, and other factors that might differently affect recovery rates between the C1 and C2 alignments. This information is needed so that NMFS can assess the impacts expected from both sources and formulate a recommended terminus for the bridge on the Outer Banks.

   Response: *The information related to the changes to SAV is included. The amount of change is directly related to the amount of shading. The refined C1 bridge corridor that is a part of the Preferred Alternative reduced SAV shading impacts. Information pertaining to how the sound bottom and benthic community may respond after construction has been*

added to this FEIS, a revised Natural Resources Technical Report (NRTR) and a revised Essential Fish Habitat Technical Report. NMFS participated in environmental resource and regulatory agency meetings and agreed with the decision to include the C1 bridge terminus as a part of the Preferred Alternative. NMFS was contacted for suggestions on information and clarifications needed to improve the Essential Fish Habitat Technical Report and those suggestions were followed in the revised Essential Fish Habitat Technical Report. Concerns for project impacts on protected habitat and species are explicitly addressed.

8. **Comment:** While additional information is needed for NMFS to complete the EFH consultation, based on the information provided thus far, NMFS concludes that the project would result in substantial adverse impacts to EFH. Section 305(b)(4)(A) of the Magnuson-Stevens Act requires NMFS to provide EFH conservation recommendations when an activity is expected to adversely impact EFH. Based on this requirement, NMFS provides the following:

   The Final EIS shall provide additional justification as to why alternatives based on the ER2 strategy are not sufficient for meeting the project's purpose and need. The DEIS focuses on economic arguments to dismiss ER2, and given the low cost of this alternative the economic arguments seem addressable via changes in NCTA policy or priorities.

   The plan selected in the Final EIS shall use bridges, rather than fill, to cross Maple Swamp.

   A plan for compensatory mitigation shall be provided that offsets all permanent and temporary impacts to EFH, including impacts from shading and from bottom disturbances from the construction process. The plan for the compensatory mitigation shall include a functional assessment that demonstrates the amounts of mitigation proposed would fully offset the impacts expected. Given the difficulty of forecasting shading impacts to SAV and recovery rates of benthic communities, the plan also shall include a monitoring program that will assess whether forecasted impacts are in line with actual impacts and whether additional compensatory mitigation is necessary if impacts prove larger than expected or mitigation proves less effective than expected. NMFS is likely to look favorably upon mitigation plans that include preservation of Maple Swamp for impacts to forested wetlands and treatment of existing stormwater runoff into Currituck Sound for impacts to estuarine habitats. The mitigation plans shall be provided to NMFS for review and approval before the project is authorized.

   Authorization of the project shall be held in abeyance until the additional information required by NMFS to complete the EFH consultation is provided and reviewed. Please note that based on review of the requested information, NMFS may be obligated to provide additional EFH conservation recommendations, which may include recommendation for a seasonal moratorium for in-water work.

Section 305(b)(4)(B) of the Magnuson-Stevens Act and its implementing regulations at 50 CFR 600.920(k), requires your office to provide a written response to our EFH recommendations within 30 days of receipt. If it is not possible to provide a substantive response within 30 days, an interim response should be provided to NMFS. A detail response must then be provided prior to final approval of the action. Your detailed response must include a description of measures proposed by your agency to avoid, mitigate, or offset the adverse impacts of the activity. If your response is inconsistent with our EFH conservation recommendations, your must provide a substantive discussion justifying the reasons for not following the recommendation. The detailed response should be received by the NMFS at least ten days prior to final approval of the action.

Response: *The Preferred Alternative Report (included on the compact disc [CD] that accompanies this FEIS) and handouts provided to environmental resource and regulatory agencies (in Preferred Alternative Report Appendix B) during discussions on the selection of the Preferred Alternative included justification on why ER2 is not adequate in meeting the purpose and need and financing constraints. The Preferred Alternative includes mainland design Option A, which bridges Maple Swamp. A compensatory mitigation plan would be implemented to mitigate impacts to EFH. Current proposals are presented in Section 3.3.7.2 in this FEIS. The interim response required by the Magnuson-Stevens Act was provided in a letter dated July 6, 2010. Our detailed response is reflected in this FEIS and the revised Essential Fish Habitat Technical Report included on the CD that accompanies this FEIS.*

9. **Comment:** These comments do not satisfy your consultation responsibilities under section 7 of the Endangered Species Act of 1973, as amended. If any activity "may effect" listed sea turtles and marine mammals and their habitats under NMFS purview, consultation should be initiated with our Protected Species Division at the letterhead address.

   Response: *Formal consultation was conducted with the Protected Species Division and its outcome will be reflected in the Record of Decision.*

10. **Comment:** NMFS had specific comments on the DEIS:

    Section 2.1.7, Pages 2-24 to 2-27, What road and bridge drainage provisions would be included in the detailed study alternatives? This section address management of stormwater runoff associated with improvements proposed for NC 12 or the proposed bridge alternatives. Discharge of additional stormwater into Currituck Sound would further degraded water quality. Regardless of which alternative is selected, NMFS recommends that a stormwater management plan be a high priority in the project design. Further, a comprehensive stormwater management plan may afford additional avenues for compensatory mitigation that NMFS might support. A comprehensive stormwater management plan would have to provide additional treatment to a portion of the existing runoff into the Sound as well as full treatment of all new runoff from the proposed highway improvements.

Response: *NCTA is committed to preparing a stormwater management plan to mitigate the Preferred Alternative's potential impact on water quality. Section 2.1.7 of this FEIS presents strategies currently planned.*

11. **Comment:** Section 2.4, Pages 2-38 and 2-39, Explain how each alternative will be built – This section addresses four alternative techniques for constructing a new bridge across Currituck Sound. NMFS recommends that NCTA and FHWA use a construction approach that does not require dredging in Currituck Sound. If NCTA and FHWA determine this is not feasible and dredging is done to accommodate shallow-draft barges, this dredging may have substantial adverse impacts to NOAA trust resources. The C1 alignment would require dredging 25 acres of unvegetated estuarine bottom; the C2 alignment would require dredging 17 acres of unvegetated estuarine bottom. The assumption in the DEIS is that unvegetated areas of estuarine bottom are of less importance to fishery resources than areas vegetated with SAV is incorrect. Estuarine benthic habitats, including sandy and muddy bottoms are designated as EFH. Recovery rates of the benthic communities that would be impacted require evaluation and compensatory mitigation for the temporal loss of ecological services.

    Response: *To date, NCTA has revised the C1 bridge alignment, conducted additional bathometric surveys in the new alignment, and plans no dredging during construction of the Preferred Alternative.*

12. **Comment:** Section 3.3.1.2, Page 3-28, Classification of Water Resources – Important nursery habitats, such as SAV, shallow estuarine bottom, and emergent marsh, occur in the Sound and, more specifically, the project area. Accordingly, the South Atlantic Fishery Management Council designates SAV, shallow estuarine bottom, and emergent marsh as EFH for penaeid shrimp and estuarine species within the snapper/grouper complex. The project area also functions as an important secondary nursery area for diadromous species that utilize these waters, and this fact should be noted in the Final EIS. A seasonal restriction on in-water work may be required if extensive dredging is planned within Currituck Sound.

    Response: *EFH are discussed in Section 3.3.7.2 of the DEIS and this FEIS, including areas designated as EFH by the South Atlantic Fishery Management Council. Although Currituck Sound does provide secondary nursery habitat to diadromous species, the sound is not officially designated as a state or federally important secondary nursery area. This clarification has been added in Section 3.3.4.1 of this FEIS, to Section 4.2.2.2 of the revised* <u>*Natural Resources Technical Memorandum*</u> *on the CD included with this FEIS, and to Section 4.1.8 of the revised* <u>*Essential Fish Habitat Technical Report*</u> *also on the CD included with this FEIS. The DEIS and original NRTR did indicate that "Currituck Sound is an important nursery area for migratory and resident fish." As noted in the response to NMFS comment 3, there would be no dredging with the Preferred Alternative.*

13. **Comment:** Section 3.3.1.3, Page 3-28, Quality of Water Resource – This section addresses the substantial degradation of water quality that has occurred in Currituck Sound over the last 10 to 20 years and provides strong justification for fully

incorporating measures to avoid, minimize, and mitigate the project's impacts to water quality. Likewise water quality enhancement measures should be considered at every opportunity in the project design.

Response: *NCTA is committed to preparing a stormwater management plan to mitigate the Preferred Alternative's potential impact on water quality. Section 2.1.7 of this FEIS presents strategies currently planned. These strategies were discussed at meetings with NCDENR-DWQ on October1, 2010 and March 21, 2011.*

14. **Comment:** Section 3.3.1.4, Pages 3-29 to 3-30, Impacts to Water Quality – This section addresses the predictable degradation of water quality that would occur if dredging is a major component of project construction. It also notes that management of runoff from a new bridge or other upland improvement is an important project component. The DEIS should initiate a concerted effort to address this issue. We recommend consultation with the U.S. Army Corps of Engineers Wilmington District regarding their on-going study of Currituck Sound, which was authorized in 1998 and is examining the significant loss of SAV and declines in water quality that impact freshwater fisheries and waterfowl populations. This study may suggest measures that could be incorporated by NCTA and FHWA to reduce the impact to the Sound of a new bridge and other highway improvements.

    Response: *NCTA is committed to preparing a stormwater management plan to mitigate the Preferred Alternative's potential impact on water quality. Section 2.1.7 of this FEIS presents strategies currently planned. The first report of the USACE study (Currituck Sound, North Carolina Ecosystem Restoration Feasibility Study-Feasibility Scoping Meeting Report) published in 2010 was consulted in developing the strategies currently proposed.*

15. **Comment:** Section 3.3.2.4, Page 3-32 to 3-38, Impacts to Biotic Communities – Measures to avoid, minimize and mitigate the less conspicuous impact versus Maple Swamp are lacking.

    Response: *It is not clear what NMFS means by "less conspicuous impact." However, Section 3.3.6.4 of the DEIS and this FEIS address avoidance, minimization, and mitigation for all wetlands and streams.*

16. **Comment:** Section 3.3.4.3, Page 3-41, Water Habitat Impacts – This section notes that shading from bridge foundations would have the adverse impacts to SAV. Impacts to SAV from shading must be mitigated.

    Response: *Mitigation for shading to SAV would be a part of the Preferred Alternative. A mitigation plan would be finalized in association with environmental resource and regulatory agencies during the permitting process to reach an acceptable agreement of type, amount, and location. NCTA's current proposals are presented in Section 3.3.7.2 of this FEIS.*

17. **Comment:** Section 3.3.4.4, Page 3-42, Impacts from Noise, Turbidity, and Siltation – NMFS will work cooperatively with the NCTA, FHWA, and NC Division of Water Quality to develop specific recommendations on how to mitigate these chronic

impacts. For example, upon completion of the project, NCTA and FHWA should conduct an as-built survey of major habitats impacted by the project (e.g., SAV re-mapping). This post-construction survey would be conducted annually for at least 5 years to determine if sufficient mitigation has been provided to offset project impacts to EFH.

Response: *Documentation of baseline conditions and preparing a post-construction survey would be discussed with environmental resource and regulatory agencies during the permitting process. Relatively loud noises, such as pile-driving, are generally unavoidable in construction activities and create sporadic, temporary, and substantial construction noise impacts in the immediate vicinity of such activities. It could be necessary for the construction contractors to schedule these activities during context-sensitive hours in the vicinity of noise-sensitive areas, to the extent practicable.*

18. **Comment:** Section 3.3.6, Pages 3-43 to 3-48, What Impacts Would Occur to Waters under the Jurisdiction of the US Army Corps of Engineers? NCTA and FHWA should pursue an alternative that involves bridging rather than filling Maple Swamp (Option A). Also, alternatives that involve construction of a new bridge across Currituck Sound would have direct and indirect impacts to SAV. Selection of the exact alignment should be done in a manner that results in the least adverse impacts to SAV and wetlands.

    Response: *The Preferred Alternative bridges Maple Swamp. C1 was selected and revised such that it bridges less distance over SAV habitat (including existing beds). The Preferred Alternative would shade 4.8 acres of SAV habitat (including existing beds) versus 4.9 acres with the original C1 corridor and 6.5 acres with the C2 corridor, as shown in Table 3-12 and Table 3-13 of this FEIS.*

19. **Comment:** Section 3.3.6.4, Pages 3-46 and 3-48, Wetland and Stream Mitigation, Avoidance and Minimization– If an alternative that involves bridging of Maple Swamp is selected, the DEIS indicates that only a right-of-way (263 acres) through the swamp will be purchased. However, if the selected alternative allows fill in this section of the highway alignment, NCTA and FHWA would purchase the entire 612 acres of Maple Swamp. In this case, all remaining un-impacted areas would be set aside and protected in perpetuity as a forested wetlands mitigative measure. The value of this large tract of forested wetlands is likely high. Option A (using a bridge to cross the swamp, rather than fill) should be required as an appropriate avoidance and minimization measure. Preserving the remaining portion of the swamp should be a component of offsetting the unavoidable impacts from using a bridge to cross the swamp.

    This section also addresses provision of compensatory mitigation through the Ecosystem Enhancement Program (EEP) of the NC Department of Environment and Natural Resources. NMFS agrees that replacement of unavoidable losses of emergent and forested wetlands should be provided through EEP. However, all bridge alternatives would directly or indirectly impact SAV habitat by shading. At

this time the EEP does not provide an SAV mitigation option; therefore, mitigation to offset unavoidable losses of SAV habitat must be addressed independently from other wetland losses. NMFS can work with the NCTA, FHWA, and EEP to address this issue.

Response: *The Preferred Alternative includes Option A. Mitigation for shading impacts to SAV habitat (including existing bed) and potential SAV habitat would be a part of the Preferred Alternative. A mitigation plan would be finalized in association with environmental resource and regulatory agencies to reach an acceptable agreement of type, amount, and location. NCTA's current proposals are presented in Section 3.3.7.2 of this FEIS.*

20. **Comment:** Section 3.3.7, Page 3-48 to 3-52, Would Coastal Area Management Act Areas of Environmental Concern or Essential Fish Habitat be affected? This section notes that the NC Division of Coastal Management has no permit jurisdiction over shading and therefore, no mitigation for shading of SAV is proposed by NCTA and FHWA. While this approach may be consistent with state rules; it is not consistent with federal guidance. The DEIS should be revised to reflect the need to mitigate for impacts to SAV habitat from shading.

    NMFS does not agree with NCTA's and FHWA's determination that all options considered in the DEIS would not have a substantial, long-term adverse impact on EFH or managed species. This paragraph does not accurately reflect the high value accorded SAV as important habitat for managed species. Evaluation of the impact is not based on the amount of similar habitat within the Sound but on the severity and duration of the impacts within the project footprints.

    Response: *Mitigation for shading to SAV would be a part of the Preferred Alternative. NCTA has chosen a Preferred Alternative that minimizes the amount of EFH affected and are committed to taking preventative measures to reduce construction and long-term impacts on EFH and species utilizing EFH. Minimization and prevention measures are described in the revised Essential Fish Habitat Technical Report and were selected to avoid substantial, long-term adverse impacts on EFH or managed species.*

21. **Comment:** Section 3.6, Table 3-17. Notable Ecosystem Features– NMFS recommends that unconsolidated estuarine bottom (a category of EFH) be added to Table 3-17.

    Response: *Unconsolidated estuarine bottom was added to Table 3-18 and to the corresponding tables and sections in the revised Indirect and Cumulative Effects Technical Report.*

22. **Comment:** Section 3.6.3, Pages 3-97 to 3-99, What are the substantial indirect and cumulative effects and could they be minimized? NMFS is committed to development of a project that would address the transportation need of Currituck County while avoiding and minimizing short- and long-term impacts to waters and wetlands that support NOAA trust resources.

Response: *NMFS's commitment is noted.*

2.1.4 US Department of the Interior—Office of the Secretary—May 25, 2010

1. **Comment:** Overall, this project will have substantial impacts to fish and wildlife resources. The project is located in an environmentally significant coastal area. Wetland impacts for the NCTA and FHWA recommended alternative range from 36.6 to 43.2 acres. All alternatives will affect essential fish habitat. MCB2 and MCB4 alternatives would bisect a state Significant Natural Heritage Area - Maple Swamp. Until recently, Maple Swamp provided one of the best and likely the northernmost example of an old-growth, *Gordonia* ecosystem. Currituck Sound, an important waterfowl wintering habitat, would be permanently altered by a large bridge structure with the MCB2 and MCB4 alternatives. Several acres of difficult-to-replace, submerged aquatic vegetation (and areas of potential future establishment) in Currituck Sound would also be shaded by the massive structure.

   Response: *The US Fish and Wildlife Service's (USFWS's) position regarding the project is acknowledged. The impacts noted are addressed in the DEIS and this FEIS. Mitigation for shading to SAV habitat (including existing bed) would be a part of the Preferred Alternative. A mitigation plan would be finalized in association with environmental resource and regulatory agencies to reach an acceptable agreement of type, amount, and location. NCTA's current proposals are presented in Section 3.3.7.2 of this FEIS.*

2. **Comment:** MCB2 and MCB4 each offer two Currituck Sound bridge options, C1 and C2. C1 has a more northern terminus in the Outer Banks, while C2 has a more southern terminus. C2 would traverse over a wider band of coastal marsh and forested wetlands, impact more acres of wetlands, be in close proximity to other important coastal wetlands, shade shallower aquatic bottom, and shade more existing submerged aquatic vegetation (SAV). Therefore, the Department strongly prefers the C1 alternatives over C2 alternatives. C1 would land on the Outer Banks at a location with only a narrow band of coastal marsh fringe and which has already been disturbed for proposed development. C1 is located farther away from emergent wetlands within Currituck Sound which are important to many coastal birds and waterfowl. Overall, C1 would have the fewest impacts to wildlife.

   Response: *C1 was selected to be a part of the Preferred Alternative. Its location was refined so that it would cross no wetlands along the eastern shoreline of Currituck Sound.*

3. **Comment:** Pages 2-10 to 2-15 discuss the two options for crossing Maple Swamp for MCB2 and MCB4. Option A would bridge over Maple Swamp and place a toll plaza on the west side of Maple Swamp within the US 158 interchange. Option A would also retain the existing Aydlett Road for use by local traffic. Option B would be a road on fill through Maple Swamp with the toll plaza placed on the east side of Maple Swamp at Aydlett. Option B would also remove the existing Aydlett Road. An option not considered in the DEIS would be to bridge Maple Swamp, remove the existing Aydlett Road, locate the toll plaza on the east side of Maple Swamp, and

accommodate local traffic with ramps off and onto the main road at Aydlett. This would combine elements of Options A and B, but would have the least impact on Maple Swamp and its hydrology, allow for onsite wetland restoration in the roadbed of the removed Aydlett Road, and provide the highest level of permeability for wildlife movements through Maple Swamp.

The existing Aydlett Road currently impacts the hydrology of Maple Swamp and partially restricts wildlife movement, as well as serves as a source of wildlife road mortality. Removing Aydlett Road and completely bridging Maple Swamp would provide the best conditions for a wildlife travel corridor. The Department strongly opposes a road on fill through Maple Swamp. Even with provision for wildlife crossings, the fill will still have significant impacts on wildlife resources through fragmentation, interruption of wildlife movements, and significant alterations in wetland hydrology.

Response: *The removal of Aydlett Road was found during the public and agency comment period to be an unacceptable community impact by both the residents of Aydlett and Currituck County officials. Those impacts are discussed in Section 3.1.2 of the DEIS and FEIS. Therefore, it is not included in the Preferred Alternative. However, Option A, which would bridge Maple Swamp, is included in the Preferred Alternative. Between the DEIS and this FEIS, NCTA examined further the potential impacts of fill in Maple Swamp on groundwater flow, including existing Aydlett Road. Regarding Aydlett Road, it was determined from available surface topography data that it appears that the original ground surface across the full width of Maple Swamp at the location of Aydlett Road is very flat, at a constant elevation of approximately 2 feet mean sea level. Therefore, as long as the culverts beneath this existing road were designed and constructed to maintain satisfactorily surface water hydrology through the swamp, it is expected that Aydlett Road has had negligible effects on groundwater flows and levels in Maple Swamp (Parsons Brinckerhoff, October 2010).*

4. **Comment:** Figure 2-7 on page 2-12 (DEIS), text on page 3-40 (DEIS), and text on page 4-33 of the *Natural Resources Technical Report* depict five wildlife crossing structures in the road fill for Option B. Would there be any additional structures for conveyance of hydrology? If not, the wildlife crossing structures could be permanently flooded, thus rendering them nearly useless for terrestrial wildlife. Most terrestrial species of wildlife would require dry ground in order to utilize the crossings.

   In Figure 2-7, Option B depicts two bridges as wildlife crossings on either end of the fill across Maple Swamp, with three smaller pipe and culvert crossings in the middle. What is the rationale for having the larger bridge structures along the outside edges? Was micro-topography considered in the placement of the structures? If not properly placed with consideration of topography and hydrology, it is very possible that the smallest structures would be completely inundated. Larger bridge structures would be far more effective wildlife passage structures.

Response: *Yes, with Option B, additional features such as equalizer pipes would be provided to maintain regular surface water hydrology. There are only minor (typically 1 foot or less) changes in elevation throughout the swamp meaning the swamp is generally flat. The bridges were proposed for the edges of the swamp where the majority of wildlife movement is expected to occur. Many species tend to travel in the ecotone between habitats and by putting the crossings on the edge of wetland/upland habitat, both upland and wetland species would benefit. Furthermore, wildlife would have a large crossing structure on each side so that if an animal is on the west side of the swamp, it would not have to travel far to find a crossing. If Option B had been selected as a part of the Preferred Alternative, the potential for inundation would have been considered in project design. However, if, or when they were to flood, most likely the entire swamp would be flooded and wildlife activity would already be limited. Also, many species would be able to use the structures even if there is water in them. This topic is further explained in the revised NRTR in Section 4.1.4.2.*

5. **Comment:** Page 3-31 identifies the *Gordonia* forest within Maple Swamp as a state Significant Natural Heritage Area and as "an unusually extensive stand" of the species. This old-growth stand of *Gordonia* may have represented the largest stand in the state, and was likely the northernmost range of this community type. However, almost all the *Gordonia* has been clear cut. An interagency field meeting on July 10, 2007 verified the uniqueness and extraordinary value of the community type to the ecology of the area prior to the logging. Subsequent field inspections by USFWS and North Carolina Wildlife Resources Commission staff on August 4, 2009 and by project consultants on August 4-5, 2009 documented extensive clear cutting of the *Gordonia* forest, as well as most of the other forest lands within and adjacent to the project study area.

   There is inconsistency within the DEIS and associated documents regarding how Maple Swamp is treated. Throughout the main document, reference is made to Maple Swamp forest as if it were still completely intact. However, the associated *Natural Resources Technical Report* (NRTR, dated November 2009) and the *Indirect and Cumulative Effects Technical Report* (ICETR, dated November 2009) both, at least in part, acknowledge some level of clear cutting within Maple Swamp. Since the DEIS was released in March 2010, this known information should have been included in the main document since it relates to much additional information, such as impact tables and mitigation options. Portions of the main document and some impact tables need to be revised to reflect current conditions.

   Response: *Maple Swamp was re-surveyed in August 2010. Areas logged were identified. The impact assessment in the revised NRTR and this FEIS has been revised to reflect this change.*

6. **Comment:** Based on multiple field observations by USFWS staff, it appears that the hydrology of Maple Swamp has been significantly affected by the removal of the enormous amount of biomass during the logging operations. Reduced transpiration from the loss of so many trees may have led to a rise in the water table, as evidenced by deeper and more persistent standing water through the study area. Even after

several days of no rain, culverts under Aydlett Road were observed to have high velocity discharge. A persistent higher water table would likely convert the former swamp forest into emergent or shrub-scrub wetlands. If Option B (road on fill material through Maple Swamp) is selected, it is unclear what ramifications occur with such altered hydrology.

Response: *During field surveys in August 2010 to determine the extent of logging, standing water was not observed. Mid-Currituck Bridge study team groundwater hydrologists reviewed known information related to Maple Swamp hydrology in association with the extent of logging and concluded that de-forestation would likely result in an increase in groundwater levels and/or surface water outflows, although they termed the increase as "slight" (Parsons Brinckerhoff, October 2010). Option B, had it been selected as a part of the Preferred Alternative, could have been designed to maintain surface water flow taking into account increased flows that could result from logging.*

7. **Comment:** During the July 10, 2007 interagency field meeting and subsequent TEAC meetings, several state and federal natural resource agencies expressed their support to preserve the unique Gordonia forest within Maple Swamp as a form of compensatory wetland mitigation for unavoidable impacts. Recommendations were made for the NCTA to begin making efforts (possibly with the assistance of local land trusts or other environmental organizations) to preserve portions of Maple Swamp. To our knowledge, no such efforts were made. Now that the unique Gordonia ecosystem is largely gone, the value of preserving portions of Maple Swamp has somewhat diminished. However, given the fact that the community type has the ability, over great time, to regenerate through stump sprouting, we believe that preservation of portions of Maple Swamp is still worthwhile.

   Page 3-47 and 3-48 of the DEIS generally discuss compensatory mitigation options. Page 4-9 of the NRTR addresses landlocked parcels within Maple Swamp that could be preserved as wetland mitigation credit. The NRTR acknowledges some clear cutting of Maple Swamp; however, the acreages listed in the NRTR are much understated based on current conditions. We still support the purchase of these landlocked parcels for wetland preservation credits. Since the logging operations have affected the landscape (e.g. rutting, log landings, compaction, and hydrology alteration), some wetland restoration or enhancement may be needed. Any such restoration or enhancement should be conducted so as to promote the growth or re-growth of the Gordonia community type.

   Response: *Prior to the completion of the NEPA process, including selection of a Preferred Alternative, it was premature to consider the purchase of portions of Maple Swamp as mitigation. Logged areas as of August 2010 are reflected in this FEIS. NCTA is committed to protecting from future logging land-locked parcels purchased in Maple Swamp and Great Swamp. This land would be set aside as a conservation area and allowed to retain or return to its natural state (assuming successful negotiations with willing sellers). (See Section 3.3.6.4 of this FEIS.)*

8. **Comment:** There are several inconsistencies and/or errors in the DEIS and supporting documents in their treatment of threatened and endangered species. The paragraph in section 3.3.8 on page 3-52 is flawed and does not match with Table 3-13 on page 3-53 (and Table 17 on page 5-14 of NRTR). The table is flawed as well.

   Table 3-13 (DEIS) and Table 17 (NRTR) states that habitat is present for the red-cockaded woodpecker (*Picoides borealis*). The DOI is not aware of any habitat for this species within the study area.

   Page 5-18 of the NRTR states that green sea turtles (*Chelonia mydas*) "do not nest in North Carolina." In fact, green sea turtles do nest in North Carolina in small numbers, but not within the project study area. Though the probability is low, green sea turtles may be encountered within Currituck Sound.

   Page 5-19 of the NRTR states "nesting is uncommon in North Carolina" for Kemp's ridley sea turtles (*Lepidochelys kempii*). In fact, the Kemp's ridley sea turtle does not nest in North Carolina. It appears that the document partially interchanged the descriptions for the green sea turtle and the Kemp's ridley sea turtle. Though unlikely, it is possible that a Kemp's ridley sea turtle could be encountered within Currituck Sound.

   Table 3-13 (DEIS) and Table 17 (NRTR) states that there is no habitat present for the leatherback sea turtle (*Dermochelys coriacea*). The tables and the text on page 5-20 (NRTR) render a "No Effect" biological conclusion for this species. Although there is no nesting habitat present, using the same rationale as for the other sea turtle species, there is the possibility of encountering the leatherback sea turtle within Currituck Sound. Therefore, to be consistent, the biological conclusion should be "May Affect – Not Likely to Adversely Affect."

   With regard to Section 7 consultation under the Endangered Species Act, sea turtles fall under the purview of the USFWS only during their beach nesting activity. While in the water, they fall under the purview of the National Marine Fisheries Service. Therefore, biological conclusions should be rendered separately for each scenario. With regard to beach nesting activities, we believe the project will have no effect on sea turtles.

   Table 3-13 (DEIS) and Table 17 (NRTR) states that there is no habitat present for shortnose sturgeon (*Acipenser brevirostrum*), yet they render a biological conclusion of "May Affect - Not Likely to Adversely Affect." How could there be an effect if no habitat is present?

   Table 3- 13 (DEIS) and Table 17 (NRTR) states that there is habitat present for seabeach amaranth (*Amaranthus pumilus*), but the text on page 5-22 of the NRTR states that there is a "lack of suitable habitat". We believe that there is no habitat present for this species.

Response: *The changes and corrections suggested by the US Department of Interior (USDOI) were made in the Summary and Section 3.3.8 of this FEIS, and Section 5.7 of the revised NRTR with one exception. There is seabeach amaranth habitat in the indirect impacts area defined in the Biological Assessment (Parsons Brinckerhoff, 2011) prepared as a part of threatened and endangered species consultation with the US Fish and Wildlife Service and the National Marine Fisheries Service.*

9. **Comment:** The current and historical importance of Currituck Sound to wintering waterfowl is well documented. Along the Atlantic coast, the marshes, other wetland habitats and shallow sound waters of North Carolina support 300,000-400,000 waterfowl annually during winter. Currituck Sound and Pamlico Sound provide the important habitat to support these large numbers of wintering waterfowl. Currituck National Wildlife Refuge (CNWR) is only a few miles away from the proposed Mid-Currituck Bridge and supports large numbers of wintering waterfowl. The proximity of the bridge to CNWR would have the potential to reduce or remove foraging areas used by wintering waterfowl to feed and rest. This would come from the direct loss of wetland habitats (e.g. marsh plants that provide seeds and plant material eaten by wintering waterfowl) and submerged aquatic plants (SAV) which are also fed upon by waterfowl.

   Response: *About 5 percent (annual average of 18,577 birds) of North Carolina's waterfowl have wintered throughout Currituck Sound between 2001 and 2009 (USFWS mid-winter waterfowl survey data). Data from 2001 through 2009 also indicate more than 50 percent of Currituck Sound's waterfowl winter in the southern portion of the sound (USFWS Unit 8), about 40 percent winter in the northern portion (USFWS Unit 9), and less than 10 percent winter in the mid portion (USFWS Unit 10) of Currituck Sound. The proposed bridge corridor would pass through shallow waters and some portions of SAV habitat (including existing beds), as defined by the NC Marine Fisheries Commission (NCMFC), on the eastern side of the sound; however, the Preferred Alternative would avoid all direct impacts to coastal, brackish, and freshwater marsh.*

   The southern boundary of Currituck National Wildlife Refuge occurs over two miles to the north of the Preferred Alternative. Potential disturbances to wintering waterfowl currently include hunters, recreational boaters, and shoreline development which reduce favorable conditions for foraging and resting birds. Developed shoreline and water access sites currently exist in the vicinity of Corolla and Whalehead Bay between the refuge and the Preferred Alternative bridge alignment. Although the exact effects of the bridge on wintering wildlife are difficult to quantify, waterfowl can become accustomed to some disturbances and roadways. Large aggregations of waterfowl and shorebirds frequently use areas near and under Bonner Bridge, as well as along and in the vicinity of public roads that traverse through both Pea Island and Lake Mattamuskeet National Wildlife Refuges. It is anticipated that waterfowl may be disrupted in the vicinity of the bridge during construction mostly during winter months, but the primary feeding, resting, and nesting habitats for waterfowl throughout the year (wintering, migrating, and nesting) are associated with marshy and shallow water areas to the north and south of the bridge corridor of the Preferred Alternative.

It is also likely that birds may become accustomed to the elevated bridge and will continue to use some areas in the bridge vicinity.

10. **Comment:** Although section 3.3.3 of the DEIS and section 4.1.3.1 of the NRTR provide some information on the historical and current importance of Currituck Sound for waterfowl, there is essentially no evaluation of what the effects to waterfowl would be. Given the importance of Currituck Sound for wintering waterfowl, we find this to be a glaring omission. At a minimum, the following potential impacts should be addressed: direct habitat loss, temporary construction impacts to include short-term noise impacts to wintering waterfowl, long-term noise effects, and potential avoidance from visual disturbance. In addition, the statement on the top of page 3-39 "However, there have been substantial declines in waterfowl numbers since the 1980's" is mischaracterized. It should read "However, there have been substantial declines in waterfowl numbers since the 1980's because of loss of natural habitat and development in the Currituck Sound region".

    Response: *Currituck Sound has historically supported large numbers of wintering waterfowl; however, since 2001 the average annual number of wintering waterfowl in the mid portion of Currituck Sound (Unit #10) has averaged less than 1 percent of the total wintering waterfowl in North Carolina (USFWS mid-winter waterfowl survey data). The sound certainly provides important and valuable habitat to waterfowl, but to far fewer birds compared to previous decades. Although waterfowl usage is often variable year to year and over time, the sound could easily become more important to waterfowl in the future.*

    The presence of a bridge in the mid portion of the sound is unlikely to alter substantially the existing or future number of waterfowl that may use the Currituck Sound. The Preferred Alternative would result in the direct loss of the following potential waterfowl habitat: 3.8 acres of SAV beds, 4.8 acres of SAV habitat (including existing beds) as defined by the NCMFC, and 0.1 acre of open water. No coastal, brackish, or freshwater marsh would be directly lost by the Preferred Alternative. Waterfowl are more likely to be indirectly affected by increased development (changes in secluded shoreline habitats and potential increase in recreational use activities) compared to the direct impacts or indirect impacts with the Preferred Alternative. The proposed bridge is not expected to increase development beyond planned levels, although some future commercial development would likely shift from the Outer Banks to the area adjacent to the US 158/Mid-Currituck Bridge interchange. The construction could potentially deter birds from the area, although each species and even individuals within the same species have different responses to construction (Burton et al., 2002; Kaseloo, 2006).

    See also the response to Comment 21 made by the Southern Environmental Law Center related to waterfowl impacts.

11. **Comment:** The natural habitats of the Atlantic coast host countless numbers of migratory birds annually during migration periods. The arrangement of the system of barrier islands and natural marshes along the North Carolina coast make this region extremely attractive and conducive to migrating birds. The construction of a large and high bridge perpendicular to this Atlantic coast migration corridor will

cause significant mortality from direct bird strikes on the bridge and collisions with vehicles on the bridge. Only alternative ER2 would avoid this hazard. Although section 4.1.2.1 of the NRTR provides minimal evaluation of the hazard of birds being killed by vehicles on the bridge, there is no analysis of mortality due to direct bird strikes on the bridge.

If an alternative is chosen to construct the Mid-Currituck Bridge, the bridge should be designed to discourage birds from perching on or underneath it. The William B. Umstead Bridge over Croatan Sound has proven to be an "attractive nuisance" situation for tens of thousands of purple martins (*Progne subis)* roosting on the cables, girders, and I-beams under the bridge. High levels of vehicle collision mortality have been documented from that bridge; therefore, a design which would similarly encourage such perching should be avoided.

Even at bridges which do not encourage similar perching, high levels of mortality from vehicles hitting flying birds have also been recorded for North Carolina's longest coastal area bridges (e.g. NC 12 Bonner Bridge over Oregon Inlet, new US 64 over Croatan Sound, US 64 over Alligator River). To discourage birds from flying low enough to be struck by a vehicle, visual obstructions along the sides of the bridge should be erected. This can take the form of fencing, higher bridge rails, poles, or decorative structures which encourage birds to fly higher. The Florida Department of Transportation erected poles along a bridge over Sebastian Inlet and documented an almost 64% decline in bird mortality. Similarly, a proposed coastal area bridge in California will be constructed with a high, decorative fence which has a high visual permeability for motorists but which will encourage birds to fly over the height of traffic (see attached Figures 1 and 2).

Response: *In studies collecting roadkill data from bridges and roads, birds were the most abundant taxa and it is estimated that death by vehicle is the fourth or fifth leading cause of death for birds, with estimates of mortality ranging from 10 to 380 million deaths each year (Jacobson, 2005). Lower estimates of mortality are typically underestimates because it is difficult to estimate the numbers of deaths related to highways because many bird carcasses are scavenged soon after death and other carcasses disappear into water or just are not noticed (Jacobson, 2005). Other birds are also attracted to the carcasses, increasing the amount of deaths if they are hit while attempting to feed on the carcass (Jacobson, 2005). General observations of dead birds from coastal North Carolina bridges suggest that gulls are the primary species observed, but other species also occur including: terns, cormorants, and pelicans.*

NCTA would use standard details for installed features used to discourage roosting/perching birds. During final design, NCTA would investigate proven methods of reducing collisions between vehicles operating on the bridge and flying birds and incorporate them as appropriate. An expanded discussion of bird mortality is included in Section 4.1.4.2 of the revised NRTR.

12. **Comment:** Page 3-74 states "With respect to floodplain highway encroachment, it is the policy of the FHWA 'to avoid significant encroachments, where practicable.'". Page 3-75 states "MCB/2B and MCB4/B would involve a significant encroachment since they would be considered a significant alteration to a water course by Currituck County." Given the fact that other viable alternatives exist, and given the fact that the two Option B alternatives (road on fill through Maple Swamp) were developed well after the Option A alternatives (bridging Maple Swamp) were initially proposed at TEAC meetings, it appears that the FHWA would be obligated to select either an Option A alternative or to select a combination alternative previously described in this letter (both bridging Maple Swamp and removing existing Aydlett Road).

    Page 3-72 states "Should MCB/2B or MCB4/B be selected for implementation, additional studies would be conducted during final design so adverse floodplain impacts...could be avoided or minimized, as well as affects on groundwater hydrology, hydrological characteristics of Maple Swamp, and supported ecological functions." Since according to Title 23 Code of *Federal Regulations* Part 650, Subpart A, "Significant encroachment" includes "A significant adverse impact on natural and beneficial floodplain values", we believe that information derived from the aforementioned studies would be crucial prior to selecting an option for crossing Maple Swamp. Furthermore, since the existing Aydlett Road has already affected the non-tidal functions of the floodplain, it seems prudent to study the effects of an option which both removes Aydlett Road and bridges Maple Swamp, thus representing more natural conditions. This would likely support the combination option previously described (both bridging Maple Swamp and removing existing Aydlett Road).

    Response: *The floodplain impact studies presented in the DEIS were revised. This included modeling impacts on storm surge elevations of design Option A and various combinations of bridge and fill across the swamp using a more detailed August 2010 location survey of the terrain in Maple Swamp and taking into account recent logging in the swamp. The presence of Aydlett Road was assumed in all cases since its removal is unacceptable to Aydlett residents and Currituck County officials. Also, current flood mapping assumes the presence of Aydlett Road. Hydraulic modeling results affirmed no impacts to 100-year maximum water surface elevations as a result of Option A. Several combinations of bridge and fill also were modeled to determine the minimum length of bridge that must be built across Maple Swamp in order to have no impacts to 100-year maximum water surface elevations. Hydraulic modeling results show that a minimum 2,500-foot wide bridge opening across the central and eastern portion of the swamp (i.e., the portion of the swamp with the lowest elevation) is required to have no effect on 100-year maximum water surface elevations. During the selection of the Preferred Alternative, NCTA proposed an alternative that included a 2,640-foot-long bridge across Maple Swamp to eliminate the flood elevation impact of Option B. Ultimately, however, Option A, which bridges Maple Swamp, was incorporated into the Preferred Alternative.*

13. **Comment:** The Department is concerned that the Mid-Currituck Bridge project will lead to increased development and infrastructure improvements in the currently roadless area of the Outer Banks north of the project area at Carova. Portions of the Currituck National Wildlife Refuge (CNWR) are immediately adjacent to Carova, and residents must currently drive on the beach through CNWR lands to access Carova. Currently, approximately 12% of the 3,200 platted lots at Carova have residential structures. If increased access to the northern Outer Banks increases the build out of Carova, our concern is that there will be public and political pressure to extend NC 12 northward from Corolla. Both the development and the road would hamper the management and the "wildlife first" mission of the CNWR.

    Page xix and 4-23 of the ICETR states "For the non-road-accessible Outer Banks there would be no reasonably foreseeable change in the location, rate, or type of development with the implementation of the detailed study alternatives, in comparison to the No-Build Alternative." We are skeptical of this conclusion. Pages 4-24 through 4-27 lists some reasons for the conclusion reached in the ICETR. Section 4.2.4.1 indicates that the uniqueness of the Carova area provides people with a sense of remoteness and isolation. This section basically argues that since Carova serves a unique market of isolation seekers, making the community road accessible would be incompatible with the local mindset. At best, this is descriptive, not prescriptive of what new potential residents may want or may tolerate.

    Section 4.2.4.2 lists several putative government restraints to extending NC 12 to Carova. This section argues that the Coastal Barrier Resources Act (CBRA) would act as a deterrent to extending NC 12. However, CBRA only makes properties ineligible for federal flood insurance and restricts the expenditure of federal money. CBRA does not prohibit development with private or local government or state government money.

    The National Wildlife Refuge System Improvement Act of 1997 is also listed as a deterrent to extending NC 12. However, history has shown that this law has not deterred the North Carolina Department of Transportation (NCDOT) from attempting to improve or relocate roads through National Wildlife Refuges. Also, there is the potential that current CNWR lands which are traversed by beach drivers could be swapped for other parcels, thus removing the trigger for a compatibility determination.

    An old resolution of the NCDOT Board of Transportation is argued as a deterrent to extending NC 12 to Carova. However, it is the prerogative of subsequent Boards of Transportation to change previous resolutions.

    Section 4.2.4.3 lists substandard lot sizes as a deterrent to future development in Carova. However, current zoning laws could be amended in the future. Also, substandard lots could be combined to meet size requirements, thus still allowing for additional build out, albeit at a lesser rate.

Section 4.2.4.4 argues that increased development and road improvements in Carova are inconsistent with the Currituck County land use plan. However, county land use plans can and do change frequently and are influenced by public demand.

Therefore, the Department remains concerned that the Mid-Currituck Bridge may increase the residential build out of the roadless area at Carova, thereby stimulating public and political pressure for infrastructure improvements, including the extension of NC 12 northward. This would have adverse ramifications on the management of CNWR.

Response: *The scenario presented in Section 4.2.4 of the Indirect and Cumulative Effects Technical Report considers the weight of the variables that would influence development in the northern beach-accessible communities. As has been evidenced in the last five years, development is likely to continue in this area with or without a bridge, but it is development of a very particular sort. The critical question is would the time saved by a bridge for travelers from the north induce additional development in the area. Of particular question in this comment is: would future development, from whatever cause, increase pressure for extension of NC 12 north. Although this scenario contends that the extension of NC 12 is not reasonably foreseeable, it is agreed that were it to occur, the cumulative effects for the northern communities and landscapes would be substantial.*

It is duly noted that there are instances where access improvements alter regional development, sometimes even contrary to existing community plans. However, several important variables do mitigate this in the northern communities. It is still fundamentally an area without general access from paved roads. Because of its distinctive "off-road," non-commercial, land's end character it is a resort based on the peculiar "amenity" of the place rather than convenience or accessibility. The beach front properties in particular support the weekly vacation rental market. This is evidenced by the most recent and largest of the "houses" to open in this area, The Wild Horse House, which has 23 bedrooms and caters to weeklong wedding parties. The vacationers for these vacation rentals come from an east-coast catchment area and, in the analytical scenario presented, would make their decisions on numerous considerations, of which a shorter trip from the north is a lesser issue.

The second point of the comment addresses the important issue: would increased development for any reason cause an extension of NC 12 to be built. All of the case-specific evidence indicates strong resistance and disincentives to extending NC 12. These include: strong local resistance, strong resource agency resistance, strong county resistance, lack of federal resources in a CBRA unit, stated NCDOT objectives, and potential hazards to the iconic Currituck ponies of a higher-speed paved road. New development may increase political pressure to create road access, but considering much of the development would be resort-oriented that is ambiguous. In addition, the combined force of the factors listed make reaching the conclusion that a Mid-Currituck Bridge would encourage extending NC 12 one of speculation and not one that can be considered reasonably foreseeable (i.e., actions that are likely to occur or probable, rather than those that are merely possible). NCDOT has only sought to replace or improve existing roads (within wildlife refuges) that serve substantial

populations, such as the Bonner Bridge replacement and the problems with shoreline erosion along NC 12 on Hatteras Island and improving US 64 in Dare County to facilitate hurricane evacuation.

14. **Comment:** Black bears (*Ursus americanus*) are a significant wildlife resource within the study area. The DEIS main document does not mention black bear, and the NRTR has only a cursory mention of the species. The DEIS should evaluate the effects to this keystone species, to include effects to home ranges, movements, and road aversion due to noise and disturbance. Both Option A and B for crossing Maple Swamp should be contrasted. Also, it should be noted that potential black bear/vehicle collisions are a significant human safety issue.

    Response: *The discussion of black bear has been expanded in this FEIS (Section 3.3.3) and the revised NRTR (Section 4.1.4). The extent of wildlife-vehicle collisions (which includes bears) is also noted in those sections.*

15. **Comment:** Section 3.3.7 on page 3-48 (DEIS) states "Impacts (fill, pilings, clearing) to CAMA wetlands (wetland freshwater marsh) would range from 0.1 acre to 3.9 acres." However, Table S-1 on page xviii (DEIS) and Table 3-11 on page 3-49 (DEIS) show a range of 0.0 to 2.2 acres for CAMA wetlands. Table 3-11 also lacks explanatory note number 3 to accompany the superscript number 3.

    Response: *The tables in the DEIS were correct. The text in this FEIS was updated to reflect the correct impacts noted in the tables. The footnotes in Table 3-11 also were corrected in this FEIS.*

16. **Comment:** Page 4-9 of the NRTR states that 264 acres within nine landlocked parcels were clear cut. This number is greatly understated based on current conditions. Page 4-25 of the NRTR does acknowledge some logging south of Aydlett Road, but does not indicate the extent. Figures 5(b) and 5(c) indicate clear cutting north of Aydlett Road, but do not reflect several hundred acres cut south of Aydlett Road, including the *Gordonia* forest.

    Table 3-3 on page 3-14 of the ICETR depicts 100+ acres, 850 acres and 81 acres of Maple Swamp being logged in the years 2009, 2008 and 2007, respectively. Again, the main document of the DEIS is not consistent with this acknowledgment. The stated source for these figures is Dan McCarthy, yet there is no explanation of who Dan McCarthy is. These numbers do not agree with Maple Swamp logging acreages given to the USFWS by Mr. Aaron Gay, Currituck County Ranger with the North Carolina Division of Forest Resources.

    Response: *The information included in the original NRTR was current as of the time it was drafted. A new survey of logged areas was conducted by NCTA in August 2010 and its results are reflected in the natural resource descriptions and impacts contained in the revised NRTR (Section 4.1) and this FEIS (Section 3.3.2.3). Dan McCarthy is a Currituck County Ranger with the North Carolina Forest Service. He works with Aaron Gay.*

17. **Comment:** The first paragraph of section 4.2.4.1 on page 4-24 of the ICETR is confusing and inaccurate. The platted subdivisions of Carova are not "mixed with four nature preserves". They are adjacent to portions of the CNWR. There are six distinct units of the CNWR north of Corolla. The Back Bay National Refuge is located several miles north in Virginia. False Cape State Park lies immediately north of Carova in Virginia, but is not a national wildlife refuge as the text states. The Currituck Banks Estuarine Research Reserve lies several miles south of Carova, as does a parcel of land owned by The Nature Conservancy.

    Response: *Section 4.2.4.1 of the Indirect and Cumulative Effects Technical Report was revised based on this comment.*

18. **Comment:** ER2 clearly has the least impacts to fish and wildlife resources and federal trust resources. However, it is understood that since ER2 would not generate tolls, it would be very unlikely that the NCTA would be able to construct ER2. Of the four remaining build alternatives, the Department prefers MCB4/C1. As to the Maple Swamp crossing option, we prefer both Maple Swamp be bridged and the existing Aydlett Road be removed.

    Response: *MCB4/C1 was selected as the Preferred Alternative. Maple Swamp is bridged. For reasons noted in response to USFWS comments above, Aydlett Road is not removed. Other refinements were made to MCB4/C1 to help avoid and minimize impacts, as described in Section 2.6 of this FEIS.*

2.1.5 US Environmental Protection Agency—June 4, 2010

1. **Comment:** EPA's primary environmental concerns regarding the Clean Water Act remain unresolved. Detailed technical review comments are attached.

    Response: *The US Environmental Protection Agency's (USEPA's) specific comments related to the Clean Water Act are addressed under USEPA's comments that follow.*

2. **Comment:** EPA has rated the proposed bridge alternatives MCB2 and MCB4 as 'EO-2', Environmental Objections with additional information being requested for the final document (Attachment B includes EPA's Summary of Rating Definitions and Follow-up Action. EPA's review has identified: significant environmental impacts to jurisdictional waters of the U.S. that should be avoided in order to adequately protect the environment, potential degradation of water quality to Currituck Sound, severe impacts to fish and wildlife resources, and indirect and cumulative effects within the project study area. Further, we believe that the proposed action might cause significant environmental degradation under the Clean Water Act and Section 404(b)(1) Guidelines.

    Response: *USEPA's specific comments related to the issues noted in the comment are addressed under USEPA's comments that follow.*

3. **Comment:** NCTA and FHWA need to further demonstrate that the environmental impacts to jurisdictional waters of the U.S. can be further avoided and minimized and potentially mitigated for and that water quality is not further degraded as a direct result of this project and its associated indirect and cumulative impacts. NCTA and FHWA should consider substantial changes to the recommended alternative or consideration of some other project alternative, including the improvement to existing roadway facilities.

   Response: *Substantial changes and environmental commitments were made in association with the Preferred Alternative (MCB4/C1) presented in this FEIS. See Section 2.1.2.5 of this FEIS for a description of the Preferred Alternative and the design refinements made in response to government agency and public input and comments to help avoid and minimize impacts. Improvement of existing roads was assessed as a detailed study alternative in the DEIS and this FEIS.*

4. **Comment:** Alternative MCB2/C1/A might be environmentally acceptable provided that impacts from floodplain encroachment can be fully and appropriately addressed prior to this FEIS, all storm water from the new bridge can be collected and treated with minimal impacts to jurisdictional resources, construction does not involve any dredging, and all wetland impacts can be first avoided and minimized and that adequate compensatory mitigation is found. Compensatory mitigation should be 'in-kind' and within the same hydrologic cataloguing unit.

   Response: *MCB4/A/C1 was selected as the Preferred Alternative. This alternative would not affect 100-year floodplain elevations. Collecting and treating bridge runoff for the entire length is not practicable because of the length of the Mid-Currituck Bridge and the Maple Swamp bridge (see Section 2.1.7.4 of this FEIS). However, a commitment is made in this FEIS to an alternative stormwater management plan. There would be no dredging with the Preferred Alternative. NCTA agrees that wetland impacts are to be first avoided and minimized to the extent practicable and then mitigated.*

5. **Comment:** EPA believes that Alternative ER2 is a reasonable and feasible alternative and its potential impacts can be addressed through additional avoidance and minimization measures. EPA believes that ER2 should be designated as the environmentally preferred alternative and meets the proposed project's purpose and need by providing the appropriate balance of impacts to the benefits and costs.

   Response: *USEPA's position is noted and was taken into consideration in the selection of the Preferred Alternative. See the response to Comment 3 above on why ER2 was not selected as the Preferred Alternative.*

6. **Comment:** The DEIS is presented in a revised format from the recommended format found at 40 CFR Section 1502.10. Page v of the DEIS Preface includes a statement concerning Chapter **3,** the Affected Environment and Environmental Consequences and as well as the potential short- and long-term beneficial and adverse effects (if any) of the detailed study alternatives. EPA believes that this major Federal action that could involve the construction of a new bridge and other coastal infrastructure

improvements in the cost range of $595.5 million $1,065.1 million will have potential short-term and long-term adverse effects on the natural and human environment. The average cost range of the new bridge alternatives and options appears to be approximately $750 to $800 million based upon the information on Page xxi of the DEIS.

Response: *USEPA's position is acknowledged.*

7. **Comment:** EPA could not find a specific discussion in the DEIS concerning the long-term maintenance costs of a new 7 to 7.5-mile bridge facility over Currituck Sound. Major infrastructure along the Outer Banks and the coastal plain of North Carolina is periodically damaged by severe storms and hurricanes. Maintenance costs associated with the existing project study area roadways and bridges has been expressed by FHWA and NCDOT as a major concern for more than a decade. Shrinking transportation dollars and increased maintenance and repair costs for infrastructure in areas that are very vulnerable to severe weather conditions such as high winds and storm surges and salt air and water should be a very important consideration for decision-makers. NCDOT Division 1 officials have routinely expressed their concerns at other project meetings for maintaining existing roadways and bridges. Adding more than 7 miles of new infrastructure in this area will further strain existing transportation resources.

   Response: *Maintenance costs are included in the financial plan for the Preferred Alternative. Maintenance would be paid from toll revenues under a long-term concession agreement between NCTA and a private developer. The project is not anticipated to add to Division 1 maintenance expenditures during the period of the concession agreement, which is assumed in this FEIS to be 50 years.*

8. **Comment:** Pages xii and xiii of the DEIS include other transportation projects proposed in the study area. EPA understood from the NCDOT project management that for R-2545 and R-2544, US 64 including the new bridge over the Alligator River, only the bridge is funded and the 20-miles of widening and new location sections between Columbia and Manteo are currently unfunded.

   Response: *According to the 2009 to 2015 STIP, no construction funding is expected for these projects until after 2015.*

9. **Comment:** Appendix A, Comments and Coordination does not include copies of specific agency letters following Turnpike Environmental Agency Coordination (TEAC) meetings.

   Response: *These letters were included in the Stakeholder Involvement for Draft Environmental Impact Statement Technical Report referenced in Appendix A of the DEIS and included on the CD that accompanied the DEIS. The letters begin on page A-173 of the technical report.*

10. **Comment:** Project Purpose and Need – The DEIS presents three primary project needs, including the need to improve traffic flow in the study area roadways such as US 158 and NC 12, the need to reduce travel time for persons traveling between the Outer Banks and Currituck County mainland, and the need to substantially reduce evacuation times from the Outer Banks. EPA has previously commented on some of the project purpose and need issues during scoping and the Turnpike Environmental Agency Coordination (TEAC) process. EPA continues to have substantial environmental concerns regarding the documented need for a new crossing of Currituck Sound and the detailed study alternatives (DSAs) presented in the DEIS that include a new bridge. The traffic flow and travel time benefits from a new bridge crossing do not in the long-term outweigh the direct adverse effects to the natural environment, including wildlife, coastal wetlands, and water quality. Table 2-3 of the DEIS attempts to capture some of the travel benefits of the detailed study alternatives of ER2, MCB2 and MCB4 compared to the No-build. In addition, this table also tries to capture the 2035 Hurricane Evacuation Benefit in clearance times between the alternatives.

    EPA does not believe that there have been any documented hurricane evacuation problems in this area of the Outer Banks in modern times using the existing roadway system. EPA understands the State's desired goal of reducing hurricane evacuation clearance times to the 18-hour goal. Planning and designing a roadway system based upon this desired goal should be a consideration but not a finite decision point in the preferred alternative selection process. There are other areas of the Outer Banks that potentially cannot meet this 18-hour goal even if a new bridge is constructed over Currituck Sound. EPA in its review of the September 2005 North Carolina Department of Transportation State Hurricane Evacuation Study found only two Category 3 hurricanes in 'modern times' (post 1930) that directly hit the Outer Banks. On September 16, 1933, Hurricane #13 hit the Outer Banks and there were reportedly 21 died, many of whom died from inland flooding. On September 1, 1993, Hurricane Emily resulted in 160,000 persons being evacuated. Two surfers reportedly died from drowning after they apparently refused to evacuate the island.

    Other reduced strength hurricanes have historically either brushed near the Outer Banks or made landfall further south in North Carolina and traveled north up the coastal plain towards Virginia. Some of these lesser strength hurricanes caused extensive flooding and storm surge damage along the Outer Banks and in inland areas (e.g. Category 2 Hurricane Isabel on September 18, 2003; only 45% reportedly evacuated from the Outer Banks). Considering that most documented fatalities during hurricanes involve drowning in flooded low-lying areas, transportation agencies should consider other planning initiatives as evacuated persons from the Outer Banks move inland. Many of the evacuation routes in the coastal plain traverse low-lying areas, rivers and streams. During one NCDOT presentation on hurricane evacuation in 2008, NCDOT used hurricane evacuation pictures from Texas (i.e., Hurricane Rita) as the documentation for traffic congestion problems. The September 2005 NCDOT State Hurricane Evacuation Study contains no photographs or other direct evidence of past evacuation problems in North Carolina.

EPA does agree that reducing hurricane evacuation clearance times in general is a desirable goal and should be reasonably weighed against other costs, benefits and adverse environmental effects. Local planning and early warning appear to be important components to effective hurricane evacuation, including the consideration of minimizing new development along isolated and remote areas of barrier islands.

Response: *In selecting the Preferred Alternative hurricane evacuation clearance times were weighed against other costs, benefits and adverse environmental effects. Local emergency management officials were consulted and continue to agree that a new bridge is important for improving clearance times (see Chapter 1.0 of this technical report and Section 2.1.10.4 of this FEIS for a summary of the discussions with the local emergency management officials). Based on these discussions with the local emergency management officials, adding a third outbound lane on US 158 on the mainland was not selected as a part of the Preferred Alternative, which also helped to minimize the potential environmental impacts of improving hurricane evacuation clearance times. Also, NCTA received a letter from Currituck County Emergency Management (the letter is included in Appendix A of this technical report) documenting traffic issues that resulted from evacuation during Hurricane Earl. The letter stated that, "Although traffic was heavy, it was moving adequately until an accident occurred in Duck which was then compounded by a malfunctioning traffic light. This turned the Currituck portion of highway 12 into a literal parking lot for several hours. Our call center was over loaded with concerned, scared and angry tourists." The letter went on to state, "While we understand that putting a mid-county bridge in our county will not alleviate all traffic issues and will not be protected from the occasional accident, it does offer us the opportunity to reroute traffic. How can we expect people to continually respond well to our evacuation orders if they must sit on a road with thousands of other vehicles and not move for long periods of time? Many of these people turned around and went back to their rental properties because they naturally assumed the traffic was going to be this way throughout the evacuation route."*

11. **Comment:** The DEIS includes information on the funding of the project and estimated costs on pages xxi and xxii. According to this section, only the toll, new bridge alternatives have a potential to be funded. DSA ER2 cannot be funded through toll revenues or the Public Private Partnership agreement. Furthermore, the $15 million per year provided by the N.C. General Assembly cannot be applied to DSA ER2 per the DEIS, only DSAs MCB2 and MCB4. The DEIS does not indicate if the N.C. Board of Transportation considers R-2576, Mid-Currituck Bridge Study project to be a priority project under its current priority plans and what funding could be made available for DSA ER2 if it is selected as the preferred alternative. NCTA officials have stated during TEAC meetings that ER2 is not a 'feasible' alternative as it cannot be funded as a toll project.

    Response: *Traditional highway funds are not available to build ER2. The 2009 to 2015 STIP includes no traditional highway funds for the Mid-Currituck Bridge project that could be used to build ER2. In addition, the reallocation of NCDOT Division 1 funds to pay for ER2 is not a realistic proposal. In the 2009 to 2015 STIP, Division 1 is anticipated to get approximately $569 million in equity funds over a 7-year period. With an estimated total*

cost of between $416.1 and $523.4 million (see Table 2-4 of this FEIS), funding ER2 would require delaying or deleting most other projects in Division 1. The replacement of the Bonner Bridge at an anticipated cost of $300 million also is scheduled within this 7-year window. Thus, generating funding from the STIP for ER2 also would require the delay of the Bonner Bridge replacement, as well as other projects.

12. **Comment:** The DEIS includes DSAs ER2, MCB2 and MCB4 with the following options: MCB2/C1, MCB2/C2, MCB4/C1 and MCB4/C2. Option C1 includes a northern connection and interchange on the barrier island side of Currituck County and Option C2 includes a southern, longer connection and interchange near Albacore Street. Option C2 is actually a 7.5-mile bridge. The DEIS also states that the bridge over Currituck Sound for C1 Option is approximately 7.0 miles in length ((Page 2-10). From past TEAC meetings, there was reference to the new bridge being approximately 5 to 7 miles long. MCB2 provides greater improvements to local roadways and MCB4 provides more limited improvements. The specific improvements under each DSA are included in Section 2 of the DEIS. The A and B designation refers to the mainland approach road options of the new bridge.

    EPA recognizes that MCB2 includes the existing road improvements similar to ER2, but the information contained on page xxi of the DEIS is confusing. For example, the range of cost difference between ER2 and MCB2/B/C1 is $416.1 to $523.4 million vs. $800.1 to $970.2 million, respectively. The DEIS does not specifically state the cost of a 7-mile or 7.5-mile bridge. The range of costs for a new bridge might be from $384.0 to $446.8 million. Similarly, the other MCB2 alternatives would indicate that a new 7-mile bridge over Currituck Sound would cost approximately $400 to $500 million dollars. These figures do not correlate well with the information contained in Table 2-4 where the costs are broken down for each DSA. Construction costs for the bridge alternatives under Option A range from $619.3 to $845.7 million, and construction costs for bridge alternatives under Option B range between $513.4 and $726.3 million. These figures exclude mitigation, right of way and utility costs. There is great variability in the actual bridge costs as presented in the DEIS and it is unclear as to the cost differences between Option C1 which is approximately 7.0 miles in length and Option C2 which is 7.5 miles in length. Therefore, EPA requests that this FEIS include clarification as to the actual costs of a new bridge.

    Option B would not include a toll plaza at the US 158 interchange and the bridge approach would be placed on fill within Maple Swamp. Option A would place a toll plaza within the US 158 interchange. The mainland approach road would include a bridge over Maple Swamp. Similarly to Options C1 and C2, the costs between these two options are not clearly identified in the DEIS. It is also unclear if the costs for the longer bridge over Maple Swamp under Option A are added to the C1 and C2 lengths. The DEIS indicates that the new Mid-Currituck Bridge would be a two-lane facility and discusses some of the travel and other considerations on Page 2-17. The difference between a two-lane facility and four-lane facility is estimated at approximately $120 million. The cost estimation details are not included in the DEIS. Superstructure supports, materials, and construction costs would be expected

to be proportionally greater with a four-lane facility. Detailed cost assumptions and estimations should be included in this FEIS.

Response: *Table 2-4 of this FEIS in Section 2.3 now specifies the Mid-Currituck Bridge and Maple Swamp bridge costs as separate line items. The cost of the Preferred Alternative also is presented. A four-lane bridge is not a part of any detailed study alternative. All bridges are two lanes. Section 2.1 describes the detailed study alternatives, as well as the Preferred Alternative. The items described in Section 2.1 reflect the assumptions made in developing the cost estimates presented in Table 2-4.*

13. **Comment:** Human and Natural Resource Impacts – The DEIS includes a comparison of key impacts in Table S-1 and in other sections of the document. Some of these impact assumptions and categories are not meaningful or have not been shown to be a relevant issue for the comparison of alternatives. For example, outdoor advertising signs are listed as a key impact with 29 signs for ER2 and 6 or 16 signs for the MCB2 or MCB4 alternatives and the respective options. FHWA and NCDOT routinely relocate outdoor advertizing signs for widening and new location projects. The relocation of gravesites is also highlighted as a major difference between the alternatives and a key impact. The relevance of this 'key impact' is not identified in the DEIS.

    The residential relocations between the alternatives are generally similar and range between 5 and 8 with 10 vacation rental units. Business relocations are also generally in the same magnitude of impact with between 5 and 8. The summary table also includes impacts with no third outbound lane for hurricane evacuation. The impacts range from 2 to 6 by not including this third lane. The DEIS includes discussions with access changes to neighborhoods and businesses. The access changes appear to be a reasonable expectation considering the scope and magnitude of the proposed improvements.

    Response: *USEPA's position that the number of outdoor sign and grave relocations are not relevant to the selection of a Preferred Alternative is noted. These impacts are important to those who own outdoor signs and to those whose loved ones are buried in the cemetery. There are notable differences between the alternatives on these impacts and thus they are included in Table S-1. USEPA's observations and position on relocations and access changes are acknowledged.*

14. **Comment:** Total wetland impacts are 7.2 acres, 40.3 acres, 44.9 acres, 42.4 acres, 47.0 acres, 36.6 acres, 41.1 acres, 38.7 acres, and 43.2 acres for Alternatives ER2, MCB2/C1/A, MCB2/C1/B, MCB2/C2/A, MCB2/C2/B, MCB4/C1/A, MCB4/C1/B, MCB4/C2/A and MCB4/C2/B, I-respectively. The bridge alternatives also have the highest impacts to SAVs with 18.8 acres for MCB2/C1, 23.3 acres for MCB2/C2, 18.8 acres for MCB4/C1 and 23.3 acres for MCB4/C2. Based on the magnitude difference in wetland and other water resource impacts, EPA believes that ER2 is the environmental preferred alternative and appears to be the Clean Water Act Section 404 Least Environmentally Damaging Practicable Alternative (LEDPA).

Response: *USEPA's position is acknowledged. USEPA participated in environmental resource and regulatory agency coordination meetings between the DEIS and FEIS that were a part of the selection of the Preferred Alternative. The Preferred Alternative would have a lower wetland impact than ER2, as presented in this FEIS in Section 3.3.6.*

15. **Comment:** The impacts to water quality are expected to be very significant. The DEIS does not fully address the fact that water quality in Currituck Sound has declined substantially in the last several decades due to primarily an increase in turbidity and nutrient loading from non-point source runoff. Nursery areas for Blueback herring and Alewife have not been recognized since the 1980's. Coastal marshes around Currituck Sound waters have been lost to erosion or invaded with exotic plant and animal species. In addition to development, other human activities such as agricultural and silviculture have potentially impacted overall water quality ill the sound and caused subsequent decline in ecosystem and habitat function. Section 3.3.4.1 addresses aquatic wildlife in Currituck Sound and Section 3.3.4.2 discusses Submerged Aquatic Vegetation (SAV). For purposes of differentiating the impacts between the alternatives, Section 3.3.4.3 is inadequate for fully addressing the magnitude of impacts to water habitat. In addition to the direct loss of SAVs and shading effects, the new bridge pilings would also potentially allow for the introduction of other organisms not typically found in a shallow water estuary. The DEIS states that: "On the other hand, organisms could be attracted to bridge pilings as a reef structure". In the appropriate ecosystem, reef structures can aid and provide potential habitat. The DEIS does not reference appropriate studies or supporting documentation that bridge pilings would be beneficial to the Currituck Sound ecosystem. Considering the loss of essential fish habitat and other natural functions from past and current human activities, EPA considers additional losses to SAVs to be a critical issue. EPA does not consider runoff from construction, including increased turbidity, siltation and sedimentation in aquatic habitat areas to be a 'minimal' effect. The discussion concerning the impacts from the bridge construction alternatives versus the existing roadway improvements does not provide the public and resource and permitting agencies a reasonable comparison of impacts to aquatic habitat. Shading is expected to impact 14.5 to 17.8 acres of aquatic bottom. Bridge foundations are expected to directly impact 4.3 to 5.5 acres of SAVs. Contrary to the italicized comment at Section 3.3.4, construction impacts may not be temporary but could become permanent considering the existing water quality problems in Currituck Sound.

    Section 3.3.4.4 of the DEIS provides more relevant information concerning the potential impacts from noise, turbidity and siltation. The DEIS acknowledges that non-mobile species such as clams could suffer long-term impacts from construction related siltation. However, the DEIS does not adequately assess the issue of recovering populations of benthic organisms after construction is completed or what practicable measures that NCTA would take to minimize turbidity generated during bridge construction. Potential construction techniques of the bridge are discussed in Section 2.4. EPA believes that only the 'top-down' method of construction would be acceptable. Dredging between 53,000 cubic yards and 61,000 cubic yards based upon

other proposed methods described in Section 2.4 would not be environmentally-sound. Furthermore, the DEIS does not describe the proposed site suitability and location of dredged spoils. The DEIS does not specifically reference if the potential impacts of 25 or 17 acres to aquatic bottom are included in summary tables. Also, the discussion concerning the approximate 4 acres of impact from the dock construction is not explained fully in reference to the summary impact table.

Response: *This FEIS (Section 3.3.1.3) and revised NRTR (Section 3.2.1) include additional information on past and present stressors to water quality in the sound. Appropriate studies on the effect of bridge pilings in sounds are lacking so studies concerning other similar in-water structures were used to infer effects and are cited in the revised Essential Fish Habitat Technical Report in Section 5.2.4. The pilings would function as a reef structure for shallow water organisms in the sound that currently attach to or utilize piers, duck blinds, etc., and may colonize the pilings. Salinity (and depth) would not support deeper species typical of true reefs. The amount of SAV habitat (including existing beds), as defined by the NCMFC, that would be permanently affected by construction is less than 0.05 acre (rounded to 0.0 acre) and the amount of shading has been reduced to 4.8 acres with the Preferred Alternative (see Table 3-13 of this FEIS). The proposed stormwater management plan for the Preferred Alternative is presented in Section 2.1.7.2 of this FEIS. The proposed strategy for minimizing SAV impact during construction is presented in Section 2.4.2 of this FEIS. The proposed strategy for mitigating the impact of SAV habitat (including existing beds) shading is presented in Section 3.3.7.2 of this FEIS.*

A separate supply dock and dredging are no longer under consideration. NCTA would continue to work with environmental resource and regulatory agencies as the project progresses into final design and permit application to refine the approach to construction. Current proposals are included in Section 2.4.2 of this FEIS. Pure "top-down" construction (i.e., the only in-water work is the placement of permanent bridge piles) is financially prohibitive. NCTA proposes to build the bridge using a combination of work barges (no additional sound bottom disturbance) and a temporary work trestle which would involve the placement of temporary piles for 6,400 feet of the bridge (1,900 feet on the western end and 4,500 feet on the eastern end). Measures to minimize the impact of all in-water work are described in Section 3.3.7.2 of this FEIS.

NCTA recognizes that temporary construction impacts could become permanent and state in this FEIS and the revised NRTR that avoiding this possibility would be discussed and dealt with in consultations with the agencies. Fine sand sediments (which are present in Currituck Sound) recover quicker than other sediments, but there is not always an influx of opportunistic species into the impacted area (Dernie et al., 2003). The recovery of the disturbed ecosystem is dependent on local conditions such as weather and time of year the disturbance occurs, which make it difficult to predict the recovery rate of a particular area. More information on water impacts has been added to Section 3.3.4.3 of this FEIS.

16. **Comment:** NCTA and FHWA propose to build the bridge simultaneously from both sides using both US 158 and NC 12 with construction meeting in the middle. Moving large construction equipment and materials via NC 12 would potentially be

very disruptive to local residents and have a substantial impact to local traffic. This issue is not discussed in the DEIS.

Response: *Additional information on anticipated construction procedures, including the transport of equipment and material, was added to Section 2.4 in this FEIS. Appropriate impact discussions were added to Section 3.5 of this FEIS related to this additional construction information.*

17. **Comment:** Alternatives MCB2 and MCB4 involve the construction of the new bridge across Currituck Sound and will traverse Maple Swamp on the mainland side. Maple Swamp is designated as a Significant Natural Heritage Area (SNHA). Option A would involve the bridging of Maple Swamp. Option B would involve filling the wetlands of Maple Swamp. EPA recommends bridging this entire high quality system.

    Response: *Option A was selected as a part of the Preferred Alternative.*

18. **Comment:** The DEIS addresses different stormwater treatment options from the deck drains for the bridge alternatives. EPA believes that a full collection and treatment system is needed for any of the bridge alternatives. Untreated roadway runoff into Currituck Sound will further degrade this resource that is already stressed from human activities, including residential and commercial development. Bridge drainage options are specifically discussed on Pages 2-25 to 2-27 of the DEIS. EPA strongly recommends Option 1 of the three options identified for collecting and treating bridge drainage. A direct discharge of bridge stormwater through deck drains into Currituck Sound is not environmentally sound and will continue to accelerate water quality degradation problems.

    Response: *Collecting and treating bridge runoff for the entire length is not practicable because of the lengths of the Currituck Sound bridge and the Maple Swamp bridge. However, a commitment is made in Section 2.1.7.2 of this FEIS to an alternative stormwater management plan, which was developed in coordination with NCDENR-DWQ.*

19. **Comment:** The discussion concerning invasive species control at Section 3.3.5 is not adequate. This FEIS should cite examples of past successes using NCDOT's Best Management Practices (BMPs) for management of invasive plant species in coastal areas. To EPA's knowledge, there are few or no long-term and cost-effective successes to controlling invasive plants such as Phragmites once they become introduced or established through disruptive activities such as construction. NCDOT's BMPs on such coastal wetland mitigation sites such as Mashoes Road for controlling Phragmites have been very costly and in the long-term ineffective in eliminating this damaging species.

    Response: *NCDOT, Roadside Environmental Unit, Roadside Erosion Control and Vegetation Management, comments that NCDOT has not had long-term success with controlling Phragmites because most projects only treat for a certain amount of years (typically 3 to 5 years and associated with the monitoring program for the project) and only*

treat within the right-of-way. Typically Phragmites will exist outside the right-of-way and expand once the treatment period ends or Phragmites that had been eliminated from the treatment area will recover after the treatment period ends or both scenarios will occur. This can also be the case with other invasive species. However, Best Management Practices (BMPs) will be applied and NCTA does not believe that the potential for introducing invasive species is a factor that should preclude all further transportation improvements or other construction in coastal areas; rather diligence in applying best available practices is appropriate. NCDOT's BMPs for control of invasive species include treatment of all identified invasive species populations in the area affected by the project with the appropriate USEPA approved herbicides by a licensed pesticide applicator with the NC Department of Agriculture and Consumer Services. In addition, the plant material and soil with root mass of any invasive species populations disturbed by construction activities would be buried 3 feet under fill or removed and placed in waste areas. Invasive plant species and their control are discussed in more detail in the revised NRTR in Section 4.3. If USEPA has suggestions on cost effective and efficacious programs for controlling invasive species, NCTA is open to further discussions on how these may be incorporated into the project.

20. **Comment:** The DEIS very generally discusses borrow site material needed for fill. The DEIS does not address the specific locations of any proposed borrow sites or any impacts associated with these potential locations. For purpose of assessing the potential indirect impacts from borrow sites needed for the proposed project alternatives, the DEIS does not provide adequate details and defers to the final design stages; additional information should be provided in this FEIS.

    Response: *Until final design plans are completed, the exact amount of borrow and waste materials associated with this project cannot be determined. The contractor would be required to obtain applicable permits relative to borrow pits and comply with the requirements for borrow pits, dewatering, and any temporary work conducted in Section 404 jurisdictional areas (wetlands and streams).*

21. **Comment:** The DEIS includes consideration for on-site wetlands mitigation by removal of Aydlett Road. However, this compensatory mitigation of potentially 9.1 acres is only being offered for the bridge alternatives that would fill existing Maple Swamp. From direct field observations, there are extensive invasive plant species immediately adjacent to Aydlett Road. The management and control of invasive plant species would need to be thoroughly addressed should this mitigation be pursued at a future date. Compensatory mitigation is also addressed on Pages 3-46 and 3-48 of the DEIS. A conceptual mitigation plan is not included in the DEIS, and should be included in this FEIS.

    Response: *A Conceptual Mitigation Plan has been prepared and its components are reflected in Section 3.3.6.4 of this FEIS and in Section 5.6 of the revised NRTR (included on the CD that accompanies this FEIS). It also is included as Appendix E in the revised NRTR. The Conceptual Mitigation Plan will be reviewed and modified if necessary with appropriate environmental resource and regulatory agencies during the permitting process to compensate adequately for impacts associated with the Preferred Alternative. The Preferred Alternative*

does not include Option B and its proposal to remove Aydlett Road. Therefore, USEPA's comment that there are invasive species adjacent to Aydlett Road that need to be addressed is no longer applicable with the Preferred Alternative.

22. **Comment:** Floodplains – The DEIS includes statements that the new highway will involve significant encroachment in floodplain areas but it also states that with respect to floodplain highway encroachment, it is the policy of the FHWA to avoid significant encroachment since they would be considered a significant alteration to a water course by Currituck County (Pages 3-74 and 3-75). Page 3-72 states that "should MCB2/B or MCB4B be selected for implementation, additional studies would be conducted during the final design so adverse floodplain impacts....could be avoided or minimized, as well as affects to groundwater hydrology, hydrological characteristics of Maple Swamp, and supported ecological functions". EPA believes that these studies should be completed prior to the issuance of a FEIS. Furthermore, Option A (i.e., Bridging Maple Swamp) should be considered in combination with the removal of Aydlett Road. The floodplain impact is estimated at 22.1 acres on the mainland (Page 3-72). For alternatives MCB2/A and MCB4/A, the impact to the 100-year floodplain would be a total of 10.4 acres. Reference to a project commitment is also made on Page 3-74 with the mitigation measures determination following design. The DEIS does not provide any suggestion of how these significant floodplain encroachment impacts can be minimized. Considering severe storms and storm surge, the past history of flooding, the accelerated development in the project study area and increases in impervious surfaces, and the potential for sea level rise, any floodplain encroachment will significantly increase flooding events. EPA does not concur with the statement concerning floodplain impacts for MCB2/A and MCB4/A on Page xxiii.

    Response: *The floodplain impact studies presented in the DEIS for Maple Swamp were revised. This included modeling impacts on storm surge elevations of design Option A and various combinations of bridge and fill across the swamp using a more detailed August 2010 location survey of the terrain in Maple Swamp and taking into account recent logging in the swamp. The presence of Aydlett Road was assumed in all cases. The removal of Aydlett Road was found during the public and agency comment period to be an unacceptable community impact by both the residents of Aydlett and Currituck County officials. Those impacts are discussed in Section 3.1.2 of the DEIS and FEIS. Also, current floodplain mapping assumes the presence of Aydlett Road. Hydraulic modeling results affirmed no impacts to 100-year maximum water surface elevations in Maple Swamp as a result of Option A. Several additional combinations of bridge and fill also were modeled to determine the minimum length of bridge that must be built across Maple Swamp in order to have no impacts to 100-year maximum water surface elevations. Hydraulic modeling results show that a minimum 2,500-foot wide bridge opening across the central and eastern portion of the swamp (i.e., the portion of the swamp with the lowest elevation) is required to have no effect on 100-year maximum water surface elevations. During the selection of the Preferred Alternative, NCTA proposed an alternative that included a 2,640-foot-long bridge across Maple Swamp to eliminate the flood elevation impact of Option B. Ultimately, however, Option A, which bridges Maple Swamp, was incorporated into the Preferred Alternative.*

The reasons behind the floodplain findings presented on page xiii of the DEIS are presented in Section 3.4.7 of the DEIS and this FEIS, as well as Section 6.0 of the Other Physical Features Technical Report. USEPA does not give any reasons for their disagreement with the floodplain findings. NCTA stands behind those findings. In terms of minimization, the US 158/Mid-Currituck Bridge interchange with the Preferred Alternative is in an area surrounded on two sides by the 100-year floodplain. US 158, the road to which the project connects, is within the 100-year floodplain. The interchange design maximizes the use of non-floodplain land. The total interchange area is 78.3 acres, of which 9.8 acres is in the floodplain. The floodplain impact could be reduced to 2.9 acres by using the Option B interchange, which would place the toll plaza in Aydlett, reducing the footprint of the interchange from 78.3 acres to 67.2 acres. However, placing the toll plaza in Aydlett would result in unacceptable community impacts and thus is not a practicable alternative. In addition, neither interchange design would result in flood elevation increases or represent a significant encroachment. Therefore, the Option A interchange is included in the Preferred Alternative.

23. **Comment:** Sea Level Rise – The DEIS includes a discussion of sea level rise in Section 3.4.4 and defers decisions on road and bridge elevations needed to accommodate potential sea level rise to final design. Raising the grade of the roadways to accommodate sea level rise estimates will increase fill heights and create additional impacts to jurisdictional water resources. EPA does not agree that a Mid-Currituck Bridge would be a useful asset in reducing the impact of sea level rise on the project's area road system. Conversely, bridge alternatives are expected to increase floodplain encroachment with no minimization measures being proposed. Sea level rise will only exacerbate flooding and storm surge issues. The statement that a Mid-Currituck Bridge could 'stay in service up to 75 years', is not reasonable nor is there a reference to other similar bridge structures in the coastal plain that have lasted that period of time without significant repairs or replacement. EPA does not concur with the suggestion that a breach in the island at the Currituck/Dare County line could be addressed through a new bridge and the conclusions of this section of the DEIS do not appear to be adequately supported by the documentation.

    Response: *Section 3.4.4 of the DEIS and this FEIS present the key sea level rise findings of Section 3.0 of the Other Physical Features Technical Report. Planned bridge and fill heights adequately account for sea level rise. USEPA's disagreement with the Mid-Currituck Bridge being a useful asset in reducing the impact of sea level rise on the project area's road system is noted. NCTA respectfully disagrees and notes that this finding did not play a role in the selection of the Preferred Alternative nor is it a project purpose. It is presented simply as a potential benefit of the bridge project. The project's financial plan includes funds for significant repairs to the bridge approximately 40 years into its life. If the bridge does not stay in service for 75 years, then the impact of accelerated sea level rise described in Section 3.4.4 would be less. As indicated above, the floodplain encroachment associated with the US 158/Mid-Currituck Bridge interchange would not alter the storm surge elevation. As indicated in Section 3.4.7 of the DEIS and FEIS and Section 6.0 of the Other Physical Features Technical Report, the floodplains in the project area do not serve the same function*

as floodplains in non-coastal areas (fluvial or river/stream floodplains with associated stormwater runoff) because water levels in the project area are not dependent on floodplain storage capacity. Unlike upland riverine floodplains, the flood levels in the project area are primarily dependent on barometric pressure and the correlated storm surge height.

24. **Comment:** Fish and Wildlife Impacts – EPA defers specifically to the U.S. Fish and Wildlife Service, N.C. Wildlife Resources Commission and other resource agencies concerning the potentially significant impacts to fish and wildlife. EPA concurs fully with the comments contained in the May 25, 2010, letter from the U.S. Department of Interior to NCTA and the May 21, 2010, memorandum from the N.C. Wildlife Resources Commission to Ms. Melba McGee, NCDENR. Only alternative ER2 does not represent a significant impact to fish and wildlife resources, including aquatic organisms and fish, migratory birds, and terrestrial species. The discussion contained in the summary impacts table is not a reasonable representation of the differences in the impacts between the alternatives. The bridge alternatives represent a major or severe impact to wildlife species, including direct impacts from habitat loss, habitat fragmentation and indirect and cumulative effects. Inaccuracies concerning endangered and threatened species should be addressed in this FEIS.

    Response: *Inconsistencies between Table S-1 and the discussion of impacts to threatened and endangered species in Section 3.3.8 of the DEIS are corrected in this FEIS. NCTA believes that Table S-1 presents a reasonable representation of the differences in impacts between the alternatives.*

25. **Comment:** Farmland Impacts – The DEIS describes the potential impacts to farmlands in Section 3.1.12. The discussion is not based upon an actual full analysis and determination of prime, unique and State and locally important farmlands under Title 7 Code of Federal Regulations (CFR) Part 658 but on soil types. The assessment did not include completed Form AD-1006 or Form NRCS-CPA-106. MCB2/A and MCB4/A would affect approximately 37 acres of prime farmland soils and 72 acres of State and locally important farmland soils. MCB2/B and MCB4/B would impact approximately 76 acres of prime farmland soils and 41 acres of State and locally important farmland soils. The DEIS does not provide a relevant discussion of North Carolina's initiatives in protecting farmlands from continued losses to development. The DEIS does not address if Currituck County is participating in the Voluntary Agricultural District (VAD) program. The DEIS does not indicate if these potential farmland losses will impact the specific operations of current agriculture and what economic impact that may result. The DEIS on Page 3-19 does reference another 2009 report that includes a copy of the Farmland Conversion Impact Rating form CPA- 106. Table S-1 Comparison of Key Impacts does not include any specific farmland impact category. Continued farmland losses in North Carolina is an important socio-economic issue and the DEIS attempts to categorize the potential loss from this proposed project as being inconsequential (e.g., "....this is less than 0.01 percent of all farmland soils in Currituck County.").

Response: *As indicated in Section 3.1.12 of the DEIS and FEIS, a detailed discussion of farmland impacts, including as noted by USEPA the required Farmland Conversion Rating Form (CPA-106) was included in the Community Impact Assessment Technical Report found on the CD included with the DEIS. Material related to North Carolina's initiatives in protecting farmlands, the Voluntary Agricultural District program, and the number of farmland operations affected by the detailed study alternatives, including the Preferred Alternative, have been added to the impact assessment in Section 3.1.12 of this FEIS and Section 5.7.1 of the CIA. Farmland impacts have been added to Table S-1 in this FEIS.*

26. **Comment:** Indirect and Cumulative Impacts – EPA has previously expressed concerns for the indirect and cumulative impacts from the proposed bridge alternatives. The DEIS discusses indirect and cumulative effects in Section 3.6. EPA continues to have environmental concerns for the proposed project bridge alternatives. The statement contained in summary impact table on Page xx includes the desire by Currituck County that the bridge alternatives are desired because the potential development at the bridge's interchange and along US 158. There are significant wetland areas and other low-lying floodplain areas where this development is desired. Referencing Page 3-88 of the DEIS, EPA does not concur with the statement concerning the type and density of development compared to the 'No-build alternative' and the bridge alternatives. 'The lack of transportation improvements and its constraint on development' statement included on Page 3-89 is not accurate or supported by actual development facts. This area has been developing at an accelerated pace until the major economic down turn in 2009. This has been occurring for more than a decade and without any transportation improvements and with some seasonal congestion. EPA does not agree with the assessment of potential development in the Carova area. This FEIS should address these issues further.

    Response: *As discussed in the indirect and cumulative impact assessment in Section 6.1.2 of the Indirect and Cumulative Effects Technical Report, there is more than adequate land classified in Currituck County's land use plan as suitable for development to accommodate development near the bridge's interchange with US 158. Therefore, there is no reason to believe that this development would occur in wetland or floodplain areas near the interchange. USEPA's disagreement with the findings on pages 3-88 and 3-89 of the DEIS is noted. In terms of the Carova area, the impact assessment assumes a continuation of trends over the decade prior to the development of the forecasts. These trends also were assumed in the project's traffic forecast. The conclusion of the indirect and cumulative impact assessment was the introduction of the bridge would not affect those trends. Other commenters had comments related to the indirect impact of a Mid-Currituck Bridge in the Carova area from potential increased beach driving. Revisions were made to Section 3.6 of this FEIS and Section 6.2.4.1 of the revised Indirect and Cumulative Effects Technical Report in response to those comments.*

2.2 State Agencies

2.2.1 North Carolina Department of Agriculture and Consumer Services—Agricultural Services—April 27, 2010

1. **Comment:** Based on the secondary, cumulative, and direct impacts, this project will adversely impact the agricultural, environmental and economic resources in the proposed area. The total negative impact on the environment and agribusiness economy will be proportionately related to the total acres of farm and forest land taken out of production. Increased division of land units and its reduced accessibility for agricultural production will also increase the negative impact on agriculture. Due to these adverse impacts, additional consideration should be given to alternative routes and/or designs that would reduce the loss of farm and forest lands.

   Response: *From the perspective of direct impacts, the primary location of impacts to farmland is at the US 158/Mid-Currituck interchange, as discussed in Section 3.1.12 of the DEIS and this FEIS. The impact to forest land occurs in Maple Swamp. Given that on the mainland, the alternatives to affecting farmland or farmland soils are affecting jurisdictional wetlands or rural communities, both of which are important to avoid, there are no alternative routes that might reduce the loss of farmland. Forest lands in the project area also are primarily wetlands and considered prime wildlife habitat. Impacts to forest lands have been minimized from that perspective. From the perspective of indirect impacts, the indirect and cumulative impact assessment found that based on a Currituck County economic development strategy for the area surrounding the US 158/Mid-Currituck Bridge interchange (Lane et al., 2008) that approximately 68 acres of development was reasonably foreseeable. This development would use actively farmed agricultural land but agricultural land listed as suitable for development in the Currituck County land use plan. From the perspective of cumulative impacts, use of agricultural lands by development would be independent of the bridge project except for the documented direct and indirect impacts. No lands classified as "rural areas" (for traditional agricultural uses such as agriculture or forestry) in the Currituck County land use plan are near the project area, as shown in Figure 2-1 of the Indirect and Cumulative Effects Technical Report included on the CD that accompanies the DEIS and this FEIS. The best opportunity to reduce the loss of farmland in Currituck County would be a change in county plans to encourage higher density development.*

2.2.2 North Carolina Department of Cultural Resources—State Historic Preservation Office—April 16, 2010

1. **Comment:** The Draft Environmental Impact Statement correctly identifies the historic properties within the undertaking's Area of Potential Effects as well as the effects the undertaking will have on them. It also commits to additional archaeological survey and testing once a preferred alternative has been selected.

   Response: *This observation is acknowledged.*

2. **Comment:** We would like to note the potentially confusing use of the term "historic properties" on page 3-19 and on the following pages discussing cultural resources. The two architectural surveys identified *36* properties that are older than 50 years and may have some significance. However, only 14 of these properties were found to be listed in or eligible for listing in the National Register of Historic Places. Only these 14 properties should be termed "historic properties," subject to Section 106. Making the distinction between the two types of properties (simply old versus historic*)* will help to avoid any confusion on the part of the reader/public.

   Response: *This confusion is corrected in this FEIS.*

2.2.3 North Carolina Department of Environment and Natural Resources—General—June 10, 2010

1. **Comment:** This project has a long history and is complex in nature. Based on the current data provided for review, there continues to be a number of weaknesses and information voids in the DEIS that will need to be addressed in order for our agencies to complete their review. Although the attached comments clearly reflect a number of deficiencies with the DEIS, our primary interest at this time is to continue to communicate and work closely with the Department of Transportation. The department feels additional efforts are needed in order to resolve the issues raised and encourages the Department of Transportation to continue to assemble the requested information and coordinate with our review agencies. Providing adequate information that addresses agency concerns during the NEPA Merger Process will help prevent delays during the department's review of this FEIS.

   Response: *Coordination with environmental resource and regulatory agencies continued between the DEIS and FEIS as a part of selecting the Preferred Alternative, further avoiding and minimizing impacts, and developing mitigation strategies. This coordination included several additional TEAC meetings conducted with environmental resource and regulatory agencies. These meetings are an alternative to the NEPA/Section 404 process referenced in the comment. All of the agency coordination meetings for the proposed project, including the TEAC meetings since the DEIS was released, are listed in Appendix A of this FEIS. A summary of the TEAC meetings since the DEIS was released is included in Chapter 1.0 of this technical report. In addition, the meeting agendas, slide show presentations, and minutes for these recent meetings are included in Appendix A of this technical report.*

2.2.4 North Carolina Department of Environment and Natural Resources—Division of Coastal Management—June 4, 2010

1. **Comment:** A formal DCM review of the project to determine consistency with the state's Coastal Management Program will not occur until a Coastal Area Management Act (CAMA) major permit application is received. At that time, the CAMA major permit application will be circulated to the network of state agencies that comprise North Carolina's Coastal Management Program. The statutes, rules and policies of each of these agencies must be considered during the review of the

CAMA major permit application. This process will also include a consistency review by the DCM District Planner of the CAMA land use plans in effect at the time of the permit application. Please see the attached memorandum written by the DCM District Planner Charlan Owens dated 6/4/10 for more information.

Response: *The NCDENR-DCM District Planner's June 4, 2010, memorandum requesting additional information before Provisional Consistency Determinations could be made for all of the DEIS detailed study alternatives with respect to the CAMA Land Use Plans in the project area (see Appendix B of this technical report, page B-26) was reviewed and the additional information requested was provided to the District Planner (see NCTA's January 12, 2011, response letter in Appendix A of this technical report, page A-178). NCDENR-DCM subsequently indicated that the additional information provided in NCTA's response letter would be useful during the permit process. The findings of the District Planner's memorandum also were used to refine Section 3.1.6 of this FEIS and Section 6.3 of the Community Impact Assessment Technical Report.*

2. **Comment:** During the CAMA major permit application review process, DCM may have additional comments after examining the more detailed environmental information that will be provided with the permit application. DCM may also place conditions on any CAMA permit that is issued to avoid, minimize and/or mitigate environmental impacts. The comments provided in this letter shall not preclude DCM from requesting additional information throughout the CAMA major permit application review process, and following normal permitting procedures. Furthermore, nothing in this letter shall be interpreted as providing an opinion on the ultimate outcome of any CAMA permit decision.

   Response: *NCDENR-DCM's process is understood. NCTA has maintained close coordination with NCDENR-DCM throughout the project development process for the Mid-Currituck Bridge by way of several agency coordination activities, including the following: regularly scheduled TEAC meetings (attended by NCDENR-DCM representative Cathy Brittingham); additional meetings to discuss specific issues such as SAV impacts and a construction moratorium for the Preferred Alternative (see Section 1.4); and field visits to confirm the locations of CAMA Areas of Environmental Concern (AEC) (on November 31 and December 1, 2010, with NCDENR-DCM representative Stephen Lane). In addition, as indicated in the response to NCDENR-DCM's previous comment above, NCTA provided the additional information requested by NCDENR-DCM's District Planner so that Provisional Consistency Determinations could be made for all of the DEIS detailed study alternatives with respect to the CAMA Land Use Plans in the project area. In an e-mail from NCDENR-DCM representative Cathy Brittingham dated February 10, 2011, it was indicated that the additional information provided in NCTA's response letter would be useful during the permit process.*

3. **Comment:** General Project Issues – DCM has identified the following general project issues as defined by the Section 6002 Coordination Plan for the Mid-Currituck Bridge Project STIP Project R-2576. Please note that in the future DCM could identify these following issues as issues of concern as defined by the Section

6002 Coordination Plan for the Mid-Currituck Bridge Project STIP Project R-2576 if they are not satisfactorily addressed during the environmental review process.

- Stormwater Management
- Permanent and temporary impacts to sub-aquatic vegetation and habitat and associated compensatory mitigation
- Permanent and temporary impacts to CAMA Coastal Wetlands and associated compensatory mitigation
- Construction methodologies and associated permanent and temporary impacts to CAMA Areas of Environmental Concern (AEC's)
- CAMA Land Use Plan conformity
- Impacts of sea level rise

Response: *These issues were considered and addressed between the DEIS and this FEIS in the context of environmental resource and regulatory agency coordination meetings focused on the selection of the Preferred Alternative and impact avoidance, minimization, and mitigation strategies; other coordination with NCDENR-DCM; and in the development of responses to the specific NCDENR-DCM comments below. NCTA will continue to coordinate with the agencies on a satisfactory resolution to these issues during the final design and permitting process.*

Specific Comments on the DEIS

4. **Comment:** Page xii, What other transportation projects are proposed in the project area. Please note that the NCDOT five-year plan does include funding for the replacement bridge over the Alligator River, which is part of TIP No. R-2544 and TIP No. R-2545.

   Response: *This was stated under TIP No. R-2545 on page xii in the DEIS, which includes the Alligator River bridge.*

5. **Comment:** Pages xxii, What state and federal regulatory requirements must be considered when comparing, the alternatives. This section does not appear to include requirements of the N.C. Coastal Area Management Act, State Dredge and Fill Law, federal Coastal Zone Management Act, N.C. Sedimentation Pollution Control Act and stormwater management rules of the Environmental Management Commission.

   Response: *The requirements of the North Carolina Coastal Area Management Act (CAMA), state dredge and fill law, federal Coastal Zone Management Act, NC Sedimentation Pollution Control Act, and stormwater management rules of the Environmental Management Commission have been added to the corresponding section in*

this FEIS, which is titled "What state and federal regulatory requirements must be met by the Preferred Alternative?"

6. **Comment:** Page xxvii, project commitment #5; page 2-38, Explain how each alternative will be built; page 3-42, Impacts from Noise, Turbidity, and Siltation; and page 3-76, Construction Impacts. It is important to provide information about construction methods that may have substantial impacts to the natural environment prior to the selection of a preferred alternative. Waiting until the permitting process to select final construction methods could result in denial of a permit or a substantial delay in issuing a permit. In particular, DCM has serious concerns about dredging in Currituck Sound.

   Response: *Additional information on construction was provided in the context of environmental resource and regulatory agency coordination between the DEIS and FEIS. This information is presented in Section 2.4 of this FEIS and associated impacts are discussed in Section 3.3. There would be no dredging with the Preferred Alternative. In addition, additional construction information has been developed in consultation with environmental resource and regulatory agencies during development of the Preferred Alternative.*

7. **Comment:** Page xxvii, project commitment #6; and page 3-65, How would potential accelerated sea level rise resulting from climate change affect long-term use of the detailed study alternatives? The design of road and bridge elevations to accommodate potential sea level rise, in addition to current storm surge and flooding elevations, may have substantial impacts to the natural environment, and it is therefore important to provide this information prior to the selection of the preferred alternative.

   Response: *Section 3.4.4 of the DEIS and this FEIS present the key sea level rise findings of Section 3.0 of the Other Physical Features Technical Report. Planned bridge and fill heights, as reflected in the Preliminary Design used to assess impacts, adequately account for sea level rise.*

8. **Comment:** Page 1-4, What needs is the project trying to meet. Due to the large size of the study area, multiple origins and destinations along the full travel corridor should be assessed and averaged for a more representative average estimate of travel time savings.

   Response: *NCTA believes the representative travel times indicated Section 1.4 provide an adequate indication of need and that the travel times presented in Section 2.2 provide an adequate indication of the likely success of the detailed study alternatives, including the Preferred Alternative, in meeting the travel time purpose and need.*

9. **Comment:** Page 2-10, MCB2 and MCB4 Corridor Alternatives and Design Options; and page 3-47, Avoidance and Minimization. Please specify how the restoration would be conducted with Option B whereby Aydlett Road would be removed and its right-of-way restored as a wetland. Please include any problems that may be

encountered with wetland restoration due to the floodplain impacts that are anticipated with Option B.

Response: *The removal of Aydlett Road is not a part of the Preferred Alternative. If Aydlett Road were removed, the pavement would be removed, the fill associated with the road would be removed to bring the right-of-way back down to the surrounding grade, and the right-of-way would be replanted with appropriate plant species. The success of replanting would be monitored. The floodplain impact associated with Option B would only affect the height of the storm surge and not normal drainage patterns and thus would not affect wetland restoration.*

10. **Comment:** Page 2-13, Figure 2-8. Ten-foot paved shoulders are depicted on both sides of the bridge. Please consider reducing impervious surface by constructing a ten-foot paved shoulder on one side of the bridge only.

    Response: *Both shoulders are needed to provide a haven for disabled vehicles in each direction of travel.*

11. **Comment:** Page 2-17, How many lanes would a Mid-Currituck Bridge include, and how tall would the bridge be. The NCTA will also need to demonstrate compliance with 15A NCAC 07H.0208(a)(2)(H): "Development shall not impede navigation or create undue interference with access to, or use of, public trust areas or estuarine waters."

    Response: *The only public trust area or estuarine water affected by the Mid-Currituck Bridge is Currituck Sound. The bridge would meet the navigation requirements of the US Coast Guard, including the possibility of a 35-foot high navigation span at the deepest part of the sound if a lower clearance is not deemed reasonable by the US Coast Guard. The Preferred Alternative would not be near or impede the access to any a public access point to Currituck Sound. The bridge would not create undue interference with use of Currituck Sound. Based on information gathered to date most watercraft that use the sound could pass under the bridge at any point along its length, and the Preferred Alternative is not located near water sports equipment rental docks or public access points where concentrations of recreational water activities might occur.*

12. **Comment:** Page 2-24, NC 12 Drainage; and page 3-29, Impacts to Water Quality. Please provide more information about the outfalls to Currituck Sound that would be associated with the infiltration strategies for NC 12, including size, number and location.

    Response: *There would be no outfalls to the sound. In part of Duck, water from the road and development currently is sheet flowing into the sound. MCB2 and ER2 would capture that runoff in infiltration strips through which that runoff would infiltrate into the ground rather than flow into the sound.*

13. **Comment:** Page 2-25, Bridge Drainage; and page 3-50, Essential Fish Habitat. Please provide a discussion of the NCDOT report prepared in accordance with Session Law

2008-107, Section 25.18, Stormwater Runoff from Bridges. Please coordinate with the N.C. Division of Water Quality (DWQ) and the N.C. Department of Transportation (NCDOT) Hydraulics Unit to incorporate results of that report into the stormwater design for the bridges on this project.

Response: *The report referenced was not complete at the time the DEIS was released. Its findings were considered in developing the stormwater management plan components discussed in Section 2.1.7.2 of this FEIS. The North Carolina Department of Environment and Natural Resources, Division of Water Quality (NCDENR-DWQ) and other environmental resource and regulatory agencies participated in meetings between the DEIS and FEIS where the stormwater management plan and its components were discussed. These meetings are summarized in Section 1.3 and the meeting minutes are included in Appendix A of this technical report.*

14. **Comment:** Page 3-28, Classifications of Water Resources. The waters of Currituck Sound and the Atlantic Intracoastal Waterway are classified as Joint Waters and the waters of Jean Guite Creek are classified as an Inland Waters Primary Nursery Area. Therefore, please coordinate with both the N.C. Division of Marine Fisheries and the N.C. Wildlife Resources Commission to determine dates for any fisheries moratoriums.

    Response: *Coordination with the North Carolina Department of Environment and Natural Resources, Division of Marine Fisheries (NCDENR-DMF) and the North Carolina Wildlife Resources Commission (NCWRC) related to a fisheries moratorium occurred between the DEIS and FEIS, including a meeting on April 6, 2011, to discuss a potential construction moratorium. This meeting is summarized in Section 1.4 and the meeting minutes are included in Appendix A of this technical report. The outcome of agency coordination on a fisheries moratorium is presented in Sections 3.3.1.2, 3.3.4.4, 3.3.6.4, and 3.3.72 of this FEIS.*

15. **Comment:** Page 3-31, Natural Heritage Areas. The statement that the bridge corridor was placed so that there would be no permanent loss or alteration of the unique loblolly bay forest found within the swamp may not be accurate for all of the detailed study alternatives. For example, the hydrologic impacts anticipated with Option B could cause the loss or alteration of portions of the unique loblolly bay forest.

    Response: *The hydrologic impact associated with Option B related to the storm surge height. The 100-year flood height would be 0.75 feet less at the south face of the fill, with the change tapering to zero approximately 5,500 feet south of the proposed fill, as presented in Section 3.4.7.1 of the DEIS. Groundwater studies conducted between the DEIS and FEIS revealed that if properly designed, there is no reason that the Option B fill should affect the groundwater or regular surface water hydrology of the swamp (Parsons Brinckerhoff, October 2010). However, Option A was selected to be a part of the Preferred Alternative and, as discussed in Section 3.3.2.3 of this FEIS, the loblolly bay forest has been clear cut.*

16. **Comment:** Page 3-32, Impacts to Biotic Communities. Please note that if temporary impacts do not recover pre-project conditions then they may need to be reclassified as permanent impacts with accompanying compensatory mitigation to be provided.

    Response: *This is understood.*

17. **Comment:** Page 3-33, Table 3-5. Please ensure that the estimates for impacts due to piling and shading are correct in both the text and the table. For example, according to the text on page 3-41, bridge foundations would affect 4.3 to 5.5 acres of SAV. However, according to Table 3-5 the pilings would affect 0.0 acres of SAV. Table 3-5 also states that there will be no piling impacts to CAMA Wetlands for any of the alternatives.

    Response: *The estimates for impacts as a result of piling and shading in both Table 3-5 and related text have been checked and corrected, as needed, in this FEIS. The 4.3 to 5.5 acres of impact noted on page 3-41 of the DEIS was referring to the SAV shading impact.*

18. **Comment:** Pages 3-33 to 3-37, Tables 3-5, 3-6, 3-7 and 3-8 with accompanying text. The wetland impacts should be identified according to wetland type and quality. It is particularly important to DCM that the potential CAMA Coastal Wetland impacts be specified. The DCM GIS wetland data would be an appropriate tool to classify impacts according to wetland type and quality.

    Response: *These tables are summaries of Tables 8 to 10 of the NRTR, which present impacts by each habitat type rather than the key groupings presented in the DEIS and this FEIS. This portion of the DEIS and FEIS is focused on biotic community impacts. Wetland impacts are discussed in Section 3.3.6.2 of the DEIS and this FEIS and Section 5.0 of the NRTR. Wetlands in the project area are classified by their Cowardin classification and hydrologic classification in Table 14 of the NRTR. Section 3.3.7.1 of the DEIS and FEIS and Section 5.10.1 of the NRTR present CAMA resource impacts, including wetland impacts. Table 5 of the NRTR has a column for NCDENR-DWQ wetland rating scores. The NRTR was included on the CD that occupancies the DEIS and FEIS.*

19. **Comment:** Pages 3-33 to 3-37, Tables 3-5, 3-6, 3-7 and 3-8. Please include permanent and temporary impacts due to the potential dredging of Currituck Sound.

    Response: *There would be no dredging with the Preferred Alternative.*

20. **Comment:** Page 3-38, Impacts to Biotic Communities. The DEIS states that if used, dredging would occur in areas of shallow water less than 6 feet deep where there is no SAV. Please describe how SAV locations would be located and protected at the time of construction. It is recommended that the determination of SAV locations and protection methods be closely coordinated with the N.C. Division of Marine Fisheries.

    Response: *SAV bed locations would be determined via a sonar survey combined with verification by human observation just before construction begins. Approaches to protecting*

SAV habitat (including existing beds) during construction are discussed in Section 2.4 of this FEIS. In addition, as stated in FEIS Project Commitment #3, NCTA will finalize (in association with environmental resource and regulatory agencies) and implement bridge construction techniques to minimize aquatic resource impacts with the Preferred Alternative. This commitment is discussed further in FEIS Section 3.3.4.4. Coordination also will continue with NCDENR-DMF.

21. **Comment:** Page 3-42, Impacts from Noise, Turbidity and Siltation. Please specify what practicable measures are being considered to minimize turbidity generated during bridge construction, including benefits and disadvantages of each.

    Response: *NCTA is currently proposing the construction methodologies described in Section 2.4 of this FEIS for construction of the bridge over Currituck Sound to minimize construction-related water quality impacts to Currituck Sound and other jurisdictional waters as practicable. Options for minimizing turbidity in SAV habitat (including existing beds) would include turbidity curtains or shrouds. There would be no dredging with the Preferred Alternative. NCTA would continue to work with environmental resource and regulatory agencies as the project progresses into final design and permit application to refine the construction approach.*

22. **Comment:** Page 3-46, Clean Water Act and Coastal Area Management Act Permits. Please note that impacts to CAMA AEC's will trigger the need for a CAMA major permit, however the CAMA major permit will be required for the entire project in accordance with the total development concept.

    Response: *NCTA understands a CAMA major permit will be required.*

23. **Comment:** Page 3-47, Avoidance and Minimization. Is the information about preservation of Maple Swamp still accurate considering the logging that has recently occurred?

    Response: *Logging of Maple Swamp is taken into account in Section 3.3.2 of this FEIS and Section 4.1 of the revised NRTR. As discussed in Section 3.3.6.4 of the DEIS and this FEIS under "Avoidance and Minimization," NCTA will purchase land-locked parcels north of Aydlett Road in addition to public right-of-way. In addition, as discussed in Section 3.3.6.4, the purchased land (i.e., the land-locked parcels) would be set aside as a conservation area and allowed to retain or return to its natural state. (See Commitment #8 in this FEIS.)*

24. **Comment:** Page 3-47, Compensatory Mitigation of Impacts. According to the Section 6002 Coordination Plan for Mid-Currituck Bridge Project STIP Project R-2576, the DEIS will include a conceptual mitigation proposal. The discussion of compensatory mitigation in the DEIS presents a summary of typical mitigation strategies, but does not appear to present a conceptual mitigation proposal.

    Response: *The conceptual mitigation plan is summarized in Section 3.3.6.4 of this FEIS under "Compensatory Mitigation of Impacts" and Section 5.6.2 of the revised NRTR. The full plan is included as Appendix E of the revised NRTR.*

25. **Comment:** Page 3-49, Table 3-11. Please contact DCM Transportation Projects Field Representative for NCDOT Division One, Jim Hoadley, at (252) 264-3901 to ensure that the correct impacts to all CAMA Areas of Environmental Concern are provided, including Estuarine Waters, Public Trust Area, Coastal Shoreline and CAMA Wetland.

    Response: *This contact was made and all CAMA Areas of Environmental Concern (AEC) were confirmed in the field with Stephen Lane of NCDENR-DCM on November 31 and December 1, 2010.*

26. **Comment:** Page 3-64, How would potential accelerated sea level rise resulting from climate change affect long-term use of the detailed study alternatives? It is recommended that NCTA also incorporate results from the following four more recent sources of information about sea level rise: (1) Results of the N.C. Sea Level Rise Forum that was hosted by the N.C. Department of Environment and Natural Resources (NCDENR) in January 20 10: http://www.nccoastalmanagement.net /slr.html; (2) The N.C. Sea-Level Rise Assessment Report prepared by the N.C. Coastal Resources Commission's Science Panel on Coastal Hazards, March 20 10: http://www.nccoastalmanagement.net/slr/NC%20Sea-Level%20Rise%20Assessment %20Report %202010%20-%20CRC%20Science%20Panel.pdf; (3) The U.S. Climate Change Science Program Synthesis and Assessment Product 4.1, Coastal Sensitivity to Sea Level Rise: A Focus on the Mid-Atlantic Region, January 2009: http:// downloads.climatescience.gov/sap/sap4-1/sap4-1-final-report-all.pdf; and (4) Results of the Climate Change Adaptation Workshop titled "Planning for North Carolina's Future: Ask the Climate Question", held on March 2-3, 2010 in Raleigh and hosted by the N.C. Interagency Leadership Team: http://www.climatechange .nc.gov/pages/ClimateChange/CC_Workshop_Archive.html.

    Response: *These sources were consulted in refinements made to the accelerated sea level rise discussion in Section 3.4.4 of this FEIS and Section 3.0 of the revised Other Physical Features Technical Report.*

27. **Comment:** Page 3-65, How would potential accelerated sea level rise resulting from climate change affect long-term use of the detailed study alternatives? Please provide more information about the expectation that under all sea level rise scenarios considered, NC 12 would eventually be broken by inundation near the Currituck/Dare County line. Please provide specific anticipated dimensions for the predicted breach in the island at the Currituck/Dare County line.

    Response: *The breach referenced is shown in the illustrations contained in Appendix A of the Other Physical Features Technical Report, which was included on the CD that accompanies the DEIS and this FEIS. It appears on these illustrations to be approximately one mile long. It reflects that the elevation of the terrain in that area is very close to the current sea level.*

28. **Comment:** Page 3-65, How would potential accelerated sea level rise resulting from climate change affect long-term use of the detailed study alternatives? Please

provide figures for the entire study area that depict the potential impacts of sea level rise within specified timeframes. Please include the impact that sea level rise would have on the long-term maintenance, lifespan and cost of each detailed study alternative. This should include the procedure for removal of any obsolete structures within public trust areas.

Response: *The assessment of sea level rise generally does not consider specific timeframes, but rather different levels of rise because the timeframe is dependent on the rate of rise. The higher the rate of rise, the greater the amounts of total rise in a particular timeframe. As indicated in Table 3-1 of the Other Physical Features Technical Report (which was on the CD that accompanied the DEIS), even with 59 centimeters (23 inches) of sea level rise, none of the components of the Preferred Alternative would be regularly inundated. As indicated in Table 3-2, fill across Maple Swamp with Option B would be at risk for flooding during a storm surge if sea level rise exceeded 30.5 centimeters (12 inches). In response to comments received on the DEIS, the revised assessment of sea level rise considers a 1 meter increase in sea level rise. These tables also present impacts to the existing road network in the project area.*

29. **Comment:** Page 3-74, Hydraulic Impacts to Floodplain. NCTA should coordinate with the U.S. Army Corps of Engineers (USACE) and DWQ to determine if the anticipated hydraulic impacts associated with Option B could be considered a direct or indirect impact to wetlands, and if so, if compensatory mitigation would be required. Anticipated hydraulic impacts described in the DEIS include changes to the existing maximum water surface elevation for the 100-year storm up to 4,000 feet north of the proposed fill and up to 5,500 feet south of the proposed fill, and groundwater and drainage patterns in Maple Swamp for non-tidal storm surge situations.

    Response: *The hydraulic impact associated with Option B is related to the storm surge height. The 100-year flood height would be 0.75 feet less at the south face of the fill, with the change tapering to zero approximately 5,500 feet south of the proposed fill, as presented in Section 3.4.7.1 of the DEIS. Groundwater studies conducted between the DEIS and FEIS revealed that if properly designed, there is no reason that the Option B fill should affect the groundwater or regular surface water hydrology of the swamp (Parsons Brinckerhoff, October 2010). Therefore, there would be no direct or indirect impacts to wetlands beyond the placement of the fill itself. However, Option A was selected to be a part of the Preferred Alternative.*

30. **Comment:** Provisional Consistency Determination: Note that this is not the formal consistency determination given the stage of the project description and the need for additional information.

    Option B is not consistent with the Currituck County 2006 LUP certified by the Coastal Resources Commission (CRC) on May 18, 2007 and amended on September 25, 2008 and June 24, 2009. (See "Basis for Determination", Attachment A)

ER2 and MCB2 are not consistent with the Town of Duck 2004 LUP certified by the CRC on April 8, 2005. (See "Basis for Determination", Attachment D)

Additional information is needed concerning protection of Natural Heritage Areas in Currituck County, anticipated shoreline stabilization, use of vegetated buffers along shorelines, anticipated wetland mitigation within the Town of Kitty Hawk, handicapped accessibility of proposed public access facilities, use of vegetated roadside swales and handling of stormwater drainage; proposed highway corridor and multi-path/trail enhancements; relocation of utilities underground; inclusion of traffic signals in Lower Currituck, and; anticipated infrastructure and service needs for Currituck County. (See "Basis for Determination" in Attachments A, B, and D)

Additional information is needed to make a consistency determination for the Town of Kitty Hawk 2004 LUP, certified by the CRC on June 2005. (See "Basis for Determination" Attachment B)

The alternatives are consistent with the Town of Southern Shores 1997 LUP certified by the CRC on September 25, 1998. (See Attachment C)

Response: *The full comment included an overview of the commenter's observation of the project and its impact, as well as attachments summarizing the key components of project area land use plans related to the project. The full NCDENR-DCM letter is included in Appendix B of this technical report. A response letter from NCTA (see Appendix A of this technical report and Appendix C of the revised Community Impact Assessment Technical Report) was sent to the commenter providing the additional information requested. An e-mail response from NCDENR-DCM on February 10, 2011 indicated that the information provided would be useful in making the final compatibility determination during the permit process. The compatibility findings reflected in the June 4, 2010 letter received from NCDENR-DCM commenting on the DEIS are incorporated into Section 3.1.6 of this FEIS and Section 6.3 of the revised Community Impact Assessment Technical Report.*

2.2.5 North Carolina Department of Environment and Natural Resources—Division of Environmental Health—April 8, 2010

1. **Comment:** No objection to project as proposed.

   Response: *Acknowledged.*

2. **Comment:** Relocation and/or replacement of potable water supply lines will require engineered plans and specifications to be submitted to the Public Water Supply Section for review and approval before construction. Final approval must be issued before placing the water mains into service.

   Response: *NCTA understands this will be required.*

3. **Comment:** The Currituck County Water System and the Southern Outer Banks Water Systems have water service in the proposed project area, and should be contacted to determine precise locations of water mains such that construction does not affect utility piping or services to customers.

   Response: *NCTA understands this will be required.*

2.2.6 North Carolina Department of Environment and Natural Resources—Division of Marine Fisheries—May 14, 2010

1. **Comment:** The NCTA's recommended alternative is MCB4. Of the alternatives listed the least environmentally damaging alternative is ER2 and is the NCDMF recommended alternative. ER2 will not shade important essential fish habitat.

   Response: *NCDENR-DMF's preference for ER2 is acknowledged. A NCDENR-DMF representative participated in environmental resource and regulatory agency meetings that led to the ultimate decision to select MCB4/C1 as the Preferred Alternative, including refinements to that alternative to avoid, minimize, and mitigate project impacts to natural resources such as EFH.*

2. **Comment:** With all of the proposed Mid-Currituck Bridge construction designs there are 2 alternatives for the approach to the Mid-Currituck Bridge. The first alternative (A) would be to construct a bridge to connect Hwy 158 and the Mid-Currituck Bridge while leaving Aydlett Road. The second alternative would be to remove the existing Aydlett Road and fill and construct a new road with crossings and culverts. Although this alternative would keep the fill status quo, the fill essentially creates a dam and impairs water movement in Maple Swamp dividing the swamp in half. When constructing roads in wetlands, bridge construction is the NCDMF's preferred alternative, as culverts will minimally allow hydrologic flow. The NCTA does not specify the approach or the corridor (Outer Banks landfall) that they prefer at this time. Option B will permanently affect 4.6 more acres of wetlands than A, but in either case there will be approximately 40 acres of permanent wetland fill and clearing (DEIS Table S-1). It is important to note that coastal and non-coastal wetlands are important sources of detritus, the basis of the aquatic food chain and approximately 40 acres of this habitat will be negatively affected. The NCDMF preferred alternative, that is not addressed in the DEIS, is to remove the existing Aydlett Road and construct a new bridge over Maple Swamp to allow water to flow unimpaired. This option would reduce the amount of fill and shading throughout the entire swamp.

   Response: *NCTA understands NCDENR-DMF's concern that Option B (placing the Maple Swamp crossing on fill) would create a dam, thereby impairing water movement and dividing the swamp in half. However, detailed hydraulic studies indicated that proper design of Option B (culverts and wildlife passageways) would maintain water movement in the swamp, thus the exchange of detritus between upland and wetland communities, as well as among wetland communities, would not have been impaired if Option B had been included in*

the Preferred Alternative. However, Option A (bridging Maple Swamp) was selected to be a part of the Preferred Alternative. The exchange of water, the primary mechanism for transport of detritus, between upland and aquatic communities, as well as among wetland communities would not be impaired with the Preferred Alternative, Any wetland impacts and altered aquatic functions would be compensated via mitigation within the watershed affected by the project. The Preferred Alternative would avoid and minimize the amount of wetland habitat that would be filled and includes a bridge through the lowest and wettest locations of Maple Swamp, thereby maintaining the primary means of detrital transport. The removal of Aydlett Road was found during the public and agency comment period to be an unacceptable community impact by both the residents of Aydlett and Currituck County officials. Thus, it is not included in the Preferred Alternative.

3. **Comment:** There are 2 alternatives (C1 and C2) proposed for where the Mid - Currituck Bridge would make landfall on the Outer Banks. C1 will make landfall south of Corolla and C2 will make landfall further south at Albacore Street. The C1 alternative presents less shading of SAV compared to the C2 alternative by avoidance and minimization of important SAV habitat. The C1 alternative will shade approximately 14.5 acres of existing and potential SAV habitat, while C2 will shade 17.8 acres (DEIS Table S-1). The shading of SAV will cause significant adverse impacts in the subject project area. It is well documented that SAV is important habitat that is utilized by fishes and invertebrates for nursery areas, foraging and protection from predators (Street et al. 2005). Although the subject project's Essential Fish Habitat Technical Report (pg 34) states that the pilings will create a habitat shift from SAV to hard bottom "reef" habitat, the current benthic and fish community are those that are suited for SAV. The NCDMF recommends C1 to minimize SAV and marsh impacts. If the subject project is permitted, would SAV mitigation be a part of the project?

   Response: *Bridge corridor C1 was selected to be a part of the Preferred Alternative. In addition, its alignment was refined, shortening it by 250 feet and moving it to be over deeper water. The end result is a lower effect on SAV habitat (including existing beds) and potential SAV habitat (aquatic bottom six feet deep or less), as documented in Table 3-6 of this FEIS and Table 11 of the revised NRTR. SAV mitigation is addressed in Section 3.3.4.4 of this FEIS and Section 5.6.2 of the revised NRTR.*

4. **Comment:** Although the construction methods for the Mid Currituck Bridge have not been selected and will be discussed once the alternative has been selected, several construction methods are possible. These include a temporary construction trestle (bridge), overhead gantry crane, a launching truss, and low draft barges that would require dredging. The Division would have numerous issues and concerns with dredging associated with the bridge construction. Currituck Sound is a very important anadromous, estuarine and resident species nursery area. After the bridge alternative is chosen the NCDMF requests that the applicant minimizes and avoids impacts to SAV and soft bottom habitat. If dredging is chosen as the construction method, impacts to the nursery area will occur and elevated turbidity levels may adversely affect SAV. Additional damage to SAV could also occur from

bottom disturbance associated with the bridge construction (prop dredging etc). The Division would request a dredging moratorium from February 15 – September 30, to ensure the environmental integrity of the area is protected during critical times of usage by finfish and invertebrates.

Response: *There would be no dredging with the Preferred Alternative. A NCDENR-DMF representative participated in environmental resource and regulatory agency meetings between the DEIS and FEIS where construction procedures were addressed. The current status of construction planning is presented in Section 2.4 of this FEIS.*

5. **Comment:** In summary the ER2 design is the least environmentally damaging alternative, and is the NCDMF preferred alternative. If the bridge is to be constructed, the NCDMF recommends that the C1 option is selected as the Outer Banks approach design, as this design minimizes wetland and SAV impacts. Will mitigation for SAV and wetlands be included in the proposed design? Although not discussed in the DEIS, the NCDMF's preferred Mid-Currituck Bridge approach alternative is the removal of the existing Aydlett Road and construction of a bridge to cross Maple Swamp to allow water movement through the wetland and accommodate for future sea level rise. The NCDMF also requests that when the Turnpike Authority chooses a construction method, they minimize and avoid impacts to SAV and wetlands and abide by a dredging moratorium (February 15-September 30) if dredging is included as a construction technique.

   Response: *NCTA recognizes that NCDENR-DMF prefers ER2. The C1 option is included in the Preferred Alternative. Mitigation for SAV and wetlands impacts would be included in the proposed design. The removal of Aydlett Road was found during the public and agency comment period to be an unacceptable community impact by both the residents of Aydlett and Currituck County officials. Those impacts are discussed in Section 3.1.2 of the DEIS and FEIS. Therefore, it is not included in the Preferred Alternative. However, Option A, which would bridge Maple Swamp, is included in the Preferred Alternative. Measures to avoid and minimize impacts to SAV and wetlands were refined in association with environmental resource and regulatory agencies between the release of the DEIS and FEIS and are presented in applicable sections of the FEIS. NCTA would continue to work with environmental resource and regulatory agencies during the permitting process to finalize these measures. There would be no dredging with the Preferred Alternative.*

2.2.7 North Carolina Department of Environment and Natural Resources—Division of Water Quality

June 1, 2010

1. **Comment:** This project is being planned as part of the Section 6002 Process. As a participating team member, NCDWQ will continue to work with the team.

   Response: *NCTA welcomes NCDENR-DWQ's continued participation.*

2. **Comment:** A map showing delineated streams, wetlands, and other jurisdictional features should be included. Impacts to these jurisdictional features should be shown on the map as well. This should be included in all future environmental documentation.

   Response: *Maps showing delineated streams, wetlands, and other jurisdictional features and impacts were included with the DEIS and this FEIS. Maps showing delineated streams, wetlands (by type), and other jurisdictional features were included as Figure 4 in the NRTR included on the CD that accompanied the DEIS. Updated versions of these maps are included as Figure 5 in the revised NRTR that can be found on the CD that accompanies this FEIS. The relationship of delineated streams, wetlands, and other jurisdictional areas to the project alternatives were shown on the public hearing maps on the CD that accompanied the DEIS. The preliminary engineering plans on the CD that accompanies this FEIS show the relationship of the Preferred Alternative to jurisdictional features. Reference to these maps has been added to Section 3.3.6.1 of the FEIS.*

3. **Comment:** The discussion of other proposed project in the area lists several planned projects in and around the study area. The text includes a discussion of R-4457, which includes an interchange conversion at the US 158/NC 12 intersection in Dare County. It is stated that this project was not included in the "No-Build" alternative because "the interchange is included as a component of detailed study alternatives ER2 and MCB2 because the interchange is needed to reach a desirable level of service (LOS) on the summer weekday in 2035." The DWQ does not agree with this concept. It is believed that the interchange should be included in the "No-Build" alternative because the project is planned independent of the Mid-Currituck Bridge project. If the "No-Build" alternative is selected then the intersection would be built. To not include it in the "No-Build" alternative is to deny the true no-build scenario, and skews the no-build analysis. In all fairness, both MCB2 alternatives and the no-built alternative need to appropriately consider an interchange at the US 158/NC 12 intersection.

   Response: *NCDENR-DWQ did not say how they thought the decision not to include the interchange in the No-Build Alternative would "skew" the No-Build analysis. From the perspective of impact assessment, it was essential to include the interchange in build alternatives that involved widening US 158 because it is impossible to separate the interchange and widening designs into two separate components with independent utility. When the interchange is ultimately assessed in some future NEPA process, its design will involve at least some widening of US 158. In addition, with a Mid-Currituck Bridge, the capacity requirements of the interchange are less than without a Mid-Currituck Bridge, resulting in a potentially smaller interchange with less impact. In terms of including the interchange in both the No-Build Alternative and MCB2, it is customary to include an improvement in the No-Build Alternative (i.e., to include programmed improvements not a part of the project), or in a build alternative for detailed assessment, but not in both. If NCDENR-DWQ is concerned that the travel needs or benefits of the project could be skewed, one could expect that levels of congestion associated with a No-Build Alternative with a*

NC 12/US 158 interchange would be less than those of the No-Build Alternative as defined in the DEIS and this FEIS and greater than those of ER2.

4. **Comment:** It is stated in several places in the document that if MCB4 were to be selected as the preferred alternative, the components that could not be funded through tolling would have to be funded or financed through the NCDOT. However, it is not discussed which components this may include. Please provide further details on those components which would be DOT funded.

   Response: *It is not anticipated that any of the components of the Preferred Alternative would be funded with traditional NCDOT funds. However if traditional funds were available and used, they would likely be used to build parts of the project that would not be tolled, e.g., adding a third outbound lane to US 158 west of its intersection with NC 12 or widening NC 12.*

5. **Comment:** It is stated on Page 1-3 that congestion occurs on almost all of NC 12 in the project area, mentioning that just south of Southern Shores and Duck as well as east of the Wright Memorial Bridge on US 158 tend to be the most congested. The statements should be clarified. As written, one would assume that congestion is a constant problem in these areas. However, this is most likely during summer peak hours as well as other high demand times, and most likely not during off-peak times. Other bulleted statements associated with the discussion are clarified and presented in more detail than this particular bullet.

   Response: *An indication of when the congestion occurs (in the summer months) has been added to the bullet point referenced by NCDENR-DWQ.*

6. **Comment:** Please explain the black rectangles in Figure 2-11(STIP Projects in the No-Build Alternative) that appear to be associated with R-4429. Also, as previously mentioned, the DWQ feels that R- 4457 should be represented on this map.

   Response: *The black rectangles contained the state route numbers of the end points of the R-4429 project. For some unknown reason, only the black boxes behind the white letters printed from the electronic graphics file. This has been corrected in this FEIS. For the reasons indicated above, R-4457 is not a part of the No-Build Alternative and is therefore not shown on this graphic, which illustrates STIP projects included in the No-Build Alternative.*

7. **Comment:** The first part of Section 2.1.7.2 appears to be in conflict, is unclear, and needs to be clarified. The first sentence states that preliminary designs assume drainage over Currituck Sound and Maple Swamp would not be captured. The third sentence states that if this is done (referring to the first sentence about not capturing drainage) then the first inch of runoff from the bridge could be captured and treated.

   Response: *The preliminary designs and in turn the impact assessment in the DEIS assumed that drainage over Currituck Sound and Maple Swamp would not be captured and treated. The fourth sentence in DEIS Section 2.1.7.2 (not the third sentence per NCDENR-DWQ's*

comment) was intended to indicate that if the decision was made to capture and treat runoff from the Currituck Sound and Maple Swamp bridges as a mitigation measure, the first inch of runoff from the bridges could be captured and treated in one of the two ways (i.e., Option 1 and Option 2) described below the opening paragraph of DEIS Section 2.1.7.2.

Section 2.1.7 of this FEIS presents the strategies currently planned to address stormwater runoff with the Preferred Alternative, including strategies for stormwater management for uplands on the mainland and the Outer Banks (Section 2.1.7.1) and the stormwater management plan for the Maple Swamp and Currituck Sound bridges (Section 2.1.7.2). As is described in detail in FEIS Section 2.1.7.2, the stormwater management plan for the Maple Swamp and Currituck Sound bridges with the Preferred Alternative would have the following components: source control (i.e., frequent deck cleaning using state of the art, multi-function cleaning equipment) on both the Maple Swamp and Currituck Sound bridges; stormwater capture and treatment at both ends of the Maple Swamp Bridge for a distance of 500 feet; capture and treatment of the first 1.5 inches of stormwater runoff at the eastern end of the Currituck Sound bridge for a distance of 4,000 feet to prevent direct discharge into SAV habitat (including existing beds), as defined by NCMFC; treatment of existing impervious road surface where the project improves those roads; and a water quality monitoring program as part of bridge operations to monitor the effectiveness of the bridge deck cleaning program, along with support of potential research for better understanding of the effect of bridge deck cleaning and/or the effect of bridge deck stormwater runoff on SAV receiving waters.

FEIS Section 2.1.7.3 discusses NC Session Law 2008-211, which calls for the capture and treatment of the first 1.5 inches of runoff from impervious surfaces in coastal counties. Although NCTA and NCDOT are exempted from this requirement, NCTA's stormwater management plan for the Preferred Alternative is intended to provide at least an equivalent benefit. Section 2.1.7.3 also describes the two options that were considered as potential components of the project's stormwater management plan for capturing the first 1.5 inches of runoff from the full length of the Maple Swamp and Currituck Sound bridges, but both options were found not to be practicable because of cost.

8. **Comment:** The DWQ is very concerned about stormwater run-off from this project. It is stated in section 3.3.1.4 (Impacts to Water Quality), with respect to permanent impacts from stormwater runoff, that "the primary pollutants associated with bridge and highway runoff include particulates, organic compounds, nutrients, and heavy metals. These pollutants accumulate on impervious surfaces and are derived from automobiles, and materials used in construction and maintenance of roadways. These substances have the potential to affect negatively aquatic life by directly or indirectly interfering with various biological processes and cycles." The text further states "Pollutants discharged into Currituck Sound from a bridge could dissipate slowly because of poor water circulation, and could result in bioaccumulation and higher sediment pollutant levels than in areas with higher flow and batter water circulation. Thermal and turbidity differences in runoff also could affect water quality by depressing oxygen levels and tight penetration." The DWQ is concerned

with the effects on the macro benthos, SAV, fish and wildlife, and overall water quality.

In issuing a 401 Water Quality Certification, 15 NCAC 2H .0506(b) states (in part) that certification may be issued if the project does not result in the degradation of surface waters; provides for protection of downstream water quality standards through the use of on-site stormwater control measures; and will minimize adverse impacts to the surface waters based on vegetation, fish and wildlife resources, and hydrological conditions. In order to obtain a 401 Water Quality Certification, the NCTA will have to provide reasonable assurance to the DWQ that these criteria are being met.

Response: *NCTA is committed to preparing a stormwater management plan to mitigate the Preferred Alternative's potential impact on water quality. Section 2.1.7 of this FEIS presents strategies currently planned. NCDENR-DWQ and other environmental resource and regulatory agencies participated in meetings between the DEIS and FEIS where the stormwater management plan and its components were discussed and will participate in future discussions.*

9. **Comment:** Section 2.1.7.2 (Bridge Drainage) states "the preliminary designs assume that bridges over Currituck Sound and Maple Swamp would drain directly into Currituck Sound and Maple Swamp. Drainage would not be captured and treated to remove motor vehicle pollutants." The DWQ has concerns with allowing untreated water to be discharged directly into Currituck Sound.

   Response: *NCTA is committed to preparing a stormwater management plan to mitigate the Preferred Alternative's potential impact on water quality. Section 2.1.7 of this FEIS presents strategies currently planned.*

10. **Comment:** Additional details need be included regarding stormwater treatment Option 3. It is not discussed where off-site treatment components (i.e. detention ponds, treatment wetlands, swales, etc.) would be located. It is also not mentioned if additional impacts to resources such as CAMA wetlands or AEC's will occur. The possibility of off-site stormwater treatment mitigation is not discussed either. These issues need to be addressed in the document.

    Response: *The Preferred Alternative would not affect CAMA wetlands or AECs (except for pile placement in Currituck Sound). If stormwater collection had been done over CAMA wetlands, the offsite components would have been placed on uplands. NCTA is committed to preparing a stormwater management plan to mitigate the Preferred Alternative's potential impact on water quality. Section 2.1.7 of this FEIS presents strategies currently planned. Off-site stormwater mitigation would be considered in future planning.*

11. **Comment:** If a stormwater treatment option is used that involves bridge deck filter devices, and perhaps some options involving detention basins, the DWQ will require a satisfactory operating and maintenance (O & M) agreement.

Response: *NCTA is committed to preparing a stormwater management plan to mitigate the Preferred Alternative's potential impact on water quality. Section 2.1.7 of this FEIS presents strategies currently planned. It does not include a bridge deck filter system for reasons discussed in Section 2.1.7.3 of this FEIS. They do include capture, piping off the bridge, and treatment of the first 1.5 inches of stormwater over SAV habitat (including existing beds), as defined by NCMFC, in the eastern part of Currituck Sound and at the ends of the Maple Swamp bridge.*

12. **Comment:** Section 2.1.7.2 states that stormwater treatment Option 3 is assumed in preliminary designs and assessed in the DEIS. However, the footnote for Table 2-4 (Cost of Detailed Study Alternatives) indicates that the costs in the table assume treatment Option 2.

    Response: *Yes, for impact assessment Option 3 was assumed and in the costs Option 2 was assumed, reflecting in each case a more conservative finding. The costs and impacts of the Preferred Alternative assume the stormwater management plan presented in Section 2.1.7 of this FEIS.*

13. **Comment:** The NCTA is strongly encouraged to contact the DWQ's Stormwater Permitting Unit to further discuss what the appropriate treatment level and options would be required to obtain necessary treatment levels. The NCTA is further encouraged to do so before preliminary designs are begun so any necessary design features can be taken into account before design begins.

    Response: *NCTA discussed stormwater management with NCDENR-DWQ's Stormwater Permitting Unit at meetings on October 1, 2010 and March 21, 2011 (see Table A-6 of this FEIS, which lists post-DEIS agency coordination meetings, and Appendix A of the Stakeholder Involvement for Final Environmental Impact Statement Technical Report for meeting minutes). NCTA will continue to work with NCDENR-DWQ as the design of the Preferred Alternative progresses.*

14. **Comment:** While submerged aquatic vegetation (SAV) is briefly discussed, there is no corresponding map showing the location of known SAV areas. Please include a map showing the bridge alternatives overlain with the most recently mapped SAV locations.

    Response: *A map showing SAV locations in relation to the detailed study alternatives is included in this FEIS as Figure 3-6. The 2010 survey data reflects existing SAV beds within the Preferred Alternative's corridor.*

15. **Comment:** The documents states that EEP will be utilized for wetland and stream impacts associated with the project. The DWQ prefers on-site mitigation when feasible and practicable, and understands that potential on-site mitigation will be investigated at a later time. The document, however, does not discuss how impacts to SAV will be mitigated for should a bridge alternative be selected. It is preferred that the NCTA begin considering mitigation options as soon as possible, as mitigation for SAV is not as straight-forward as those for streams and wetlands.

Final details, including any amount required, can be detailed later after a preferred alternative is selected. It is strongly suggested that the NCTA begin discussions with the DWQ and the DCM regarding this matter.

Response: *SAV mitigation is addressed in Section 3.3.7.2 of this FEIS, Section 5.6.2 of the revised NRTR, and Section 5.1 of the revised Essential Fish Habitat Technical Report.*

16. **Comment:** The NCTA should verify that most of Maple Swamp has been logged and consider this impact and update the document as necessary. For example, the effects of the swamp being clear-cut, to the extent that DWQ understands, will most likely effect the drainage and hydrology in the area. Appropriate calculations should be recalculated and considered accordingly. For example, it could increase potential flooding in the event of a major storm because the water storage capacity of the area has been decreased. Therefore, it may be prudent to consider this when discussing potential flooding. This increase in water may also affect what size culvert(s) would be needed to appropriately convey water should Option B (road on fill through Maple Swamp) be selected.

    It is also stated in Section 3.3.6.4 that land-locked parcels should be purchased and protected from future logging and this land would be set aside as a conservation area and allowed to retain its natural state. If these potential land-locked parcels planning to be preserved have been logged, then the resource desiring protection no longer exists.

    Response: *Logging of Maple Swamp is taken into account in Section 3.3.2 of this FEIS and Section 4.1 of the revised NRTR based on field surveys in August, 2010. Mid-Currituck Bridge study team groundwater hydrologists reviewed known information related to Maple Swamp hydrology in association with the extent of logging and concluded de-forestation would likely increase groundwater levels and/or surface water outflows "slightly" (Parsons Brinckerhoff, October 2010). The floodplain impact studies presented in the DEIS were revised taking into account areas logged. Option A was selected to be a part of the Preferred Alternative. As discussed in Section 3.3.6.4 of the DEIS and this FEIS under "Avoidance and Minimization," with Option A, NCTA will purchase land-locked parcels north of Aydlett Road in addition to public right-of-way and protect it from future logging.*

17. **Comment:** Section 3.1.4.3 discusses outdoor advertising sign (billboard) relocations. It is stated that such structures are classified as personal property. Generally, compensation is not paid for personal property; such items are moveable, unlike real property and structures. In fact, most contracts require billboards to be removed from the property at such time the contract expires and is not renewed. Additionally, billboards can be moved and relocated, perhaps to the same general area. The DWQ does not view billboard relocations as a compensable impact and will not be considering them as such in determining the preferred alternative.

    Response: *NCDENR-DWQ's position on the relevance of outdoor advertising signs to the selection of a Preferred Alternative is acknowledged.*

18. **Comment:** Regarding sea level rise, a map showing which areas will be regularly inundated or at-risk based on the modeling results should be presented. Also, the modeling results presented are based on the scenario on [sic] the year 2100. The point is made that, based on the modeling results, the Outer Banks will be permanently breached near the Dare/Currituck County line and the bridge will be the only route off the island. The bridge will be well beyond its useful life in 2100, even if the bridge does last the potential 75 years indicated in the document. The document also assumes that no other improvements to alleviate this breach (or any other issues associated with sea level rise) are constructed or addressed. Most likely, these issues will be addressed by NCDOT as they arise. Additionally, the document seems to assume that the bridge will be replaced at the end of its useful life, as once again the document seems to indicate that the bridge will be the only way off a breached Outer Banks based on modeling results for the year 2100. If the bridge is not replaced, and there is no guarantee that it will be, then this link to the mainland will not exist. Since the design year for the bridge and associated components is 2035, it would seem more appropriate that the sea level modeling results would be better served to address a time frame closer to 2035 rather than 2100. While the creation of the breach may be gradual (if not assisted by strong storm activity or hurricanes), it is not discussed when the breach is anticipated to became significant. As such, it is unclear if the bridge will still be in service at this time. The document assumes that this is the case, but no information is provided in support of this.

    Response: *Maps showing areas regularly inundated were presented in Appendix A of the* <u>*Other Physical Features Technical Report*</u> *included on the CD that accompanies the DEIS and this FEIS. Modeling results were presented at different levels of rise irrespective of when they might occur. Sea level rise by 2035 was discussed in the fourth paragraph of page 3-65 of the DEIS. A revised discussion of sea level rise is included Section 3.4.4 of this FEIS.*

19. **Comment:** Section 3.5.7 asks if lighting would be used to allow construction at night. However, the discussion does not answer the question, rather just states that it is "not uncommon to restrict construction to daytime hours." While Aydlett and the Outer Banks may be the most critical areas, it is stated that people in Aydlett enjoy stargazing because the relative darkness of the area. So, to use nighttime lighting outside of these areas could further diminish this activity. Also, because of the openness of the sound, and nighttime lighting used for construction, even temporarily, could be detrimental and distracting as it could be seen for some distance from the work site.

    Response: *NCDENR-DWQ's observations are correct. It is not known at this time whether nighttime lighting will be permitted. Nighttime construction and lighting will be considered in developing NCTA's agreement with the concessionaire contracted to build and operate the project.*

20. **Comment:** Section 3.5.9, which discusses utility relocations, should be expanded. While it may be premature to discuss specific details as an alternative has not been selected yet, it should be discussed what types of utilities are within the project area,

primary service provider company names, and if any major utility crossings will be affected by construction, and whether any impacts to jurisdictional resources will be anticipated. Also, the table of impacts does not indicate if an alternative involves a major utility crossing or not. For example, the current corridor location being considered on the mainland is parallel to electric utility lines, and is in close proximity to the utility corridor. Also, is [sic] a power substation located in Aydlett. The MCB2 and MCB4 alternatives have to be routed around this station. Such items should be discussed in the document as there may be conflicts with these structures.

Response: *MCB2, MCB4, and the Preferred Alternative are routed around the substation in Aydlett. With MCB2, MCB4, and the Preferred Alternative there is a major powerline in the US 158/Mid-Currituck Bridge project interchange area, the corridors parallel a major powerline across Maple Swamp, a major power line is along US 158 east of the Wright Memorial Bridge, and the Mid-Currituck Bridge passes over an underwater powerline in Currituck Sound. With the Preferred Alternative (and the other alternatives using design Option A), powerline towers at four locations would be relocated in the interchange area, but without service disruption. None are within or would be relocated within jurisdictional resources (wetlands and streams). Local utilities along NC 12 would be relocated when widening NC 12 with minimal or no service disruption. The area required to relocate utilities along NC 12 is included in the preliminary design plans used to assess impacts. Thus, no additional jurisdictional impacts would be involved beyond those presented in the DEIS and this FEIS.*

21. **Comment:** The DEIS does not go into much detail regarding indirect and cumulative effects on overall water quality. Such an analysis will be required for this project per DWQ's *Cumulative Impacts and the 401 Water Quality Certification and Isolated Wetland Permit Programs* (available online at http://portal.ncdenr.org/web /wq/swp/ws/401/policies). Typically this analysis is performed after a preferred alternative is selected to allow for appropriately focused results. The DWQ has not received a copy of the *Indirect and Cumulative Effects Technical Report* and as such has not properly reviewed the report. The DWQ will review the document included in the CD and decide if it sufficient enough to meet the DWQ's requirements and provide comments in a separate letter.

    Response: *The Indirect and Cumulative Effects Technical Report was included on the CD that accompanies the DEIS and this FEIS. If required, NCTA would prepare a separate Indirect and Cumulative Impacts Technical Report during the 401 permitting process per NCDENR-DWQ's Cumulative Impacts and the 401 Water Quality Certification and Isolated Wetland Permit Programs. At this time, it is not expected that a quantitative assessment will be required.*

22. **Comment:** The impact tables refer to "ponds." No further details or further discussions are given regarding these ponds and whether or not they are jurisdictional or stormwater ponds. If they are stormwater ponds associated with a DWQ issued stormwater permit, then they will need to be reconfigured to assure

that no net loss of treatment is occurring. If necessary, please contact the DWQ to discuss further details.

Response: *They are stormwater ponds. They would be reconfigured to ensure that no net loss of treatment occurs.*

23. **Comment:** It should be stated in the document that there are no DWQ riparian buffer areas currently located within the Pasquotank River Basin. Therefore, no riparian buffer impacts will be incurred.

    Response: *This statement is made in Section 5.4 of the NRTR, which was included on the CD that accompanies the DEIS and this FEIS. Since these areas are not a factor in the decision on whether to build a Mid-Currituck Bridge, this statement was not included in the DEIS or this FEIS.*

24. **Comment:** The DWQ understands that the 1995 DEIS was rescinded by the NCTA. However, the DEIS, as well as the 1995 Alternatives Study Report, discuss in detail bridge corridors that were significantly north and south of the currently proposed corridor. It may be worthwhile to include a brief discussion of these early corridors and why they were eliminated. This would help the NCTA in supporting the current corridors and show that other areas where considered for the crossing but where not shown to be viable.

    Response: *These alternatives are discussed in Section 3.2 of the Alternatives Screening Report, which was included on the CD that accompanies the DEIS and this FEIS.*

25. **Comment:** A land suitability map is includes [sic] as Figure 3-11. However, the map covers all of Currituck County and is too small to see much detail. The DWQ is most interested in the area around the potential bridge corridors. A land suitability map zoomed to the corridor area that has the corridors overlain would provide useful information and should be included.

    Response: *The land suitability map comes from the Currituck County land use plan and is shown in the DEIS at approximately 75 percent of its original size. An enlarged inset map has been added to the land suitability map in this FEIS, which is now Figure 3-12. The inset map also shows the DEIS C1 and C2 and Preferred Alternative bridge corridors. This inset also was added to Figure 2-2 of the revised Indirect and Cumulative Effects Technical Report.*

General Comments:

26. **Comment:** The environmental document, as well as the 401 Water Quality Certification Application, should provide a detailed and itemized presentation of the proposed impacts to wetlands and streams with corresponding mapping. If mitigation is necessary as required by 15A NCAC 2H.0506(h), it is preferable to present a conceptual (if not finalized) mitigation plan with the environmental documentation. Appropriate mitigation plans will be required prior to issuance of a 401 Water Quality Certification.

Response: *A conceptual mitigation plan is included as Appendix E in the revised NRTR.*

27. **Comment:** After the selection of the preferred alternative and prior to an issuance of the 401 Water Quality Certification, the NCDOT is respectfully reminded that they will need to demonstrate the avoidance and minimization of impacts to wetlands (and streams) to the maximum extent practical. In accordance with the Environmental Management Commission's Rules (15A NCAC 2H.0506[h]), mitigation will be required for impacts of greater than 1 acre to wetlands. In the event that mitigation is required, the mitigation plan shall be designed to replace appropriate lost functions and values. The NC Ecosystem Enhancement Program may be available for use as wetland mitigation.

    Response: *NCTA understands and will meet these requirements.*

28. **Comment:** In accordance with the Environmental Management Commission's Rules (15A NCAC 2H.0506[h]), mitigation will be required for impacts of greater than 150 linear feet to any single perennial or intermittent stream. In the event that mitigation is required, the mitigation plan shall be designed to replace appropriate lost functions and values. The NC Ecosystem Enhancement Program may be available for use as stream mitigation.

    Response: *NCTA understands. The Preferred Alternative would have no impacts to jurisdictional streams.*

29. **Comment:** The NCTA is respectfully reminded that all impacts, including but not limited to, bridging, fill, excavation and clearing, and rip rap to jurisdictional wetlands, streams, and riparian buffers need to be included in the final impact calculations. These impacts, in addition to any construction impacts, temporary or otherwise, also need to be included as part of the 401 Water Quality Certification Application.

    Response: *NCTA understands and will meet these requirements.*

30. **Comment:** Bridge deck drains shall not discharge directly into the stream. Stormwater shall be directed across the bridge and pre-treated through site-appropriate means (grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. Please refer to the most current version of NCDWQ's *Stormwater Best Management Practices*.

    The 401 Water Quality Certification application will need to specifically address the proposed methods for stormwater management. More specifically, stormwater shall not be permitted to discharge directly into streams or surface waters.

    Response: *NCTA is committed to preparing a stormwater management plan to mitigate the Preferred Alternative's potential impact on water quality. Section 2.1.7 of this FEIS presents strategies currently planned. NCDENR-DWQ and other environmental resource and regulatory agencies participated in meetings between the DEIS and FEIS where the*

stormwater management plan and its components were discussed and will participate in future discussions.

31. **Comment:** Borrow/waste areas should avoid wetlands to the maximum extent practical. Impacts to wetlands in borrow/waste areas will need to be presented in the 401 Water Quality Certification and could precipitate compensatory mitigation.

    Response: *NCTA understands.*

32. **Comment:** Based on the information presented in the document, the magnitude of impacts to wetlands and streams may require an Individual Permit (IP) application to the Corps of Engineers and corresponding 401 Water Quality Certification. Please be advised that a 401 Water Quality Certification requires satisfactory protection of water quality to ensure that water quality standards are met and no wetland or stream uses are lost. Final permit authorization will require the submittal of a formal application by the NCTA and written concurrence from NCDWQ. Please be aware that any approval will be contingent on appropriate avoidance and minimization of wetland and stream impacts to the maximum extent practical, the development of an acceptable stormwater management plan, and the inclusion of appropriate mitigation plans where appropriate.

    Response: *NCTA understands and will meet these requirements.*

33. **Comment:** If foundation test borings are necessary; [sic] it shall be noted in the document. Geotechnical work is approved under General 401 Certification Number 3687/Nationwide Permit No. 6 for Survey Activities.

    Response: *NCTA understands and will meet this requirement.*

34. **Comment:** Sediment and erosion control measures sufficient to protect water resources must be implemented and maintained in accordance with the most recent version of North Carolina Sediment and Erosion Control Planning and Design Manual and the most recent version of NCS000250.

    Response: *NCTA understands and will meet these requirements.*

October 5, 2010

1. **Comment:** This office has reviewed the referenced document dated November 2009. The NC Division of Water Quality (NCDWQ) is responsible for the issuance of the Section 401 Water Quality Certification for activities that impact Waters of the U.S., including wetlands. Under 15A NAC 2H .0500 (.0506[4]), it is the NCDWQYs [sic] responsibility to ensure that projects do not result in cumulative effects or cause a violation of downstream water quality based on reasonably anticipated future impacts.

Upon reviewing the information provided in the referenced document, the NCDWQ has concluded that the information provided does not fully address the NCDWQ's concerns regarding potential cumulative impacts and preservation of downstream water quality. The NCDWQ believes the document is deficient for the following reasons:

Response: *Responses are provided below for the specific comments.*

2. **Comment:** A LEDPA has not been chosen for this project. Currently, there are two alternatives still being considered; the bridge and upgrade existing alternatives. Generally, a LEPDA is chosen before an ICE analysis is performed. This allows the applicant to better focus on a single alternative and, in turn, require fewer resources.

   Response: *If required by NCDENR-DWQ, NCTA will prepare a quantitative Indirect and Cumulative Impacts Technical Report during the 401 certification process. It will follow the January 21, 2004 "NCDOT/NCDENR Indirect and Cumulative Impact Assessment Guidance: Integrated NEPA/SEPA/401 Eight-Step ICI Assessment Process." The LEDPA will be identified during the Section 404 permitting/Section 401 certification process. The technical report upon which the comments were made is an Indirect and Cumulative Effects Technical Report prepared as a part of the indirect and cumulative effects assessment presented in the DEIS and this FEIS. It followed the November 2001 "Guidance for Assessing Indirect and Cumulative Impacts of Transportation Projects in North Carolina," which is not specifically directed to meeting the objectives of the integrated NEPA/SEPA/401 process.*

3. **Comment:** Bridge stormwater is not addressed sufficiently. The general conclusion in the document is that stormwater effects from the bridge to Currituck Sound and wetlands will be negligible. This conclusion appears to be made based on the amount of stormwater anticipated to discharge from the bridge compared to the size of Currituck Sound, and does not seem to recognize that pollutants are concentrated in stormwater runoff. Furthermore, a stormwater management plan for the bridge has not been presented in the document, although more recent discussion between the NCTA and the NCDWQ have begun to shape a potential plan. However, a plan comprehensive enough to satisfy the NCDWQ has not been presented and therefore the NCDWQ cannot fully analyze the information provided and determine if cumulative impacts would likely occur with the construction of the project.

   Response: *NCTA is committed to preparing a stormwater management plan to mitigate the Preferred Alternative's potential impact on water quality. Section 2.1.7 of this FEIS presents strategies currently planned. NCTA discussed stormwater management with NCDENR-DWQ's Stormwater Permitting Unit at meetings on October 1, 2010 and March 21, 2011. NCTA will continue to work with NCDENR-DWQ as the design of the Preferred Alternative and the permit process progresses.*

4. **Comment:** It is concluded that 34 businesses would most likely relocate from the Outer Banks to the mainland of Currituck County. However, there is no mention of

new businesses that may choose to locate along the US 158 corridor or other areas near the bridge. It is not discussed what types of businesses, either new or relocated, these could potentially be or if housing will be required or desired for employees of these businesses. Certain businesses are prone to effect water quality more than others.

Response: *Wording from the "Vision Plan" qualifying the types of businesses has been added to the revised Indirect and Cumulative Effects Technical Report in Section 4.2.5. They include retail stores, restaurants, service businesses, and a hotel. As discussed in Section 3.6.2.1 of the DEIS and this FEIS, as well as Section 4.2.5 of the Indirect and Cumulative Effects Technical Report that is the subject of this comment, the 34 businesses are expected on US 158 near the bridge. The discussion of the potential land use change scenario because of this has been expanded. Cumulative effects on Estuaries/Water Quality and Groundwater are discussed in Section 6.3.2.3 and Section 6.3.2.5, respectively, of the Indirect and Cumulative Effects Technical Report.*

Also, all references to the "Vision Plan" in the Indirect and Cumulative Effects Technical Report have been updated to reference the final version of that report and not the draft version. There were no material changes in the conclusions, although the order of the findings changed.

5. **Comment:** Furthermore, it is unclear to the NCDWQ why future development associated with the bridge will be restricted to a 1.5 mile radius from the bridge intersection with US 158 as stated in the document. The Economic Development Strategy "Vision Plan" for Currituck County, North Carolina study concluded that construction would occur within a 7.5 square-mile area, not a 1.5 mile radius. The NCDWQ suggests that the analysis and references of a 1.5 mile circle (and all other circles) be removed from the document and development focus be moved to the entire study area.

   Response: *The Indirect and Cumulative Effects Technical Report has been revised according to this comment. Section 4.2.5 describes the type of businesses, land use change, suitability, and zoning along US 158 near the bridge. The original intent of describing a "radius" of influence was to help visualize the extent of development. A circle with a radius of 1.5 miles contains 7.1 square miles. As the comment points out, and consistent with the "Vision Plan," the development will be near the bridge terminus, but not necessarily proximate. Section 3.6.2.1 of this FEIS has been similarly updated.*

6. **Comment:** The NCDWQ is concerned with future development on the mainland around the bridge in part because the "vision study" referred to in the ICE states that than an increase in new retail, entertainment, and hospitality services is anticipated by Currituck County. The County would like to boost a lagging economic and employment sector. On the Outer Banks, it is stated that Currituck County would like to capture some of the retail sales and tax revenue it feels is being lost to Dare County. These ideas indicate that Currituck County has plans to allow more commercial and housing on the mainland and the Outer Banks to the extent possible. Any plans they have regarding economic development as a result of the bridge

should be discussed and considered for indirect and cumulative effects to the extent that they are known or anticipated.

Response: *The "vision study" was commissioned from the UNC Center for Competitive Economies by the Economic Development office of Currituck County. The final report was delivered in November 2008. This study presented a list of general recommendations for the county but was not formally adopted and does not represent policy. An important finding of the "vision study" was the location of additional business opportunities on the mainland. This potential was discussed in the Indirect and Cumulative Effects Technical Report distributed with the DEIS, and has been refined in the revised version.*

Follow up conversations with the county's Planning Department and The Economic Development office do not reveal any inconsistency in plans or anticipated departure from current plans as suggested by the comment. In fact, evidence indicates that land use and economic development policies are consistently developed. The county's Economic Development Advisory Board held public meetings in the spring of 2011 to receive community input on the "Economic Vision" for the county. As stated on the office's web site: "The resulting final 'Vision' document is intended to work in concert with the county's Land Use Plan, Unified Development Ordinance (UDO), and a future County Incentive & Investment Policy" (http://www.thinkcurrituck.com/economicvision.aspx). There are no other expressed plans for economic development around a new bridge.

A personal interview with Ben Woody of the Planning Department on April 28, 2011 confirmed that Currituck County does not have unexpressed land use and economic development plans in the event of a bridge. Mr. Woody did explain that if a bridge is approved, the Planning Department will undertake small area plans to better prepare for any land use pressures that would result from the bridge. Subsequent to that, the Planning Department will undertake a comprehensive plan. Mr. Peter Bishop of Currituck County Economic Development stated in a personal interview on April 29, 2011 that his office would be cooperating with the Planning Department in the development of small area plans and a new comprehensive plan.

Currituck County has not indicated that it wants more businesses on the Outer Banks. It considers it desirable to have businesses on the mainland near the bridge's interchange that could serve people on the Outer Banks.

It also important to note that the current land use plan and population forecasts for Currituck County assume substantial continued growth of the county population irrespective of the introduction of a Mid-Currituck Bridge, as is reflected in the cumulative effects discussion in Section 6.3 of the Indirect and Cumulative Effects Report and Section 3.6.2.3 of the DEIS and this FEIS.

7. **Comment:** Current land use maps are included for Kitty Hawk and Duck; a future land use map is included for Kitty Hawk. Land suitability maps are included for

Duck, Kitty Hawk, and Currituck County. The NCDWQ has several issues concerning this information:

- There is no indication on the maps to as to what year the data represent. The "current year" is 2006 according to the text. It is unclear what year represents the future." Ideally this should be 2035 as this is the project's horizon year.

- For proper ICE analysis, the NCDWQ requires maps depicting actual zoned or planned zoning for the current year as well as anticipated future land use, as was included for Kitty Hawk. Land suitability, while useful, is not a substitute as it does not indicate with enough certainty where towns will allow certain types of development to occur, rather only if the land is suitable for development. This is important as the type and density of development allowed in an area affects water quality differently. Also, the NCDWQ considers any planned shifts in zoning, especially those that may be in conjunction with a given project, as a predictor of potential development, which may in turn affect water quality. This is perhaps most critical for the Currituck mainland as it has a large amount of undeveloped land and therefore has the most potential for development and growth. However, it is important for the outer banks as well since it is indicated that Currituck County wants more businesses in the area.

- The map for Currituck County is at such a large scale that the areas that may be affected by future development that cannot be effectively seen. Maps should be at a scale that information being depicted can easily be analyzed.

- The maps should have road corridors overlain such that they can be seen in relationship to zoning and land suitability, most notably the bridge corridor.

Response: *The land suitability maps have no date in that it is presumed that, since it is reflective of the land's natural characteristics, suitability will not change unless the definition of what is "suitable" versus "unsuitable" were to change. Future land use maps reflect the horizon year of their respective project plans. The dates are included on the maps in the revised Indirect and Cumulative Impacts Technical Report. Currituck County's future land use plan is for 2025. Growth to 2035, however, is discussed in the cumulative effects discussion in Section 6.3 of the revised Indirect and Cumulative Effects Report and Section 3.6.2.3 of the DEIS and this FEIS.*

A zoning map for Currituck County has been added to the revised Indirect and Cumulative Impacts Technical Report at the request of the commenter. It should be noted, however, the zoning in Currituck County and Dare county municipalities is consistent with their land use plans. The zoning of the land along US 158 considered suitable for development near the bridge's US 158 interchange is "General Business." Currituck County has not indicated that it wants more businesses on the Outer Banks. It considers it desirable to have businesses on the mainland near the bridge's interchange that could serve people on the Outer Banks.

The maps are sufficient for the analysis presented in the Indirect and Cumulative Effects Technical Report. For Currituck County, future land use and land suitability maps at their

original size of 11x17 can be downloaded at http://www.co.currituck.nc.us/land-use-plan.cfm. A 22x34 version of the future land use map published with the 2009 minor update of the land use plan can be found at http://co.currituck.nc.us/pdf/land-use-plan/11.1%20August%202009sizepdf.pdf. The zoning map for the county can be downloaded at its original size 36x36 is at http://www.co.currituck.nc.us/Unofficial-Zoning-MapDup2.cfm?xsrch=zoning%20map. During the during the 401 certification process, NCTA will arrange to have these maps blown up for use by NCDENR-DWQ. An inset showing the land suitability, land use plan, and zoning at a larger scale with the bridge corridors has been added to those graphics in the revised Indirect and Cumulative Effects Technical Report.

8. **Comment:** It is unclear if new development in the area will have water and sewer available or if well and septic tanks will be utilized. If sewer will be provided, a brief discussion about which facility will service the area, whether the facility is compliance, and if the facility has enough capacity to handle expected growth or if upgrades would be necessary should be included. If the facility is not in compliance with permits, then additional impacts to surface waters may occur. In contrast, if septic tanks are to be used then a discussion of this should be included, and potential septic tank failures should be addressed as well, since this will have an effect on water quality.

   Response: *The area influenced by the bridge access on the mainland does not have sewer and there are no foreseeable plans to install it. New and repaired septic systems are permitted and inspected by Albemarle Regional Health Services. The area is serviced by water, which is available along US 158. There is ample water supply in the county with the recent completion of a new reverse osmosis plant. This in discussed in greater detail in the revised Indirect and Cumulative Effect Technical Report in Sections 4.2.5, 6.2.2.4, 6.2.2.5, and 6.3.*

9. **Comment:** The document, with respect to water quality, is focused on impacts to Currituck Sound. The NCTA is respectfully reminded that, although Currituck Sound is the most dominant waterbody in the project area, the NCDWQ is concerned about effect to all jurisdictional waters within the project area.

   Response: *This analysis reflects the importance of all water quality within the Indirect and Cumulative Effect study area. Currituck Sound is the primary focus of attention because the direct and indirect actions of a bridge occur within the sound's drainage area. Where appropriate, additional assessments were added regarding North River to the Indirect and Cumulative Effects Technical Report in Section 6.0. There are no substantial effects.*

10. **Comment:** The NCDWQ is concerned about impacts to submerged aquatic vegetation (SAVs). The document discusses shading from the bridge. However, potential impacts from turbidity and other potential pollutants should be addressed, including measures which will be taken to reduce the impacts.

    Response: *Shading, turbidity, and other potential pollutants associated with the bridge are direct impacts. Measures to minimize and mitigate bridge impacts are discussed in Section 2.1.7 (stormwater management), Section 2.4.2, 3.3.4.4, and 3.3.6.4 (construction of the Mid-*

Currituck Bridge), and Section 3.3.7.2 (SAV and Essential Fish Habitat mitigation) of this FEIS.

11. **Comment:** In conclusion, it is suggested that once a preferred corridor is selected that the above issues be addressed by the NCTA. Once a preferred alternative is selected the response to the above issues can be focused to a given area and alternative.

    The NCTA is reminded that issuance of a 401 Water Quality Certification requires that appropriate measures be instituted to ensure that water quality standards are met and designated uses are not degraded or lost.

    Response: *NCTA has selected a Preferred Alternative, as described in Section 2.6 of this FEIS. The above issues have been addressed in this FEIS and associated technical reports included on the CD that accompanies this FEIS, or will be addressed during the permit process, which includes obtaining a 401 Water Quality Certification for the Preferred Alternative with appropriate measures to ensure that water quality standards are met and designated uses are not degraded or lost.*

2.2.8 North Carolina Department of Environment and Natural Resources—Natural Heritage Program—May 26, 2010

1. **Comment:** The Natural Heritage Program has reviewed the DEIS, in particular the Natural Resources Technical Report in the Appendix. The DEIS correctly indicates the locations of the Significant Natural Heritage Areas in the project area, on Figure 3-5. The primary site that will be impacted by a new bridge is the Maple Swamp Gordonia Forest, which currently is bisected by Aydlett Road. As the Technical Report indicates, there is an existing east-west powerline corridor to the north of Aydlett Road, and it also states that there have been a number of recent clearcuts in this area. The 2008 aerial photos show that about 1-1.25-miles of the swamp on the north side of Aydlett Road (including on both sides of the powerline clearing) have recently been cleared. Fortunately, the swamp from Aydlett Road to the south, a distance of over 3.5 miles, and from the clearcut area north to Waterlily Road, a distance of about 1.7 miles, still appear to be in natural condition.

    There are two options for getting traffic from US 158 to Aydlett, as shown in Figure 2.7. Our Program preference is Option B, which involves a new road at ground level, but with several wildlife underpasses and culverts. This option would be constructed mostly within the already cleared forested area north of Aydlett Road, and it would also include the removal of the existing Aydlett Road; this road site would be allowed to return to a wetland forested condition, over time. Option A involves a bridge over the swamp, but leaves Aydlett Road in place. However, because the area to be bridged has mostly been clearcut recently, and because Aydlett Road currently is at ground level with no animal movement passages, it appears that this option is not as favorable to our Program.

Response: *Option A was selected as the Preferred Alternative. It was the preference over Option B of all other environmental resource and regulatory agencies because Option A would bridge wetlands and not affect the storm surge, thus avoiding floodplain impacts. The removal of Aydlett Road was found during the public and agency comment period to be an unacceptable community impact by both the residents of Aydlett and Currituck County officials. Thus, it is not included in the Preferred Alternative.*

2. **Comment:** On the Currituck Banks side of the project area, our Program has little or no preference between Options C1 and C2, as neither impacts known rare species or Significant Natural Heritage Areas. This portion of the project area is mostly heavily developed, except for a very narrow strip of wetland along the Currituck Sound shoreline.

   Response: *The Natural Heritage Program's lack of a preference between C1 and C2 is acknowledged.*

3. **Comment:** The project may slightly affect several additional natural areas elsewhere, in terms of widening of existing roads such as US 158. Our Program hopes that widening can be done on the sides of the existing roads opposite the natural areas, if feasible.

   Response: *The Natural Heritage Program's preference is acknowledged. The Preferred Alternative does not include widening along US 158. Widening along NC 12 would occur in developed areas.*

2.2.9 North Carolina Department of Environment and Natural Resources—Washington Regional Office—May 27, 2010

1. **Comment:** Any open burning associated with subject proposal must be in compliance with 15 A NCAC 2D.1900.

   Demolition or renovations of structures containing asbestos material must be in compliance with 15 A NCAC 2O.1110 (a)(1) which requires notification and removal prior to demolition. Contact Asbestos Control Group 919-707-5950.

   Sedimentation and erosion control must be addressed in accordance with NCDOT's approved program. Particular attention should be given to design and installation of appropriate perimeter sediment trapping devices as well as stable stormwater conveyances and outlets.

   Response: *NCTA understands and will meet these requirements.*

2. **Comment:** A 401 Water Quality Certification permit is required.

   Response: *NCTA understands and will seek this certification.*

3. **Comment:** Compliance with 15A NCAC 2H.1000 (Coastal Stormwater Rules) is required.

   Response: *NCTA understands and will meet this requirement.*

2.2.10 North Carolina Department of Environment and Natural Resources—Washington Regional Office, Aquifer Protection Section—April 19, 2010

1. **Comment:** It is this office's opinion that during the selection of a final preferred alternative for this project any potential impacts to any of the several permitted non-discharge wastewater treatment and disposal facilities present on the Outer Banks of Currituck County should be considered. For instance, under the recommended alternative MCB4 in the draft EIS it appears that if the southernmost bridge corridor (C2) is used the eastern terminus of the bridge will be very near both the Ocean Sands (WQ0000185) and Monteray Shores (WQ0009772) wastewater treatment and disposal systems. Also, under this alternative Highway 12 would be widened to 4 lanes by the Pine Island-Currituck Club (WQ0004823) wastewater treatment and disposal system, which irrigates treated effluent onto the Currituck Club golf course directly west of the highway. These facilities have a combined treatment and disposal capacity of over 1.6 million gallons per day and serve a substantial portion of the Outer Banks of Currituck County. Under 15A NCAC 02T, they must maintain specified setback distances to numerous features such as property lines, public right-of-ways, and drainage ditches, which all could be affected by the construction of the proposed project. Additionally, due to the proximity of the eastern bridge terminus to the wastewater facilities, site improvements related to the proposed project may affect localized surface water and groundwater drainage characteristics. Please be aware that any changes in drainage patterns may also affect operational performance of the wastewater facilities and should be taken into consideration. If the operation of these facilities is impacted by the proposed project there could also be significant impacts to the residents, landowners, and business owners served by these facilities.

   Response: *Bridge corridor C1 was selected as the Preferred Alternative. Specified setback distances will be maintained. Infiltration strips would be provided along locations where NC 12 would be widened to provide for the proper infiltration of runoff from NC 12. Wastewater treatment and disposal systems would not be affected by the project.*

2.2.11 North Carolina Department of Environment and Natural Resources—Wildlife Resources Commission—May 21, 2010

1. **Comment:** Currituck Sound is a unique and important ecosystem in North Carolina and is currently experiencing stress from a variety of sources including development and stormwater runoff. Existing problems for the Currituck Sound Ecosystem were identified in the *Currituck Sound, North Carolina Ecosystem Restoration Feasibility Study, Feasibility Scoping Meeting Report, February 2010.* The following stressors were discussed:

- Currituck Sound has experienced a significant change and subsequent decline in ecosystem/habitat function with wide fluctuations in the type and quantity of SAV, changes in fish population, and changes in resident and winter waterfowl habitat.

- Water quality has declined over the past 50 years primarily due to an increase in turbidity and possible nutrient loading from non-point source runoff.

- SAV have significantly declined since the 1980's thereby reducing spawning habitat and or nursery habitat for a variety of freshwater, anadromous, shellfish, and estuarine fish species as well as primary food source for wintering waterfowl.

- Fish (largemouth bass) and wintering waterfowl populations have declined drastically due to the loss of SAV and increased salinity (providing toxic to young bass).

- Loss of waterbird nesting habitat.

- Coastal marshes and Currituck Sound waters have been lost to erosion or invaded by exotic plant and animal species.

This project has the potential to exacerbate or directly contribute to these problems.

Response: *The Wildlife Resources Commission's position is acknowledged. Impacts of the proposed project to SAV, fish population, wildlife habitat, water quality, waterbirds, coastal marches, and Currituck Sound waters are addressed in Section 3.3 of the DEIS and this FEIS, as well as the NRTR and revised the Essential Fish Habitat Technical Report included on the CD that accompanies the DEIS and this FEIS.*

2. **Comment:** Alternative ER2 is the only alternative evaluated in detail that does not include the construction of a new bridge across Currituck Sound, therefore relying on improvements made to the existing roads to meet the project purpose and need. By not constructing a new bridge impacts to sensitive habitats such as Currituck Sound and Maple Swamp would be avoided. Therefore, ER2 is the least damaging alternative to fish and wildlife resources in the project study area. However, this alternative would not be constructible as a toll facility and without funding, unlikely to be selected. The following comments are regarding the construction of a new location facility.

   Alternatives MCB4 and MCB2 involve construction of a new bridge across the Currituck Sound originating at US 158 west of Aydlett and ending on the Outer Banks south of Corolla. The Mid-Currituck Bridge (MCB) alternatives will traverse the mainland portion of Currituck County through Maple Swamp on an alignment parallel and north of existing Aydlett Road. Maple Swamp is designated a Significant Natural Heritage Area (SNHA) of state significance. Consisting of non-riverine swamp forest, non-riverine wet hardwood forest, and one of the largest

loblolly bay forests in the state, this area provides exemplary habitat for a multitude of species including great blue heron and great egret colonies as well as a bald eagle nest, numerous amphibian and reptile species, and large mammals such as black bear. Fragmentation of this area would have significant adverse impacts on the quality of this habitat and its use by wildlife. Two options have been presented for the Maple Swamp crossing in the MCB alternatives. Option A would bridge Maple Swamp and Option B would utilize a fill causeway for the crossing.

MCB Option A is the least environmentally damaging of the two options. Bridging the entire crossing of Maple Swamp would improve wildlife passage significantly over the use of a fill causeway. Both surface and subsurface hydrology through this area would also be largely undisturbed with Option A.

Response: *Option A is included in the Preferred Alternative.*

3. **Comment:** MCB Option B is more complex and would utilize a fill causeway with wildlife crossings, while placing the tolling station in the community of Aydlett and consequently allowing the removal of the existing Aydlett Road. Wildlife crossings have been shown to be effective for improving highway permeability for wildlife. However, constructing this facility on fill material will likely necessitate the removal of several feet of muck and replacement with a compactable soil which will affect the subsurface hydrology of the area. Hydrologic alteration in these non-riverine wetland systems can result in permanent changes in the vegetative community. Furthermore, the limited openings provided by the wildlife crossing structures will be prone to seasonal inundation from surface flow which may be exacerbated by hydrology alterations. Surface water inundation of the wildlife crossing structures will reduce their effectiveness and may discourage use by certain species of wildlife. Although this option does offer the potential for removing existing Aydlett Rd which may somewhat restore the natural hydrology, it would not avoid and minimize impacts to the extent of Option A.

   Response: *Option B is not included in the Preferred Alternative.*

4. **Comment:** Noting the benefits of the Aydlett Road removal and the potential restoration of the hydrologic and vegetative conditions of this area, the NCTA should consider a third option. Bridging Maple Swamp and "landing" the bridge west of Aydlett prior to the location of the planned toll facility in Option B would still provide access for the community and would allow the removal of Aydlett Road. This option would provide the greatest avoidance, minimization, and potential mitigation of impacts to fish and wildlife resources in Maple Swamp. All MCB alternatives should bridge Maple Swamp.

   Response: *The removal of Aydlett Road was found during the public and agency comment period to be an unacceptable community impact by both the residents of Aydlett and Currituck County officials. Those impacts are discussed in Section 3.1.2 of the DEIS and*

FEIS. Therefore, it is not included in the Preferred Alternative. However, bridging Maple Swamp (Option A) is included.

5. **Comment:** Two MCB alignment options are also under consideration for the section over Currituck Sound. Denoted as C1 and C2 both would originate in the same location on the west side of the sound however; bridge corridor C1 would terminate at NC 12 approximately two miles north of Albacore Street and C2 would terminate approximately 0.5 miles south of C1.

   Impacts presented in the document state that corridor C1 would fill approximately 2.6 acres more wetlands as alternative C2. Although not an insignificant difference in direct impacts, corridor C2 would affect more high quality habitat. The proximity of C2 to the extensive Pine Island/Currituck Natural Area marsh complex would adversely affect the use of the area by fish and wildlife. Additionally, this area has a greater coverage of submerged aquatic vegetation (SAV). Both of these habitats are important habitats for migratory waterfowl and a multitude of fish species in Currituck sound. We feel C1 would minimize impacts to the highest quality habitat.

   Two MCB alternatives address different levels of existing road improvements, MCB2 and MCB4. MCB4 only proposes minimal existing road improvements were MCB2 would improve substantial amounts of NC 12 and US 158. The increased amount of existing road improvements in MCB2 would have greater environmental impacts while providing minimal benefit over MCB4. We feel MCB4 would minimize impacts to fish and wildlife resources.

   Response: *MCB4/C1 was selected as the Preferred Alternative. Refinements were made to the bridge alignment and NC 12 improvements to further reduce SAV habitat (including existing beds), potential SAV habitat, and wetland impacts from that presented for MCB4/C1 in the DEIS.*

6. **Comment:** Potential impacts resulting from various alternative construction methodologies was mentioned but not discussed in detail in the document. We recognize it may be premature to have detailed information on constructability issues, however the potential exist for those techniques to have significant effects on the aquatic resources in Currituck Sound, and recommend that NCTA coordinate with resource agencies to address potential impacts as soon as sufficient information becomes available.

   Response: *Coordination with environmental resource and regulatory agencies related to construction methodologies and their impacts was carried out between the DEIS and this FEIS. The outcome of these discussions is reflected in Section 2.4 of this FEIS and in the impact assessment in Chapter 3.*

2.3 Local Government

2.3.1 Town of Duck—May 21, 2010

1. **Comment:** The Town appreciates the efforts of the NCTA and all project team members in developing this much needed public infrastructure project. We are hopeful that the design and construction of the recommended alternative can be achieved as outlined in the current project schedule.

   The Town agrees with NCTA's recommendation of MCB4 which involves construction of a two-lane bridge facility with associated widening of US 158 and NC 12 in the vicinity of the bridge approaches as described in the DEIS. As stated previously, the Town believes a widening only alternative would fail to accomplish all of the objectives listed in the project purpose and need and a three-lane widening of NC 12 within the Town would have a negative impact on the Duck community. The Town believes strongly that the alternative recommended by NCTA most cost-effectively achieves the project purpose and need and would have the most favorable impact on the Town of Duck with regards to traffic diversion and community disruption.

   To reiterate comments provided to you after the May 2008 public hearings, the Town believes a bridge alternative is necessary not only to meet the legislative standard evacuation time of 18 hours, but also to provide an alternative evacuation route in the event NC 12 is blocked during a severe storm event. It is not unusual for portions of NC 12 within the Town or throughout the northern Outer Banks to become virtually impassable due to flooding caused by overwash or heavy rainfall. There is also the potential for inlet formation within the Town in areas with low elevation and narrow width from ocean to sound. The DEIS has indicated this potential in the vicinity of the Dare/Currituck County line. There has been a history of inlets in the northern Outer Banks including the Caffey's Inlet, which was known to be located approximately where the Palmer's Island subdivision currently exists at the northern end of the Town of Duck. In response to impacts from sea level rise, it is important to recognize that an additional bridge is necessary to maintain access as an alternative evacuation route.

   In addition to hurricane evacuation, the Town strongly favors the bridge alternative since it would divert a significant amount of traffic that would otherwise be required to travel through the Town to reach the Currituck portion of the Outer Banks. The Mid-Currituck Preliminary Traffic and Revenue Study indicated that in 2006 28,800 vehicles traveled through the Duck commercial area during the summer weekend peak. The Average Annual Daily Traffic (AADT) at this time was noted at 19,500. This same report projected future traffic in the design year (2035) during the summer peak at 44,100 vehicles per day with future AADT at 29,000. These projections indicate that the design year AADT is expected to increase above the current

summer peak traffic levels. It is anticipated that the bridge alternative would divert greater than 40 percent of the vehicles that would otherwise be required to travel through the Town, both when the bridge is immediately opened and in the design year. Without this traffic diversion, congestion in our community would reach intolerable levels and severely increase hazards for the significant number of bicyclists and pedestrians that use the shoulder and/or cross NC 12 within the Duck community. For these reasons, we believe a bridge alternative is essential to maintaining the quality of life in the Duck community.

Response: *MCB4, which includes a Mid-Currituck Bridge, was selected as the Preferred Alternative.*

2. **Comment:** The Town also believes the following impacts associated with the widening of NC 12 through the Duck community as identified in the DEIS are a significant concern that would change the character of the Town and are not consistent with the Town's goals and objectives:

   - The need for home relocations and property/easement acquisitions to support road improvements and drainage infiltration areas for a third travel lane.

   - The closing of local streets along NC 12 to facilitate NC 12 traffic flow. Within the Town of Duck, the following streets were identified; Widgeon Drive (SR 1479), Wood Duck Drive (SR 1477), Canvas Back Drive (SR 1476), and Old Squaw Drive (SR 1474).

   - Widening NC 12 to a three-lane section would aggravate hazards for bicyclists and pedestrians, particularly when crossing NC 12. There are many areas of Town where the posted speed limit of 35 or 45 mph combined with limited sight distance makes crossing NC 12 challenging and unsafe. These areas would become increasingly difficult to cross with the addition of a third travel lane. A third travel lane would also limit the Town's ability to provide future pedestrian safety enhancements such as refuge areas in the median since the center lane would need to be completely unobstructed to be used as an additional travel lane.

   - The widening of NC 12 would generally serve to increase the instances of speeding and the likelihood of vehicle related crashes within the Town. Anecdotal information provided during the Town's recent bicycle and pedestrian safety audit indicates that drivers tend to adjust speed depending on their comfort level with the roadway. As the width of the roadway increases, the driver's comfort level improves and the tendency to speed increases. Several recommendations provided to the Town during the pedestrian safety audit call for reducing travel lane widths or providing traffic calming measures to reduce vehicle speeds. The widening of NC 12 would complicate the Town's efforts to improve the safety for bicyclists and pedestrians on NC 12 and would encourage faster speeds through the Town.

Response: *No widening of NC 12 in Duck would be done as a part of the Preferred Alternative.*

3. **Comment:** Finally, we would like to reiterate that only a bridge alternative, without the widening of NC 12, would be consistent with the Town's adopted Land Use Plan as evidenced by the following statements included in the Plan:

   - GOAL #26: Ensure a safe, efficient transportation system with NC 12 remaining a two-lane facility and the construction of a mid-Currituck County bridge.
   - POLICY #26a: Duck supports the construction of a mid-Currituck County bridge and maintenance of the existing two-lane configuration of NC 12 with the Duck Trail along NC 12 through Duck.
   - OBJECTIVE #26a: Lobby for the construction of a mid-Currituck County bridge.
   - OBJECTIVE #26b: Lobby for maintaining NC 12 as a two-lane facility in its present configuration through Duck.
   - OBJECTIVE #26d: Encourage the provision of a safe, efficient transportation system given State and local finances, topography, geography, and natural systems and surrounding land uses and development.

   Response: *A Mid-Currituck Bridge is a part of the Preferred Alternative. The goals of Duck's land use plan are addressed in Section 3.1.6 of the DEIS and this FEIS.*

4. **Comment:** In closing, we would support a decision by the NCTA to carry forward the current recommended MCB4 alternative as the preferred alternative to be included in the Final Environmental Impact Statement. We believe this alternative best meets the stated purpose and need for the project while recognizing and mitigating the potential environmental and community impacts within the project area and within the Town of Duck.

   Response: *MCB4 was selected as the Preferred Alternative.*

2.3.2 Town of Nags Head—May 20, 2010

1. **Comment:** …the Town of Nags Head Board of Commissioners does hereby encourage the NCTA, in cooperation with the FHWA, to proceed with the preparation of Final Environmental Impact Statement and Record of Decision for the Mid-Currituck Bridge Study as quickly as is practical and to begin construction of MCB4 as the preferred alternative.

   Response: *MCB4 was selected as the Preferred Alternative.*

2.3.3 Town of Southern Shores—May 5, 2010

1. **Comment:** … the Southern Shores Town Council is in total support of Alternative MCB4 as the only acceptable bridge construction alternative; and … the Southern Shores Town Council recognizes that NC 12 storm water drainage problems need to be addressed, but the Southern Shores Town Council opposes the plan proposed in Alternative MCB2 as a future means for remediating the storm water drainage issues, and … the Southern Shores Town Council will work with the North Carolina Department of Transportation (NCDOT) to develop an acceptable means of addressing stormwater drainage on NC 12.

   Response: *MCB4 was selected as the Preferred Alternative. No drainage improvements on NC 12 in Southern Shores would be built as a part of the Preferred Alternative.*

3.0 Non-Governmental Organization Comments on the Draft Environmental Impact Statement and Responses

3.1 Southern Environmental Law Center

1. **Comment:** Currituck County and state transportation officials first hatched their plans for a bridge across the Mid-Currituck Sound in the 1970s. In 1975, the state Board of Transportation adopted a formal resolution favoring the Project. Since then, the Project has been the subject of numerous studies, each of which have concluded that other transportation improvements would better suit the needs of area residents with less taxpayer dollars, and cause far less damage to the environment. In 1998, the first DEIS for this Project was issued, but it was never followed by a Final EIS. According to the transportation agencies, a "majority" of those who spoke up at public hearings or submitted written comments on the project "expressed opposition to a Mid- Currituck Bridge because of natural resource impacts, the belief that the project would not solve hurricane evacuation needs, and the expectation that the project would facilitate development on the Outer Banks." [P&N Doc 1-9]

   Now, in the new, current DEIS, the Transportation Agencies have refashioned the Mid- Currituck Bridge as a toll bridge, which may cost as much as $12 per crossing. But the potential of this project to generate toll revenue does not alter the basic calculus regarding whether it is feasibility [sic] and whether it belongs among the state's transportation priorities. Tolls would pay for only a fraction of the Bridge's cost. The project would require state "gap funding" appropriations over the next thirty years that are worth nearly $300 million today. The state would also back several hundred million dollars of loans and "toll revenue bonds." This public funding and debt capacity could be put to better use devoting them to North Carolina's pressing transportation needs. For example, it could address neglected maintenance and repair needs in the vicinity of the project, including the replacement of the Bonner Bridge over Oregon Inlet. The continued promotion of the Mid-Currituck Toll Bridge reflects the peculiar status of the North Carolina Turnpike Authority, which continues to pursue an independent transportation agenda, out of step with emerging federal and state policies on infrastructure investment, energy, and environmental stewardship, despite the passage of a law last summer "transferring the functions and funds" of the agency to the North Carolina Department of Transportation.

   Response: *The Southern Environmental Law Center's (SELC's) opinion on what should be the transportation priorities of the State of North Carolina are noted. The Mid-Currituck Bridge is included in the North Carolina Department of Transportation's (NCDOT) 2009 to 2015 State Transportation Improvement Program (STIP), as are all NCTA projects. It is*

also consistent with the goals of the North Carolina Strategic Highway Corridors Concept Development Report (NCDOT, 2005). NCTA's program is not independent of NCDOT's or state transportation policy in general.

2. **Comment:** The Mid-Currituck Bridge is an ill-conceived project with or without tolls, and with or without the limited involvement of a private sector partner. As the DEIS points out, this involvement is contingent upon the selection of a Toll Bridge alternative. The private partner consortium, led by the Spanish conglomerate Grupo ACS, is expected to contribute only $80 million, approximately ten percent of the project's construction costs, leaving the bulk of the remainder to be borne by North Carolina taxpayers. For Grupo ACS's investment to pay off, moreover, during the summer high season nearly 20,000 cars per day would need to pass over the Bridge and through Corolla, what is now an unincorporated community of some 500 permanent residents and 30 public beach access parking spaces. These financial plans implicate massive new investments in real estate and infrastructure, which would be highly vulnerable to hurricanes, sea level rise, erosion, and other phenomena that will exact ever higher costs as climate change impacts worsen.

   Response: *The project's financial plans do not presume massive new investments in real estate and infrastructure but rather expected growth as defined by area land use plans.*

3. **Comment:** The rigor of the Transportation Agencies' evaluation of this project under NEPA should have been commensurate with its scale, cost, and regional importance. Instead, the Transportation Agencies have issued a DEIS that suffers from multiple inaccuracies, omissions and other shortcomings. The DEIS fails to account for induced population growth, advancing the false claim that building a bridge where none currently exists would have no effect on the total amount of traffic in the area. As a result, the DEIS mischaracterizes the Toll Bridge's ability to advance the stated objectives for the project: relieving congestion and expediting hurricane evacuation. It also fails to adequately assess the Toll Bridge's impact on wildlife, including various endangered species, on water quality, on fisheries, and on the overall quality of experience for visitors and residents along the Outer Banks. These shortcomings prevent the meaningful and informed evaluation of this project as required by NEPA. The Agencies should issue a new DEIS that fully addresses these issues and compares the project's benefits to a viable existing road upgrade alternative before proceeding to the Final EIS phase.

   Response: *The project's traffic forecasts assume full build-out of the NC 12-accessible Outer Banks north of US 158 in Dare and Currituck counties, as well as additional development north of the end of NC 12. The DEIS and this FEIS addresses the benefits and impacts of widening existing roads (ER2). SELC's position on the adequacy of the impact assessment in the DEIS is addressed within the context of their specific comments below.*

NEPA

Deficiencies in the Purpose and Needs Section

4. **Comment:** The DEIS's discussion of purpose and needs does not meet the requirements of NEPA. The only need that the Toll Bridge might actually address–reducing travel times "between the Currituck County mainland and the Currituck County Outer Banks"–is impermissibly narrow. By all accounts other than the current DEIS, including that of the previous 1998 DEIS, the Toll Bridge would exacerbate traffic congestion in the area and lengthen hurricane evacuation times.

   Response: *The Statement of Purpose and Need was prepared and documented prior to the development and evaluation of alternatives. The DEIS and FEIS demonstrate in Section 2.2 that the Mid-Currituck Bridge, as well as ER2 (which does not include a Mid-Currituck Bridge), would both reduce congestion and travel time. Section 2.2 also indicates differences between the alternatives in terms of the travel benefits each alternative offers. Additional detail is presented in the 2035 Traffic Alternatives Report included on the CD that accompanies the DEIS and this FEIS.*

5. **Comment:** The DEIS makes clear that the Toll Bridge would connect two parts of Currituck County that are currently accessible to one another only by traveling through part of Dare County. The DEIS does little to explain, however, how this connection between the two sides of Currituck County addresses any sort of significant need. In the 1998 DEIS for this project, the Transportation Agencies cited an objective to "provide more efficient public services to Currituck Outer Banks." (DEIS 1-10.) Collaborating state and federal agencies criticized this characterization of the project purpose, pointing out, for example, that "Currituck and Dare Counties have already demonstrated cooperative arrangements on the provision of [public] services," and that "based on continuing development in the Corolla area, improved access is not a critical need for development." The current DEIS omits any reference to public services on the Currituck County Outer Banks. Instead, it emphasizes travel delays during the summer high season to the area. But while the Toll Bridge would undoubtedly reduce travel time for those making the "representative trip" between "the approximate endpoints of a Mid-Currituck Bridge," the DEIS gives little reason to believe that this benefit justifies the enormous economic and ecological costs of the Project.

   Response: *SELC's opinion on whether the travel benefits of a Mid-Currituck Bridge justify the cost and environmental impact, as well as on the significance of connecting the two sides of Currituck County, are noted. The needs expressed represent the positions of state and local governments, those responsible for transportation and land use planning, and, therefore, are significant. Since the 1998 DEIS, the provision of services was accomplished except for schools, but at the time NCTA prepared the purpose and need for the DEIS and this FEIS, there was only one child going to school from the Outer Banks. The State of North Carolina*

has concluded that the cost is justified and environmental impacts can be adequately avoided, minimized, and mitigated.

6. **Comment:** Similarly, the traffic congestion projections cited in the DEIS fail to establish a compelling need for the Toll Bridge. Considering that most of the development along the Outer Banks is dedicated to summer vacation rentals, the reported congestion is unsurprising. More remarkable is the underlying assumption in the DEIS that traffic volume along NC 12 and US 158 will continue to grow, nearly doubling by 2035 and producing staggering delays during the summer weekend days. These projections are inconsistent with the Transportation Agencies' own studies, which note that traffic volumes along US 158 have "exhibited little growth in the most recent five year period" and that "[t]raffic levels on NC 12 between Southern Shores and Corolla appeared to be down," possibly indicating that "congestion along this road has reached a saturation point and become a deterrent to traffic growth."

   Response: *The SELC opinion that the traffic congestion projections cited in the DEIS fail to establish a compelling need for a Mid-Currituck Bridge is noted. NCTA disagrees with SELC that summer congestion is not important to address, particularly since it is expected to continue to worsen in the future as the NC 12-accessible area moves towards full build-out. For example, even in urban areas it is customary to strive to achieve a level of service where congestion occurs only in the 29 highest hours of traffic in the year. The 2035 traffic forecasts are based on the best information available related to expected and planned development in the area. They assume full-build out on the road-accessible Outer Banks based on current land use plans, growth on the Currituck County mainland based on state population projections for Currituck County, a continuation of trends in building on the Currituck County Outer Banks, and historic trip generation rates by Outer Banks development. The traffic forecasts are not projections of recent traffic trends. Congestion exists to today on US 158 and NC 12 in the summer and as such a Mid-Currituck Bridge would provide benefits whether or not the 2035 forecasts happen.*

   Although the conclusion of the NEPA process could be to select the No-Build Alternative and not address existing and forecast congestion problems, it is not sound transportation planning practice to evaluate the merits of transportation improvement assuming less growth than expected and planned or to assume because congestion is adversely affecting travel demand that no problem exists.

   The needs and purposes of the project were developed in consultation with environmental resource and regulatory agencies and the public and are described in the Statement of Purpose and Need (Parsons Brinckerhoff, 2008).

7. **Comment:** To the extent that traffic congestion represents a problem in the project area, the Toll Bridge would not help to solve it. The DEIS points out that on weekend days during the summer high season, "congestion occurs on NC 12 just south of Southern Shores and Duck and on US 158 east of the Wright Memorial Bridge." (DEIS 1-3.) Notably, travelers would not likely use the Toll Bridge to access

these areas. Travelers using the Bridge would, however, add to the existing traffic along NC 12 in the Corolla area, and along US 158 and US [sic] 168 north of the proposed mainland terminus. The 1998 DEIS acknowledged this traffic growth effect. It conceded that "the future development allowed by the bridge would result in the congestion on NC 12 returning to or exceeding current levels by 2020." This prompted criticism, with EPA noting that "[s]trangely, this project is not designed to reduce congestion on the main roadways but is narrowly geared to address travel to the uppermost Outer Banks."

Response: *The benefit of the bridge is that it would redistribute traffic otherwise carried along NC 12 so that a portion of the existing road system could better serve demand. This redistribution would take traffic destined for Currituck County off NC 12 in Southern Shores and Duck and put it directly into Currituck County. The bridge also would reduce demand on US 158 south of the bridge. Although not eliminating congestion, congestion would be substantially reduced. Further information is available in the 2035 Traffic Alternatives Report included on the CD that accompanies the DEIS and this FEIS.*

8. **Comment:** The current DEIS attempts to blunt this line of criticism by denying that the Toll Bridge would, in fact, cause more vehicles to travel to the area. The DEIS references a 2035 Traffic Alternatives Report that depicts the same number of cars traveling along the US 158 mainland arterial directly north of the Toll Bridge under the future "Build" and "No Build" scenario. In other words, the DEIS claims that over an hour of travel time savings would not persuade any additional drivers to visit the northern Outer Banks. Neither the DEIS nor the 2035 Traffic Alternatives Report explain this counterintuitive conclusion, which ignores an abundance of carefully documented empirical studies that link traffic levels to available road capacity. As one meta-analysis of over fifty traffic studies concludes: "There is no question that road improvements prompt traffic increase."

   Response: *As indicated in the DEIS, the most likely scenario with a No-Build Alternative would be for some expected and planned development not to occur with associated traffic reductions than for additional unplanned development to occur with a bridge project. This is particularly the case considering that project traffic forecasts assume full build-out of the NC 12-accessible Outer Banks. ER2 also would constrain development. This finding is quantified and discussed in more detail in Sections 3.6.1.4 of this FEIS, as well as Sections 4.2.3 and 6.2 of the revised Indirect and Cumulative Effects Technical Report. Also, see the response to USACE comment 18 above which indicates the No-Build Alternative could constrain development at 70 percent of current build-out from Southern Shores to the Virginia line and 75 percent with ER2. With MCB2, MCB4, and the Preferred Alternative, road capacity would not act as a development constraint. Without a road capacity constraint, 86 percent of current build-out is forecast for 2035, the project's design year. In 2007, build-out was at 59 percent. Build-out is currently approximately 15,400 homes and hotel rooms.*

9. **Comment:** In North Carolina, federal courts have recognized these traffic inducing effects of large highway infrastructure projects. In Sunset Beach, North Carolina, the Transportation Agencies claimed that replacing a one-lane, pontoon bridge with a

high-level, fixed-span bridge would not cause any traffic increases or induce additional development. See Mullin v. Skinner, 756 F. Supp. 904 (E.D.N.C. 1990). The Federal District Court for the Eastern District of North Carolina rejected that claim, explaining that induced traffic growth follows from the "irrefutable reality that the easier it is to get somewhere, the more people will be inspired to do so." Id. at 917; see also Sierra Club v. United States DOT, 962 F. Supp. 1037, 1043 (D. Ill. 1997) (rejecting an EIS based on the "implausible assumption that the same level of transportation needs will exist whether or not the tollroad is constructed.") Compared to the situation in Sunset Beach, the Mid-Currituck Toll Bridge would make it even easier for travelers, particularly from points north of the project area, to access the North Carolina Outer Banks, because it would establish a new route of access altogether. The DEIS, however, falsely claims that the improvement would not inspire any new visitors to go there.

Response: *At question here is whether highway projects, or a least ones such as this that improve access to otherwise accessible areas, in turn cause new traffic-generating development, including changing land use plans and associated zoning. While one cannot categorically say it does not, one cannot categorically say it does. Recent studies (see Ewing, 2008) challenge the popular notion that highway infrastructure causes net development. Nonetheless, new infrastructure can shift the timing and sequence of development locally even when there is no net increase. Changes in land use patterns are particular to the project and to the region. Transformative land use changes are most likely to occur where entirely new modes of access are created, such as when a fixed span bridge replaces a ferry, or when a highway structure creates new direct access to otherwise undeveloped localities.*

The DEIS (Section 3.6.1.4) and the Indirect and Cumulative Effects Technical Report (Section 4.2) provide detailed analytical scenarios of potential development in the project area. These same sections are included in this FEIS and the revised Indirect and Cumulative Effects Technical Report.

10. **Comment:** Finally, the DEIS points out that North Carolina General Statute § 136-102.7 establishes a "Hurricane Evacuation Standard" of 18 hours from the time of a hurricane warning, a standard that "was already exceeded at 27 hours in 2007 for evacuees leaving the Outer Banks via NC 168 and US 158." (DEIS 1-5.) This law does not establish a need for the Toll Bridge. If anything, the law–which explains that the standard shall "be used for any bridge or highway construction project" under NCDOT authority–augers against its construction. Although the DEIS claims that the Toll Bridge would reduce hurricane evacuation times, this claim is based on the assumption that the Toll Bridge would not cause any growth in travel to the Outer Banks. That assumption is not scientifically credible or legally defensible. In fact, as the US Army Corps of Engineers pointed out in its comments on the previous DEIS, the transportation agencies should have disclosed the impacts associated with "hurricane evacuation time increase" resulting from the Project.

    Response: *The law does not establish the need for a toll bridge. It does establish a need (given current and forecast clearance times with the No-Build Alternative) that warrants the*

study of potential solutions. Any of the detailed study alternatives assessed in the DEIS and this FEIS (including ER2, which does not include a Mid-Currituck Bridge) would reduce clearance times for both current and new evacuatees that result from expected future development. Similar to the traffic forecasts, the hurricane evacuation clearance time model also assumed full build-out along NC 12. Therefore, as indicated in the DEIS and in more detail in this FEIS in Section 3.6.1.4, the most likely scenario with a No-Build Alternative would be for some expected and planned development not to occur with associated traffic reductions than for additional unplanned development to occur with a bridge project. With the No-Build Alternative, however, the need would not be addressed and hurricane clearance times would continue to increase until congestion acts as a constraint on development and then would remain unacceptably high.

Deficiencies in the Analysis of Alternatives Section

11. **Comment:** Reflective of the Turnpike Authority's narrow focus, the DEIS devotes inadequate treatment to Toll Bridge alternatives. In a single sentence, the DEIS eliminates the ferry service alternative from consideration because, according to the document, ferries would be costly as well as ineffective, and "would require substantial dredging in the Currituck Sound." (DEIS 2- 41.) Another technical report, the Alternatives Screening Report, provides the analysis of these options. Notably, the Report only considers conventional ferry service, and on a very large scale. It fails to address comments made in response to the previous DEIS requesting that the agencies investigate whether very shallow draft ferries could meet the project purposes without extensive damage to submerged aquatic vegetation (SAV) and other resources in the Sound. A system of modern, high-speed, shallow-draft ferries and water taxies could serve high volumes of passengers even in fairly shallow waters. The San Juan Islands, Channel Islands National Park, and Cumberland Island National Seashore are examples of popular tourist destinations reached by ferry. Likewise, Ocracoke and Bald Head Islands, Cape Lookout National Seashore, and Hammocks Beach State Park have all been connected to the mainland only by ferry boats for their entire histories, and yet remain among the most popular tourist destinations on the North Carolina coast. In light of the many advantages of ferries and the many examples of successful ferry systems, the cursory analysis in the DEIS and rejection of ferries as an alternative for this relatively lightly developed area is unjustified.

    Response: *The technical reports were distributed with the DEIS on a CD (hard copies were available at the public review locations) and are a part of the assessment of impacts and the Administrative Record. This includes the Alternatives Screening Report.*

    Regarding ferry service, irrespective of whether an alternative craft was considered (perhaps one that could be used without dredging), the fact would remain that:

    - *It takes a fixed amount of time to load and unload cars;*
    - *A higher speed craft would not substantially change the travel times across the sound compared to conventional craft given the short distance; and*

– *That a large scale service (either in terms of a large number of smaller craft or a smaller number of larger craft) would be required to have a capacity adequate to substantially divert travel from existing roads and reduce congestion.*

Therefore, a different vessel would make no difference in the conclusion that ferry service is not a viable alternative for meeting the project's purpose and need.

SELC cites several examples of tourist destinations currently served by ferries. The commenter suggests that because ferries are used in these locations that ferries therefore should be studied in detail as a reasonable alternative for meeting the purpose and need associated with the Mid-Currituck Bridge project. However, Channel Islands National Park, Cumberland Island National Seashore, Cape Lookout National Seashore, and Hammocks Beach State Park are all uninhabited national or state parks (except for Cumberland Island, which has approximately 40 residents); Ocracoke and Bald Head Islands have both been accessed only by boat, ferry or plane for their entire modern histories and they have substantially lower permanent and seasonal populations than the Currituck County Outer Banks, which also is not an island and has existing highway access. The settings of these services are not in any way equivalent to the Mid-Currituck Bridge project area.

In terms of the number of vehicles carried, the closest equivalent to a Mid-Currituck Bridge of the examples given by the commenter is the San Juan Islands. This ferry service carried 832,000 vehicles in 2009. The existing NCDOT ferry service carries 1.1 million vehicles per year on seven routes. However, in 2035, a Mid-Currituck Bridge is projected to carry 4.6 million vehicles (annual average daily traffic of 12,600 times 365 as shown in Figure 8 of the 2035 Traffic Alternatives Report included on the CD that accompanies the DEIS and this FEIS). To replace the traffic that could be serviced by a Mid-Currituck Bridge with a ferry would be to require NCDOT to ultimately increase its existing service by four times.

The San Juan service is one part of the Washington State Ferry Service, serving Puget Sound, which is the largest ferry system in the world in terms of the number of vehicles carried (over 10 million vehicles per year), including five routes that carry 1.7 to 2.1 million vehicles per year each. As of 2010, 20 ferries operate on Puget Sound. The largest vessels in this fleet carry up to 202 vehicles. Puget Sound has an average depth of 450 feet. In contrast, a typical NCDOT vessel carries 40 vehicles. Currituck Sound rarely gets deeper than 6 feet (and several areas are only a foot deep). Thus, although the San Juan Island service, and the larger Washington State service that the San Juan service is a part of, offers equivalent annual vehicle transport volumes, it is accomplished with a much larger vessel designed to operate in a setting with much greater water depths than the situation in North Carolina and Currituck Sound.

Thus, none of the examples of other ferry services offered by SELC are a reasonable alternative to meet the purpose and need of this project. Finally, if a Mid-Currituck Bridge were not built, ER2, widening existing roads, would be a better choice than a ferry alternative. ER2 was found in the Alternatives Screening Report to meet the project purpose and need better than a ferry alternative.

12. **Comment:** Similarly, the DEIS barely mentions a bus transit service alternative. Agency comments on the previous 1998 DEIS noted that "[p]ublic bus transit would benefit travel on NC 12 and it should have some appeal and feasibility because of the narrow, linear nature of the Outer Banks and seasonal tourist travelers." The current DEIS, however, refers again to the Alternatives Screening Report for further explanation of why bus transit would reap only "minimal" benefits. (DEIS 2-41.) That report does not define a bus transit alternative, explaining that "specific design and operational characteristics of the Bus Transit Alternative were not developed pending a finding on whether or not the potential benefits of transit made it an option worth pursuing in further detail." According to the report, the study team found that transit was not an option worth pursuing further based on a hypothetical 16.8 mile trip. As the report explains: "It was assumed that if the bus under uncongested conditions takes longer to make this trip than an automobile under worst-case congested conditions (No-Build Alternative), then it could be concluded that transit would offer no benefit." Because the time needed for passengers to "walk to the bus," "wait for the bus," "ride the bus with the bus stopping every one-half mile for one minute to take on passengers, and walk to their destination," would be greater than the driving time under congested conditions, the report concludes that "it is likely that bus transit would be little used if provided." Notably, such an evaluation would support the elimination of much, if not most, existing bus transit across the country. The Report does not support its transit analysis with references to other authorities, or explain why its trip comparison is an appropriate criteria for determining the demand for transit or its usefulness for mitigating congestion along the Outer Banks.

    Response: *The technical reports were included on the CD that accompanies the DEIS and this FEIS (hard copies were available at the DEIS and FEIS public review locations) and are a part of the assessment of impacts and the Administrative Record. This includes the Alternatives Screening Report. This comment focuses only on one aspect of the bus transit analysis and its assumptions, travel time on NC 12. The full bus transit analysis documented in the Alternatives Screening Report noted five limitations of the project setting that were taken into account, the unlikelihood that bus transit could capture trips by tourists traveling to and from the Outer Banks, and that bus transit would not aid in reducing hurricane clearance times. A specific design and operating characteristics for bus transit were not developed and analyzed because the Bus Transit Alternative would not meet the project purpose and need based on the analysis presented in the technical report. If the screening analysis had revealed that a Bus Transit Alternative could meet the purpose and need of the project, then specific design and operating characteristics would have been developed to further assess the merits of the alternative.*

13. **Comment:** Further, the DEIS fails to provide an adequate explanation of why the improve existing "ER2" and "No-Build" alternatives do not meet the project purpose and need in comparison with the Bridge alternatives. This deficiency relates back to the unrealistic traffic projections for the project area. The DEIS does not expressly present these projections, however, but instead presents a chart with metrics such as "congested vehicle miles traveled," and "hurricane evacuation benefit." In support

of its conclusion that the Bridge alternatives best achieve these objectives, the DEIS refers to both the Alternatives Screening Report and the 2035 Traffic Alternatives Report. The DEIS does not adequately disclose that its analysis relies on the assumption that the same number of cars would travel through the project area to the Outer Banks, regardless of whether a bridge is built, existing roads are expanded, or no new road capacity is added at all. In fact, these different scenarios would result in significant differences in traffic volume that must factor into any meaningful analysis of alternatives. Until this is done, the upgrade alternative cannot be eliminated.

Response: *The No-Build Alternative would not meet the purpose and need because doing nothing would not reduce congestion, travel time, or hurricane clearance times. All of the detailed study alternatives evaluated in the DEIS would meet the project purpose and need to varying degrees. ER2 would meet the purpose and need of the project, but not as well as MCB4. As stated in Section 2.2 of the DEIS and this FEIS, ER2 would offer the least traffic flow and travel time benefit of the detailed study alternatives. As noted in the SELC's comment, the traffic projections are presented in the 2035 Traffic Alternatives Report, which was included on the CD that accompanies the DEIS and this FEIS and was available as a hard copy at public review locations. Regarding the traffic forecast comment, see the response to SELC comments 6 and 8.*

Environmental Impacts

14. **Comment:** An EIS must contain a full and fair discussion of significant environmental impacts and the impacts must be discussed "in proportion to their significance." Citizens Against Burlington, Inc. v. Busey, 938 F.2d 190,200 (D.C. Cir. 1991). Here, the DEIS has improperly given short shrift to the impacts to natural resources that would be caused by construction of the Toll Bridge alternative. The DEIS portrays the area's natural resources as hopelessly compromised by existing development, and suggests, without support, that the Toll Bridge will not significantly compound existing stresses on water quality, wildlife habitat, fisheries, and waterfowl populations. In fact, development restrictions and other carefully targeted policies can help to reduce these stresses on the environment, just as targeted improvements to existing roadways can help to reduce traffic congestion during the peak tourist season and hurricane evacuations. The Toll Bridge, however, would fundamentally alter the ecological and socioeconomic character of the area. The DEIS gives only a superficial analysis of the Bridge's direct environmental impacts, and perhaps most egregiously, refuses to even acknowledge the significant indirect and cumulative impacts that this project would cause by spurring intensive development along the shifting sands of the North Carolina Outer Banks. A new DEIS should address these issues, as discussed below.

Response: *NCTA disagrees with the SELC's opinion that the bridge would alter fundamentally the ecological and socioeconomic character of the area or spur substantial new development. See the responses to the specific indirect effects comments (15 to 19) below. A new DEIS is not needed. Note that Currituck County and Dare County's municipalities all*

have development restrictions and other carefully targeted policies contained in the land use plans and development regulations and these regulations are in addition to federal and state regulations intended to protect the natural environment.

Indirect Effects: The DEIS's Consideration of Induced Growth

15. **Comment:** The 1998 DEIS for this Project acknowledged that the Bridge would induce a significant increase in development along the Currituck Outer Banks and the rest of the project area. For example, it estimated that "the bridge would allow an estimated 2,473 additional homes along Currituck Outer Banks." Nevertheless, the 1998 DEIS gave little consideration to the indirect and cumulative impacts caused by the increased development, concluding that the impacts "would be similar for the Bridge and No-Build Alternatives." Comments from almost every federal and state government agency involved in the project indicated that this conclusion was wrong and that the analysis was inadequate to satisfy the National Environmental Policy Act:

    "This project cannot be thoroughly evaluated without a comprehensive discussion of secondary and cumulative impacts."

    "[H]urricane evacuation time increase and increased traffic congestion should be included in the secondary and cumulative impacts section. Specifically, the new bridge will promote greater development in a high hazard, storm prone area."

    The DEIS "appears to base levels of development on the opinions of local realtors."

    "[The DEIS] states, 'The potential for negative impacts to water quality would be similar for the Bridge and No-Build Alternatives.' . . . we disagree with the above statement…."

    "The basic issue that must be addressed is whether it is appropriate for NCDOT/FHWA to consider any alternative that would support levels of Outer Banks development incompatible with long-term environmental quality."

    "The Division continues to be concerned with the secondary and cumulative impacts associated with the bridge alternative."

    "[T]he 'No-Build' alternative would not promote the adverse secondary and cumulative impacts (water and sewer projects and increased traffic on NC 12, which is already at capacity according to NCDOT traffic counts) associated with providing quicker access to the Currituck County Outer Banks."

    "The DEIS accurately notes that the project is not likely to directly affect these [endangered] species since no construction is proposed for beach areas. However, the influence of an increased human presence, both as day visitors and

seasonal residents, would extend for many miles both north and south of the eastern bridge terminus."

"[I]t should be noted that providing quicker access to Currituck Outer Banks would not only accelerate development but would also promote increased traffic and the potential for water quality degradation resulting from the direct discharge of stormwater from the bridge deck into Currituck Sound. . . . The community's ability to deal effectively with any increased need for additional water use, wastewater treatment and other infrastructures is a very important part of the success of this proposal and should be considered throughout the planning stages of this project."

Twelve years have passed since these comments were submitted on the first DEIS for this project. The new DEIS provides virtually no specific information regarding why any of the above concerns should have lessened. Indeed, the current DEIS now presents analysis of indirect impacts, making only conclusory statements such as that "[f]orecast development would be the predominant contributor to cumulative impacts, irrespective of whether a detailed study alternative is implemented," and "the extent of development on the Outer Banks by 2035 would be the same with or without the bridge." (DEIS xx, Table S-1.) The DEIS fails to support this assertion or to present an adequate analysis of the significant secondary and cumulative effects that clearly would result from building the Toll Bridge.

Response: *The comments quoted above represent the opinion of the commenters on a DEIS that was rescinded and no longer applicable. The current DEIS is a new, fresh look at environmental impacts and comments should address the current DEIS. NCTA understands that there will be opposition to the project and welcomes all comments and opinions whether in opposition or support of the project. NCTA stands behind its assessment of the potential for indirect (secondary) and cumulative impacts as presented in the DEIS. The 1998 DEIS made the assumption that traffic growth and in turn development would be constrained by high levels of congestion. For the current analysis, it was decided that it would be more reasonable to evaluate project benefits to unconstrained traffic assuming that planned development occurred. Thus, the project's traffic forecasts assume full build-out of the NC 12-accessible Outer Banks north of US 158 in Dare and Currituck counties, as well as additional development north of the end of NC 12. The DEIS in Section 3.6.1.4 and the Indirect and Cumulative Effects Technical Report in Section 4.2.3 indicates that the No-Build Alternative could constrain growth from what is expected and planned. In response to this comment and similar ones from other commenters, this potential for constrained growth has been quantified and added to this FEIS in Section 3.6.1.4 and the revised Indirect and Cumulative Effects Technical Report in Section 4.2.3. The current potential for constrained growth takes into consideration changes in travel patterns and levels of build-out that have occurred since the 1998 DEIS. At the time of the 1995 assessment presented in the 1998 DEIS, build-out from Southern Shores to the Virginia line was approximately 16,954 homes and hotel rooms. In 2007, build-out was approximately 15,418 homes and hotel rooms. Developers have chosen to finalize development plans associated with approved planned unit developments with fewer units than allowed by general planned unit development guidelines.*

Lots have been consolidated in the non-NC 12-accessible Outer Banks. See the response to SELC comment 18 below.

16. **Comment:** The DEIS's brief analysis of induced development is internally inconsistent, seemingly claiming that the transportation improvements described in the DEIS would both facilitate development and have no effect on development. On the one hand, it maintains that "lack of transportation improvements and associated growing congestion could constrain development under the No-Build Alternative." But at the same, the DEIS claims that "transportation improvements have little effect on the demand for and rate of development," and in any event, the project area "is already largely developed." (DEIS 3-89.) The DEIS does not clarify the meaning of "developed." Recent estimates, however, put the total number of vacation rental properties along the Outer Banks north of the Wright Memorial Bridge at approximately 4,500. So if the DEIS is correct in its prediction that the area is already "largely developed," the construction cost of the Toll Bridge comes to well over $100,000 per vacation rental property serviced.

    Response: *See the response to SELC comment 15 regarding the constraint on development of the No-Build Alternative. The project would not facilitate development except as noted in Section 3.6.1 of the DEIS and this FEIS on the mainland near the US 158/Mid-Currituck Bridge interchange. The project would serve planned development as reflected in land use plans and the extent of subdividing on the Outer Banks. While the detailed study alternatives would reduce traffic congestion as a potential constraint on planned and expected development, they are not expected to generate unplanned development from the perspectives of either quantity or density. The number of developed (having buildings on them) residential properties along the Outer Banks in 2007 was approximately 8,800 (out of approximately 13,500) according to the towns of Southern Shores and Duck and Currituck County (see Table 4-7 of the revised Indirect and Cumulative Effects Technical Report). There also are currently 252 hotel rooms in Duck and Currituck County, with 1,250 more hotel rooms included in approved development plans in Currituck County.*

17. **Comment:** The various sources cited by the DEIS indicate that the project area is not intensively developed. According to the Currituck County Land Use Plan (hereinafter "2006 Land Use Plan"), the northern Outer Banks area contained a total 3,100 residential lots," of which "436 (15%) were developed," leaving significant room for development to be encouraged. The DEIS cites population and growth estimates from the 2006 Land Use Plan as support for its conclusion that the Toll Bridge "would not notably contribute to cumulative impacts." (DEIS 3-96.) But the 2006 Land Use Plan predicts that "the Mid-County Bridge will have a huge influence on development patterns throughout much of Currituck County," and that "pressure for additional development in Corolla and especially Carova will increase dramatically with improved access to these two areas." Similarly, the DEIS reports that a "Vision Plan" for the area does "not indicate a net increase in overall business or residential development on the Outer Banks related to the detailed study alternatives." (DEIS 3-91.) In fact, the "Vision Plan" makes the vague assertion that "Corolla and Carova are fairly well developed already," but it further warns that

"[c]urrently, there does not exist proper infrastructure to support the quantity and type of businesses the Mid-Currituck Sound Bridge will draw-access to central water and sewer, garbage collection, effective stormwater management, and the Internet…." These infrastructure needs, like the Bridge's other indirect impacts, similarly receive less consideration in the current DEIS than in the 1998 version of the document.

Response: *The commenter accurately cites the quotes of the 2006 Currituck County land use plan from Section 5: Community Facilities analysis, in a subsection on the impacts of possible transportation improvements. This specific comment was discussed with Dan Scanlon, County Manager, and Ben Woody, County Planning Director. It was their opinion that the quoted section in the CAMA plan was a descriptive inventory that did not constitute a hard look at the growth impacts of a bridge and, even at that, did not account for the current state of planning and development in the beach communities. Most importantly, they contended that Section 9: Land Use and Development Policies contained the critical statements of community trends. These policy statements are comprehensive including the five standard categories for CAMA land use plans (public access, land use compatibility policies, infrastructure carrying capacity, natural hazard areas, and water quality), as well as two ad hoc categories (local countywide concerns and subarea concerns). In this last category Special Policies Applicable to the Outer Banks are enumerated. They include the following:*

- *POLICY OB4: Currituck County supports policies and actions that require the square footage, number of bedrooms, and/or occupancy levels of RESIDENTIAL STRUCTURES to be determined in proportion to lot size, as well as public health and safety issues concerning water supply and sewage disposal, fire safety, emergency services, parking, traffic loads during evacuations, etc.*

- *POLICY OB5: Currituck County, through its actions and decisions, shall seek to preserve the historic character and heritage of the COROLLA VILLAGE area of the Outer Banks.*

- *POLICY OB6: Concerning OFF-ROAD AREAS OF THE OUTER BANKS, Currituck County shall not permit or encourage the provision of growth-inducing facilities and services to these areas, including for example, commercial services, centralized sewage treatment and hard surface roads.*

- *POLICY OB7: VEHICULAR ACCESS TO THE NORTH BEACHES (off-road area) shall not compromise the environmental integrity of wildlife refuges, the estuarine research reserve, other ecologically sensitive areas, or habitat for wild horses. Structures or other man-made improvements not specifically serving the public interest shall not be permitted to block vehicular access along the beach.*

- *POLICY OB8: in order to protect WILD HORSES, Currituck County shall not permit nor encourage the provision of hard surface roads in the off-road areas of Carova.*

Moreover, when asked specifically about their expert assessment of the growth impacts of a bridge, Mr. Scanlon and Mr. Woody concurred with the analytical scenarios described in the

Indirect and Cumulative Effects Technical Report and summarized in the DEIS and this FEIS.

The "Vision Plan" is focused only on development on the mainland near the US 158/Mid-Currituck Bridge interchange. It does not address development on the Outer Banks. The first "Vision Plan" quote is presented in the context of reasons why induced economic development would be concentrated on the mainland. The second quote is focused solely on development around the interchange, and its context is that unless Currituck County invests in infrastructure, the development might not occur.

18. **Comment:** The DEIS claims that the bridge would not affect the level of development on the Currituck Outer Banks in part because existing area land use plans would limit any such growth. According to the DEIS, "current development regulation and past trends associated with implementation of these plans are indicative of the local jurisdictions' commitments to implement these plans as they stand." (DEIS 3-89.) The Transportation Agencies made a similar claim in the Mullin case to defend their conclusion that a "new bridge will not spur significant increased development at Sunset Beach." Mullin, 756 F. Supp. at 921. In no uncertain terms, the Federal District Court for the Eastern District of North Carolina rejected the Agencies' suggestion that land use regulations would remain static, calling it "so utterly devoid of common sense and inconsistent with NEPA that it cannot be taken seriously." Id. The court went on to conclude that it "did not need plaintiffs' experts to tell it that zoning changes inevitably follow development pressures. To believe otherwise is to ignore reality." Id. The DEIS nevertheless repeats this approach, failing to take the requisite "hard look" at the environmental impacts of growth induced by the bridge.

    Response: *As indicated under SELC comment 9, at question here is whether highway projects, or a least ones such as this that improve access to otherwise accessible areas, in turn cause new traffic-generating development, including changing land use plans and associated zoning. While one cannot categorically say it does not, one cannot categorically say it does. Recent studies (see Ewing, 2008) challenge the popular notion that highway infrastructure causes net development. Nonetheless, new infrastructure can shift the timing and sequence of development locally even when there is no net increase. Changes in land use patterns are particular to the project and to the region. Transformative land use changes are most likely to occur where entirely new modes of access are created, such as when a fixed span bridge replaces a ferry, or when a highway structure creates new direct access to otherwise undeveloped localities.*

    Mullin v. Skinner found that the Environmental Assessment with a Finding of No Significant Impact was insufficient based on a finding that rejected the blanket assertion that no induced traffic or development would occur because it was contrary to existing plans. In that case, the court found that a "hard look" at the case would be necessary and thereby ordered a full Environmental Impact Statement (EIS).

    Subsequently, a full EIS was completed and a Record Of Decision were published in August 1999 with a recommended alternative of a fixed span bridge. This FEIS included a land use

study using analogous case studies as well as traffic projections made accordingly. Analogous case studies are an accepted method of qualitative analysis in the National Cooperative Highway Research Program (NCHRP) Report 466: Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects. In Hunt v. NC Dept. of Transportation, 299 F. Supp. 2d 529 (E.D., N.C. 2004), plaintiffs again sued alleging, among other things, that the wrong comparatives were used in the land analysis and the traffic projections were flawed. Reviewing the administrative record, the court rejected both complaints. With respect to the land use analysis the court found that "Agencies are free 'to select their own methodology as long as that methodology is reasonable.' Hughes River Watershed Conservancy v. Johnson, 165, F. 3d 283,289 (4th Cir. 1999)". With respect to NEPA requirements, the court found that regardless of the plaintiffs' dissatisfaction, the "defendants took a 'hard look' at the effect the bridge would have on the environment, including secondary development effects…. Having found that the agency took a 'hard look' at the effects of the bridge project, this FEIS is deemed adequate and the agency has complied with NEPA."

The DEIS (Section 3.6.1.4) and the Indirect and Cumulative Effects Technical Report (Section 4.2) provide detailed analytical scenarios of potential development in the project area. These same sections are included in this FEIS and the revised Indirect and Cumulative Effects Technical Report.

19. **Comment:** The DEIS indicates that the Transportation Agencies have a responsibility to "minimize impacts associated with the US 158/Mid-Currituck Bridge Interchange itself," but otherwise the "significant cumulative effects . . . associated with continued development. . . would be the responsibility of Currituck County." (DEIS 3-97.) This is a derogation of the Agencies' analysis and disclosure duties under NEPA. The Agencies should issue a new DEIS that evaluates all of the likely indirect effects of the Toll Bridge versus other alternatives, and also identifies and discusses available mitigation strategies.

    Response: *The DEIS thoroughly evaluated the indirect and cumulative impacts of the detailed study alternatives. Available avoidance, minimization, and mitigation strategies are disclosed in Section 3.6.3 of the DEIS and this FEIS for both the one induced development impact found and cumulative impacts. They include potential actions by local government. NCTA will do what is within its jurisdiction (such as access control, as mentioned in Section 3.6.3), but the remainder would be left to local government since they have the legal authority to carry them out.*

Significant Impacts on Natural Resources

20. **Comment:** Laboring under the assumption that the Toll Bridge would not cause any additional development along the Outer Banks, nor even attract any additional day visitors, the DEIS completely ignores some of the most significant impacts associated with the Toll Bridge. As one court has explained, for an agency "to ignore the indirect effects that result from its actions would be to . . . wear blinders that Congress has not chosen to impose." Riverside Irr. Dist. v. Andrews, 758 F.2d 508,

512 (10th Cir. 1985). Here, the DEIS fails to adequately address and evaluate the likely substantial impacts, including the indirect effects of induced traffic and development, on the following significant natural resources:

Response: *The project is not expected to induce traffic beyond what is forecast given the development assumptions used in the forecast (including full build-out in the NC 12-accessible Outer Banks in the project area). Impacts of that traffic represent a worst-case.*

Impacts to Waterfowl

21. **Comment:** The DEIS does not adequately address adverse impacts on waterfowl in Currituck Sound, given the area's significance as waterfowl habitat, especially for large numbers of wintering and migrating birds. Currently, the DEIS focuses more on the history of waterfowl use of the area, rather than on future effects of the Toll Bridge on waterfowl. On page 3-39, the DEIS reports reductions in waterfowl numbers as if it were a reason to give less consideration to the needs of waterfowl, instead of acknowledging that development impacts have contributed to much of the previous decreases and the development stimulated by the Toll Bridge would further contribute to the decline of waterfowl populations in the area. The proposed bridge is likely to directly reduce or remove habitat, including foraging areas, for waterfowl through the loss of wetlands and the birds' food sources found there. It would also pollute the waters used by waterfowl with runoff from the bridge and roads. The increased traffic, with its accompanying increased activity, noise, and potential for direct collisions between birds and vehicles, could disturb waterfowl, fragmenting and reducing the area's utility as resting and wintering habitat, and eventually causing sensitive species to abandon the area altogether. Among the birds that will be affected are waterfowl (including ducks, geese, swans, etc.), waterbirds (including ospreys and various species of terns), shorebirds (including plovers and sandpipers), marsh birds (including rails and bitterns), wading birds (including herons, egrets, and ibis), and the occasional bald eagle. These effects should be acknowledged and examined.

    Response: *USFWS mid-winter waterfowl survey data (2001 to 2009) indicate that waterfowl usage of Currituck Sound has exhibited a general decreasing trend, similar to the entire Outer Banks, except around Pea Island National Wildlife Refuge, which has been generally increasing. Much of the Outer Banks between Rodanthe and the Core Banks have remained relatively natural and undeveloped and still exhibit a trend similar to the Currituck area. Overall waterfowl numbers for the State of North Carolina from this same time frame have generally increased, suggesting that other areas of North Carolina have become more important to wintering waterfowl in recent years.*

    The Preferred Alternative would result in the direct loss of the following potential waterfowl habitat: 0.0 acres of SAV habitat (including existing beds) and 0.1 acres of open water. No coastal, brackish, or freshwater marsh would be directly lost by the Preferred Alternative. The potential effects of runoff from the bridge would be addressed in a stormwater management plan currently under development in coordination with appropriate

environmental resource and regulatory agencies. The stormwater management plan would be a requirement of water quality-related permits. Section 2.1.7 of this FEIS presents strategies currently planned. They were developed in coordination with environmental resource and regulatory agencies, including NCDENR-DWQ.

Bird usage, in general, is high along the Outer Banks, especially during migration for both land and water birds. Regular shorebird use of the area is more common along the oceanfront and irregular along the soundside shoreline. Water levels and exposed mudflats, within the sound, are primarily influenced by wind speed and direction. The most favorable shorebird conditions exist when winds from an easterly direction expose muddy shorelines along the Outer Banks. Shorebird richness is often higher during these conditions and during migration. Shallow water and marshy shorelines away from relict tidal deltas are used by fewer shorebird species but will harbor some species that favor this habitat (i.e., yellowlegs and snipe during appropriate seasons).

Many waterbird species (i.e., especially ducks, geese, swans, coots, rails, bitterns, herons, egrets, and ibis) and larger aggregations of waterbirds favor marshy shallow areas in the vicinity of old inlet tidal deltas. The Preferred Alternative avoids dissection and fragmentation of these marshy old tidal deltas. Most areas noted for attracting and harboring a diversity of waterbirds, and those preserved natural resource areas, are found near these marshy areas. The locations of historic hunt clubs, Currituck, Pine Island, Monkey Island, and Swan Island were all associated with marshy islands and shorelines. Most current preserved natural resource areas along the Currituck Outer Banks are north and south of the Preferred Alternative in areas that contain and support marsh communities (i.e., the North Carolina Coastal Reserve and National Estuarine Research Reserve, Currituck National wildlife Refuge, and the Pine Island Audubon Sanctuary).

It is expected that the Preferred Alternative would not result in an impact any different from similar existing bridges (Alligator River Bridge – 2.7 miles over the mouth of Alligator River, the Virginia Dare Memorial Bridge – 4.7 miles and Mann's Harbor/William B. Umstead Bridge – 2.7 miles, both over the Croatan Sound, Washington Baum Bridge – 0.8 mile over Roanoke Sound, and the Wright Memorial Bridge – 2.8 miles over the Currituck Sound). All of these bridges are aligned generally east/west, and thus have the potential to intercept north/south migrating birds. General observations indicate that most bird fatalities associated with bridge traffic are not waterfowl, but terns (Bard et al., 2001) and brown pelicans (Owens and James, 1991). Gulls, cormorants, and occasional wading birds also have been observed on the Wright Memorial Bridge during field work.

It is anticipated that some waterbirds may be disrupted in the vicinity of the bridge during construction mostly during winter months, but the primary feeding/foraging, resting, and nesting sites are associated with marshy and shallow water areas to the north and south of proposed bridge alignment with the Preferred Alternative. It also is likely that birds may become accustomed to the elevated bridge (and its visual presence and associated noises) and will continue to use some areas near the road/bridge, like waterfowl found in the vicinity of Bonner Bridge, and along roads within Pea Island and Lake Mattamuskeet National Wildlife Refuges.

Waterfowl are added as a specific notable feature in Table 3-18 of this FEIS and Table 5-1 of the revised Indirect and Cumulative Effects Technical Report. Cumulative impacts to waterfowl are discussed from the perspective of cumulative impacts to their habitat in Section 6.3.2.11 of the revised Indirect and Cumulative Effects Technical Report. It concludes that there "would be no substantial impact on waterbirds in the ICE study area."

22. **Comment:** The DEIS should also consider construction methods and technologies to discourage birds from perching and nesting on or around the bridge itself, in order to reduce the likelihood of collisions.

    Response: *NCTA would use standard details for installed features used to discourage roosting/perching birds. During final design, NCTA would investigate proven methods of reducing collisions between vehicles operating on the bridge and flying birds and incorporate them as appropriate.*

Fisheries

23. **Comment:** The DEIS fails to adequately support its conclusion that the Toll Bridge "would not have a substantial long-term adverse impact" on designated fisheries and submerged aquatic vegetation (SAV) habitat in the area. (DEIS 3-50.) In fact, it presents information that that is inconsistent with this conclusion. For example, the Essential Fish Habitat Technical Report notes that the bridge would "introduce a new source of pollution (via bridge runoff)" that may justify various mitigation measures as the "amount of runoff and associated impacts to water quality are dependent upon the method implemented to manage bridge runoff." At the same time, the report indicates that it assumes no mitigation measures would be in place to treat runoff, yet without further discussion of the amount of runoff and associated impacts to water quality that would occur under that scenario, it concludes that no substantial long-term effects would result. With respect to secondary and cumulative impacts of the Bridge on fish habitat, the DEIS and its supporting documents again fail to acknowledge factors, such as increased storm water run-off, increased erosion, increased wetlands fill for commercial and residential structures, and overfishing, related to increased access to the area, nor is there any discussion of possible mitigation strategies.

    Response: *NCTA would comply with NC Session Law 2008-211 (An Act to Provide for Improvements in the Management of Stormwater in the Coastal Counties in Order to Protect Water Quality) to the maximum extent practicable for the additional impervious surface area created by this project. NCTA is committed to preparing a stormwater management plan to mitigate the Preferred Alternative's potential impact on water quality (see Section 2.1.7 of this FEIS). It would include source control (using modern pavement sweeping and vacuuming technology), stormwater capture at the ends of the Maple Swamp Bridge, stormwater capture over SAV habitat (including existing beds) at the east end of Mid-Currituck Bridge, treatment of existing impervious road surface where the project improves those roads, and water quality monitoring and research.*

Existing road drainage patterns and typical road drainage systems are assumed in association with improvements to US 158 and other new roads associated with the detailed study alternatives, including the Preferred Alternative. Customary BMPs would be used for runoff from new and improved roads. Infiltration strips would be used along NC 12. There would be no outfalls from NC 12 to any bodies of water.

Future development in the project area also must meet the requirements of NC Session Law 2008-211 (An Act to Provide for Improvements in the Management of Stormwater in the Coastal Counties in Order to Protect Water Quality), including capturing and treating the first 1.5 inches of runoff from new impervious surfaces. Wetlands in the indirect and cumulative impact study area are not listed in area land use plans as suitable for development. The availability of suitable land for future development was discussed in Section 3.6.2.3 of the DEIS and this FEIS. Section 3.6.3 of the DEIS and this FEIS discusses possible strategies for minimizing indirect and cumulative effects.

Currituck National Wildlife Refuge, Natural Heritage Areas and other environmentally significant areas

24. **Comment:** The DEIS includes inadequate analysis of impacts on numerous barrier island areas and ecosystems in the vicinity of the Project that are environmentally significant. Thousands of acres of pristine coastal habitat are maintained for the public's enjoyment by numerous groups, including the federal and state governments, the National Audubon Society, the Nature Conservancy, and other non-profits. The areas include Currituck National Wildlife Refuge, Pine Island Audubon Sanctuary, Nature Conservancy land, Currituck Banks National Estuarine Reserve, and at least ten other Natural Heritage Areas. They provide habitat for the federally protected sea turtles and other species listed on p. 3-53 of the DEIS, as well as the many bird species listed above in section C(3)(a), wild horses, deer, fox, raccoons, wild hogs, etc. The remoteness and abundance of wilderness are clearly an important part of the reason people live in and visit the area. Besides the many nature preserves and natural areas listed above, other tourist attractions also center around outdoor activities like kayaking, hiking wilderness trails, visiting the Outer Banks Center for Wildlife Education, viewing the local wild horse herd, bird watching, etc.

    Response: *The analysis indicates that the past and future trends of the indirect and cumulative effects study area are towards changing and developing landscapes. The revised* <u>*Indirect and Cumulative Effects Technical Report*</u> *discusses the indirect and cumulative effects on conservation areas in Sections 6.2.2.16 and 6.3.2.16 and related sections. In addition to the impacts on notable features, the analysis also includes a discussion of the impacts at the landscape level in Sections 6.2.1 and 6.3.1. On the mainland landscape, the bridge alternatives would be expected to result in an "induced development zone" of up to 34 businesses on 68 acres. On the Outer Banks landscape a bridge alternative would be expected to change the order and timing of development, but not increase the final planned development.*

25. **Comment:** Construction of a Toll Bridge would adversely impact these areas and attractions, and reduce not only the quality of the experience for visitors but also the economic vitality of the nature-related tourism industry, through increased traffic, encroaching development in or near the natural areas, and the accompanying noise, water and air pollution, wildlife habitat fragmentation and degradation, etc. For those areas north of the end of NC 12, the impacts would also include either increased traffic on the fragile beach or the construction of a paved road access (for instance, an extension of NC 12) through the pristine natural areas. Depending on the tide and the state of the beach, many vehicles per day drive on the beachfront section of the National Wildlife Refuge, already degrading the beach and disrupting any wildlife attempting to nest, forage, or rest there. Additional driving on the Refuge and beach areas would further degrade those resources.

Response: *The primary issue contained in this comment relates to indirect and cumulative impacts on nature-based tourism, which is implied as especially important north of the end of NC 12. The concern of the indirect and cumulative effects analysis would be those impacts to which transportation improvements would contribute. However, it is important to note that the cadastral land use patterns are well established in the NC 12 area, and even in the northern beaches subdivisions and county land use policies govern the land use patterns. The areas that are zoned for conservation are controlled by public agencies or conservancies. The end-stage fragmentation of the landscape is set by this ownership pattern. There are no known plans for any transfer of land from private residential zones to conservation or vice versa. The only recent examples of this were a land swap across NC 12 by the Audubon Society near Pine Island, and, in the northern beaches, Wild Horse Estates, a recent development, set aside a portion of its acreage for permanent conservation.*

The construction of a bridge alternative would not be expected to increase planned development on the Outer Banks and would be consistent with existing land use plans. Further analysis has affirmed that with a No Build Alternative, there could be traffic congestion that could constrain tourism and development. (See the response to USACE comment 18.) While this does indicate a potential land use differential between scenarios with a bridge or with no bridge, causing growth management tactics and indirectly forcing conservation in private residential zones by maximizing traffic congestion is not consistent with the local CAMA land use plans.

The second issue concerned the ecological effects of current beach driving and the potential effects of increased beach driving. Implied in the comment is that a bridge would cause increased beach driving, presumably through increased day visitors to the northern beaches or by increased traffic-generating development in the northern communities. By improving access and reducing congestion on the roadways, a bridge has the potential to increase the demand for beach driving. As discussed in the response to USACE's comment 18, how and under what conditions that demand is realized depends on numerous conditions. An expanded treatment of this topic has been added to Sections 4.2.2 and 8.3 of the revised <u>*Indirect and Cumulative Effects Technical Report*</u>*.*

26. **Comment:** These impacts should be acknowledged and examined in more detail. Currently, the DEIS acknowledges the existence of some areas, but focuses primarily on the Natural Heritage Areas in the immediate project area and barely assesses the effects on them at all. Table 3-5 purports to contain an analysis of "Permanent Impacts to Biotic Communities," but groups communities in large categories and presents the information in a cursory manner with little underlying data. In so doing, the DEIS fails to enable a reader to evaluate the analysis and conclusions and to comment on it, in violation of NEPA.

    Response: *More detailed versions of DEIS Table 3-5 are contained in the original NRTR, which was referenced in and distributed on a CD that accompanied the DEIS. The information summarized in Table 3-5 is considered to be the key differentiators between alternatives.*

    Impacts to Natural Heritage Areas are indicated in Section 3.3.2.3 of the DEIS and this FEIS. There are three Natural Heritage Areas in the project area. All of the detailed study alternatives would affect the eastern fringe of Great Swamp. MCB2 and MCB4 would pass through Maple Swamp. The bridge corridor, however, was placed so that there would be no permanent loss or alteration of the unique loblolly bay (Gordonia) forest that was found within the swamp until it was logged. Drainage improvements along NC 12 with ER2 and MCB2 would affect the fringe of the Pine Island/Currituck Club Natural Area where it borders NC 12. Impacts resulting from these encroachments, two of which are minor and one that avoided the most notable part of the area are discussed throughout the natural resource impact assessment in the DEIS. For this FEIS, we added to Section 3.3.2.3 the number of acres used by biotic community type on the fringe of Great Swamp and the Pine Island/ Currituck Club Natural Area to make clear that the impact would be minor. The Preferred Alternative would not affect the Pine Island/Currituck Club Natural Area. In addition, the impacts to Maple Swamp discussed throughout the assessment are summarized in Section 3.3.2.3. The Preferred Alternative would bridge Maple Swamp in an area adjacent to an existing power line corridor through the swamp. Most of the corridor was logged in the last few years. Similar changes were made in Section 4.1.2 of the revised NRTR.

Wildlife Habitat in Maple Swamp

27. **Comment:** The DEIS's analysis of impacts on ecologically significant areas on the mainland side of the Sound is also inadequate. Most notably, the large area known as Maple Swamp and its unique Gordonia forest would be bisected by any of the options that involve construction of a Toll Bridge, either by construction of a road on fill or by bridging it. Although the forest has been degraded already by logging and clear-cutting, this fact is not clearly acknowledged in the DEIS. This past degradation is not justification for downplaying the Toll Bridge's impacts on the area, but rather a reason for increased concern and protective measures. Among other issues, the recent clear-cutting will cause more severe flooding in the area of the planned bridge terminus.

Response: *The DEIS was completed prior to much of the logging. This FEIS updates habitat information to reflect the logging. The C1 and C2 corridor does not pass through what was Maple Swamp's unique Gordonia or loblolly bay forest. Avoiding the loblolly bay forest was the reason for dropping bridge corridors C3 to C6 during the alternatives study (see pages 59 to 60 of the Alternatives Screening Report on the CD included with the DEIS and this FEIS).*

The floodplain modeling was revised between the DEIS and this FEIS taking into account recent logging. No changes in flood levels were found to result from logging. The revised floodplain modeling is described in Section 6.3 of the revised Other Physical Features Technical Report.

Finally, logging has not been used as justification for downplaying impacts, but it does change the impacts.

28. **Comment:** Further degradation of the forest and of wildlife habitat - through fragmentation, runoff pollution, etc. -are likely significant effects of the project. The DEIS discusses briefly a plan for providing wildlife passage under a road through pipes and culverts, but does not explain, for instance, how these would be useful to wildlife when they are filled with water. In general, the DEIS provides scant analysis of these effects, and any proffered mitigation, that is insufficient to pass muster under NEPA.

    Response: *Option B, which included wildlife crossings in its proposed fill, was not included in the Preferred Alternative. The Preferred Alternative includes Option A, which would bridge Maple Swamp. However, Option B included two bridges for use by wildlife, in addition to pipes and culverts. Pipes and culverts proposed for wildlife crossing would be designed for wildlife passage as their primary purpose as opposed for the transmission of surface water from one side of the fill to the other. If water in the swamp was deep enough, for example during a 100-year storm surge, to flood the wildlife passage pipes or culverts, wildlife that might use the pipes or culverts would be equally affected by water levels in the swamp itself.*

Air Quality

29. **Comment:** The DEIS dismisses air quality concerns, particularly regarding mobile source air toxics, without sufficient support. The DEIS reasons that the Toll Bridge would actually improve air quality because it would reduce vehicle miles traveled and congestion. As discussed above, however, the traffic projections for this project are not credible. If past experience and peer-reviewed traffic studies are any indication, the Toll Bridge would generate higher traffic volumes and congestion would meet or exceed current levels within a few years. The added capacity of the Toll Bridge, however, would mean that the traffic jams involve more cars, and more sources of mobile source air toxics, as well as carbon monoxide and other pollutants which tend to accumulate in areas with large concentrations of traffic, creating "hot spots" of contamination. A new DEIS should consider these air quality effects, based on a realistic analysis of future traffic with the Bridge. In particular, it should

examine air quality impacts in the immediate vicinity of the planned interchange of US 158 and the Toll Bridge.

Response: *As stated in response to other comments, the traffic forecasts are based on full build-out on the NC 12-accessible Outer Banks north of US 158, mainland population forecasts, and recent growth trends north of the end of NC 12. As such, they are realistic. The bridge and associated improvements were designed to minimize congestion. Overall congestion levels in the project area are expected to drop with all detailed study alternatives, as noted in Section 2.2 of the DEIS and this FEIS.*

Currituck County is in attainment with all USEPA National Ambient Air Quality Standards, including carbon monoxide and particulates (hotspot pollutants). USEPA's air quality regulations do not require hotspot analysis of pollutants in attainment areas (and neither does FHWA). The proposed US 158/Mid-Currituck Bridge interchange is designed to handle even 2035 summer weekend traffic at an acceptable level-of-service (LOS) D (heavy uncongested travel) or better at all ramp junctions. US 158 would operate, however, at a summer weekend peak hour level of service of F (highly congested) with or without the bridge project either for 25 miles north from the Wright Memorial Bridge with the No-Build Alternative or with ER2 or for 5 miles north from the Mid-Currituck Bridge. As such, at the US 158/Mid-Currituck Bridge interchange, the northbound merge and the southbound diverge to/from US 158 are anticipated to operate at LOS F. Since an interchange is used at US 158 instead of a signalized intersection, the proposed bridge project would not affect traffic congestion on US 158 north of the interchange. It would reduce congestion south of the interchange by diverting traffic from US 158. On the NC 12 side of the bridge, the proposed multi-lane roundabout in the Preferred Alternative would operate at LOS C during the 2035 summer weekend peaks.

Water Quality: The DEIS's Consideration of Water Quality Impacts

30. **Comment:** The DEIS estimates that construction of the recommended Toll Bridge alternative would require filling between forty to fifty-two acres of wetlands. The DEIS also recognizes that runoff from the bridge platform would impact water quality in the Currituck Sound, although it fails to adequately quantify and analyze these impacts. These impacts on wetlands require a Section 404 permit from the U.S. Army Corps of Engineers. Due to the deficient alternatives analysis, as discussed above, the DEIS provides an insufficient basis to conclude that, "in light of overall project purposes," the Toll Bridge qualifies as the least environmentally damaging practicable alternative. 40 C.F.R. § 230.10(a)(2).

    Response: *The DEIS did not recommend between Option A and Option B. Option B with MCB2 or MCB4 would require filling 32.0 to 47.1 acres of wetland, as indicated in Table 3-10 of the DEIS and this FEIS assuming the proposed slope stake line plus 25 feet. Option A with MCB2 or MCB4 would require filling 6.0 to 21.1 acres of wetland, as indicated in Table 3-9 of the DEIS. ER2 (no bridge) would fill 8.6 to 12.6 acres of wetland. The Preferred Alternative would fill 7.9 acres. Between the DEIS and FEIS, development of a stormwater*

management plan was initiated in consultation with federal and state environmental resource and regulatory agencies. (See Section 2.1.7 of this FEIS.) Its details will be finalized during the permit process as is customary. The Least Environmentally Damaging Practicable Alternative was the subject of conversation with environmental resource and regulatory agencies during the selection of the Preferred Alternative. USACE will not issue a Section 404 permit for the project unless they find it to be the Least Environmentally Damaging Practicable Alternative.

31. **Comment:** The DEIS also fails to adequately disclose and consider water quality impacts. According to the DEIS, water quality in the project area already "is undergoing substantial degradation because of the area's increasing population, changes in agricultural practices, and urbanization and industrialization of the region." (DEIS 3-28.) The DEIS indicates that these phenomena will continue, irrespective of whether the Bridge provides a new point of access to the Outer Banks. "Impacts to salinity, water supply and wastewater treatment should not result from any of the detailed study alternatives," according to the DEIS. (DEIS 3-29.) The DEIS fails to support this claim, and indeed, mischaracterizes the project's likely effect on water quality, ignoring altogether secondary and cumulative effects on water quality.

    Response: *The Chapter 3 section of the DEIS referenced by SELC describes potential water quality impacts related to turbidity during construction and bridge runoff. The minimization of both is further addressed in this FEIS (see Section 2.4 on construction and Section 2.1.7 on stormwater management). The proposed project would not block the influx of either fresh water or salt water into Currituck Sound and so could not influence salinity. The area's water supply either comes from private freshwater wells or from saline contaminated wells treated by reverse osmosis. The proposed project would not block groundwater flow and as such would not affect water supply. No wastewater treatment plants on the Outer Banks would be affected by the project and on the mainland where septic fields are used, no homes would be separated from their septic fields so there would be no impact to wastewater. The Indirect and Cumulative Effects Technical Report discussed estuarine water quality in Sections 6.2.2.3 and 6.3.2.3.*

32. **Comment:** The DEIS intimates that water quality in the project area has declined to a point where any additional contaminants introduced as a result of the Bridge would lack an independent significance. But a recent decline in the water quality of Currituck Sound and the rest of the Albemarle-Pamlico estuarine system demands greater, not less, consideration in the DEIS of how this project would contribute to water pollution. By exacerbating existing stresses to the system, the Bridge's impacts may have a greater effect on overall water quality than if they occurred in isolation. Moreover, the DEIS exaggerates the extent of the existing degradation, shifting the frame of reference from the project area ("closed to harvesting shellfish"), to waters "within 1.0 mile downstream of the project area" (not classified as "High Quality Waters"), to the area "crossed by the detailed study alternatives" (not designated as an "Anadromous Fish Spawning Area"). (DEIS 3-28.) In reality, while existing development in the project area has affected water quality, the Currituck Sound and

the waters feeding into it continue to serve important ecological functions, supporting fisheries and wildlife habitat, which in turn support important tourism and recreational interests. A new DEIS should adequately address how the bridge could impact these interests, and identify appropriate mitigation measures.

Response: *The descriptions and classifications are statements of fact that are important to know, and they were not provided to exaggerate the extent of existing degradation. More information on the stressors to water quality in the sound and how the project may affect it were added to this FEIS (in Section 3.3.1.3), the revised NRTR (in Section 3.2.1), and the revised Essential Fish Habitat Technical Report (in Section 5.1). As described in Section 2.1.7 of this FEIS, NCTA is committed to developing a stormwater management plan approved by NCDENR-DWQ to minimize the potential impact of project pollutants on water quality in the project area. A future bridge's contribution to cumulative water quality impacts is discussed in Section 6.3.2.3 of the revised Indirect and Cumulative Effects Technical Report.*

33. **Comment:** In order to adequately address water quality impacts, the DEIS must include a rigorous analysis of secondary and cumulative impacts. This should include consideration of the increased storm water run-off caused by development in the area, and specific abatement measures to control storm water run-off, as well as the costs associated with those measures. A new DEIS should also address sewage and water treatment issues, particularly along the Outer Banks. According to the 2006 Land Use Plan, over 95% of residents rely on "individual on-site wastewater systems," i.e. septic tanks, even though "soils with severe septic system limitations dominate the County." According to the plan, "failing septic systems" are a problem, with significant numbers of households drawing their potable water from individual wells, which are susceptible to cross-contamination. Individual wells are the only source of water in the Carova area. Water treatment facilities serve other parts of the project area, such as Corolla, but demand already meets the available capacity. A new DEIS should discuss the economic and ecological costs of providing water and sewage service to new development facilitated by the Bridge.

Response: *Groundwater resources, well water, public water supply, septic systems, package sewer systems, and municipal sewer services are important interrelated issues that also affect surface waters. As a rapidly growing county, these are important cumulative issues that are accommodated in the Currituck County CAMA Land Use Plan. Accordingly, the revised Indirect and Cumulative Effects Technical Report accounts for these phenomena in Table 5.1, which has been revised to include groundwater as a separate notable ecosystem feature. Cumulative impacts are discussed in Section 6.3.2. As there is no clear causal relationship between a future bridge and increased development over what is planned on the Outer Banks, the implication of cumulative water resource impact, as a result of the project, on the Outer Banks is refuted. (See responses to USACE comment 18 and SELC comments 15 to 18 and 25.) There would be a net increase of development on the mainland and mitigating the water resource impacts of this development would be well facilitated by a properly prepared small area plan by the local planners. Future development in the project area also must meet the*

stormwater requirements of NC Session Law 2008-211. (See the response to SELC comment 23.)

The Coastal Barrier Resources Act

34. **Comment:** The Mid-Currituck Bridge is inconsistent with the CBRA. While the Bridge would not directly enter into areas designated under the Act, it would support development in those areas. Federal courts have read the Act to mean that "[f]urther federal assistance, with certain limited exceptions, for development within or access to those areas is banned." Cape May Greene, Inc. v. Warren, 698 F.2d 179, 189 (3d Cir. 1983) (emphasis added). The exceptions carved out in the Act apply to "maintenance" and "replacement" of "essential links," in the transportation network, such as the Bonner Bridge. In contrast, this project would provide a new link to areas that, according to the U.S. Fish and Wildlife Service, "were made ineligible for direct or indirect Federal financial assistance that might support development." The DEIS relegates its discussion of the Act, and the disclosure of much of the project study area's status, to section 5.7.5 of a "Community Impact Assessment Technical Report." That report acknowledges that the listed areas include "lands in private ownership," but fails to explain how this project would not promote development that is inconsistent with the CBRA.

    Response: *The relationship of a future bridge and induced development was discussed in five analytical scenarios in Section 4.2 of the Indirect and Cumulative Effects Technical Report and Section 3.6.1.4 of the DEIS and this FEIS. Specific comments of that analysis have been addressed in responses to USACE comment 18 and SELC comments 15 to 18 and 25. Impacts on the CBRA units have been discussed in expanded Sections 6.2.2.16and 6.3.2.16 of the revised technical report. The analysis indicated that there would be net induced development on the mainland and that on the Outer Banks there would be a change in the timing and sequence of development but no net increase causally correlated to a bridge. Considering the reasonably foreseeable actions in the study area, there was no demonstrable increase in development in the CBRA units. An extension of NC 12 into the CBRA unit would change that situation. However, that extension is not considered reasonably foreseeable. Further discussion of this was included in the response to USDOI comment 13.*

Coastal Zone Management Act

35. **Comment:** As the DEIS explains, a "CAMA major permit would be required for all of the detailed study alternatives." (DEIS 3-49.) According to the DEIS and its supporting documents, failure to build the bridge would be inconsistent with area land use plans. But while some area land use plans cite construction of the Mid-Currituck Bridge as an express transportation objective, the Toll Bridge would also impact AECs directly and by subsequent development activities. If a development project violates general or specific use standards for an AEC, a permit must be denied, even if local land use plans include the project.

    Response: *The Preferred Alternative would directly affect the CAMA AEC categories of estuarine waters/public trust areas and coastal shoreline (see Section 3.3.7 of this FEIS), or in*

other words Currituck Sound and its shoreline. NCTA expects the Preferred Alternative to meet the general and specific use standard for this AEC. The Preferred Alternative has been aligned to avoid impacts to CAMA AEC coastal wetlands. All CAMA AECs were confirmed in the field with Stephen Lane of NCDENR-DCM on November 31 and December 1, 2010. CAMA major permit requirements consider the project's direct impacts and not indirect and cumulative impacts. Indirect and cumulative impacts to CAMA resources are addressed in Section 3.6.2.3 of this FEIS and Section 6.3 of the revised Indirect and Cumulative Effects Technical Report. Section 2.3.3 was added to the technical report to examine the consistency between AECs and local CAMA plans. Note that the land use plans for the municipalities in the project area and Currituck County are approved by NCDENR-DCM and as such reflect the protection of CAMA AECs and general or specific use standards

36. **Comment:** The DEIS relies on the statistic that AECs "encompass less than 3 percent of the land covered by CAMA in North Carolina's 20 coastal counties" to justify the short shrift it gives impacts on them. AECs, however, are prevalent in the vicinity of this project. Under CAMA, there are four categories of AECs: the estuarine and ocean system (15A N.C. Admin. Code 07H.0200), the ocean hazard system (15A N.C. Admin. Code 07H.0300), public water supplies (15A N.C. Admin. Code 07H.0400), and natural and cultural resource areas (15A N.C. Admin. Code 07H.0500). The 2006 Land Use Plan recognizes "two categories of AECs . . . the estuarine system AECs and ocean hazard system AECS." In its CAMA section, the DEIS acknowledges that AECs in only the first category exist in the immediate Project area, that is, the "estuarine and ocean system" subcategories of coastal wetlands, estuarine waters, coastal shorelines, and public trust coastal waters and submerged lands, but the DEIS does not even show where these areas are located on the various maps presented in its various reports. (Compare DEIS at 3-48 to 3-49 with 2006 Land Use Plan, Map 3.1.)

    Response: *NCTA searched the DEIS and related technical reports and did not find the quote that begins this comment. Figure 3-5 of the DEIS and this FEIS show shorelines (CAMA AEC coastal shorelines) and waters of Currituck Sound (CAMA AEC estuarine waters), Jean Guite Creek (CAMA AEC public trust areas), and the Intracoastal Waterways within the project area. Figure 5 in the NRTR depicts the location of wetland freshwater marsh communities within the project area. The wetland freshwater marsh community described in the DEIS/FEIS, NRTR, and Essential Fish Habitat Technical Report is equivalent to CAMA AEC coastal wetlands. Impacts to these areas are accounted for in this FEIS in Table 3-11 and in the NRTR in Table 18. The footnotes to these tables have been revised for additional clarification. Further explanations of AEC's and the how they relate to the project have been added to the text (FEIS Section 3.3.7, NRTR Section 5.10.) Table 14 in the NRTR contains a list of all wetlands in the project area and a footnote identifies which polygons contain CAMA coastal wetlands. These polygons can be cross-referenced with Figures 4 and 5 in the NRTR to see the location of the polygons.*

37. **Comment:** The DEIS fails to adequately evaluate even the direct impacts of the Toll Bridge on estuarine AECs it acknowledges. In particular, CAMA requires that "uses" of estuarine waters, such as the dredging and fill associated with the Toll

Bridge, be "consistent with the management objectives of this rule." 15.4 N.C. Admin. Code 07H .0206(d). The management objective of the estuarine waters rule is "[t]o conserve and manage the important features of estuarine waters so as to safeguard and perpetuate their biological, social, aesthetic, and economic values." 15A NCAC 07H .0206(c)-(d). The DEIS fails to address the apparent inconsistency between the Toll Bridge and this objective, or explain the plan for complying with those standards.

Response: *Additional information is incorporated into this FEIS (Section 3.3.7) and the revised NRTR (Section 5.10.1) to clarify impacts to CAMA AECs. The Preferred Alternative would comply with North Carolina Administrative Code (NCAC). NCDENR-DCM commented on information needed to make consistency determinations. NCTA responded with the information January 12, 2011. Since the release of the DEIS, NCTA has had an ongoing dialogue with environmental resource and regulatory agencies on the approach to constructing the Currituck Sound Bridge. NCTA would continue to work with environmental resource and regulatory agencies as the project progresses into final design and permit application to refine the approach to construction.*

38. **Comment:** Further, the DEIS declines to mention that land use plans designate "virtually Currituck County's entire oceanfront coastline," as "ocean erodible area" (the other category of AEC listed in the 2006 Land Use Plan) that is "subject to longterm erosion and significant shoreline changes." The DEIS claims that "the greatest impact to Coastal Area Management Act (CAMA) resources . . . would be associated with shading by a Mid-Currituck Bridge," but this claim is not adequately supported. As discussed above, the secondary effects of this project would extend far beyond these limited direct impacts. The 2006 Land Use Plan identifies far more AECS and other sensitive areas that would be affected. For instance, Map 3.5 of the Plan shows the many environmentally fragile areas in close vicinity to the Toll Bridge, including anadromous fish spawning areas and significant Natural Heritage Areas, while Map 3.6 indicates that much of the county land qualifies as environmental hazard Class 111, where "the impact of development may cause serious damage to the function of natural systems." Copies of these maps are enclosed. Ignoring or downplaying the impacts to these areas is inconsistent with the goals of CAMA.

Response: *Analyses of indirect effects of a bridge were included in the DEIS (Section 3.6.1.4) and the Indirect and Cumulative Effects Technical Report (Section 4.2). These same sections are included in this FEIS and the revised Indirect and Cumulative Effects Technical Report. With respect to development specifically, responses have been articulated to USACE comment 18 and SELC comments 15 to 18 and 25.*

NCTA has recognized the importance of AECs in the study area. Additional discussion of this topic has been added as Section 2.3.3 of the revised Indirect and Cumulative Effects Technical Report. AECs protection is embedded in the CAMA local land use planning process as directed by the North Carolina Coastal Resources Commission. These are reflected in the policies and future land use plans for all municipalities. AECs are deemed unsuitable

for development. The suitability maps for the communities in the study area were reproduced as Figures 2-2, 2-5 and 2-7 of the Indirect and Cumulative Effects Technical Report.

39. **Comment:** In addition to falling short of the requirements under NEPA, the DEIS does not adequately consider how these impacts may undermine area land use plans for the purposes of state and federal coastal management laws. In fact, as described elsewhere in these comments, the direct and indirect impacts on these areas, including areas designated as Ocean Erodible Areas, would be significant. For instance, just as a new bridge would surely enable access and increase development north of Corolla and Carova, it would increase the number of vehicles driving on the beach to access the houses (both existing and new) that are located north of the end of NC 12, which would increase erosion on the fragile barrier island shoreline. Already, "the Swan Beach area midway between Carova Beach and Corolla has higher erosion rate factors ranging from 4.5 to 8.5 feet/year," according to area land use plans. Although the General Use Standards for Ocean Hazard Areas do not specifically ban driving on the beach, development in these areas must comply with management objectives that include "preserving the natural ecological conditions of the barrier dune and beach systems." 15A N.C. Admin. Code 07H.0303, .0306(f). In this and other ways, building a bridge would encourage development and traffic that is inconsistent with the goals of CAMA. The DEIS fails to acknowledge these apparent planning conflicts, or to explain why the Toll Bridge should nevertheless qualify for a CAMA permit.

    Response: *NCDENR-DCM provided an initial determination of the consistency of the proposed project with area land use plans. They requested additional information, which was supplied. This initial determination is reflected in Section 3.1.6 of this FEIS and Section 6.3 of the Community Impact Assessment Technical Report. This comment is predicated on the assertions that "a new bridge would surely… enable access and increase development north of Corolla and Carova" and "it would increase the number of vehicles driving on the beach to access the houses." These assertions are refuted. The analyses of these questions are presented in Sections 4.2.2 and 4.2.4 of the Indirect and Cumulative Effects Technical Report, Section 3.6.1.4 of the DEIS and this FEIS. Also, see responses to USACE comment 18 and SELC comments 15 to 18 and 25. The significance of beach driving is recognized as an important activity and has been added as an "other activity" to Tables 5-1 and 5-2 of the revised Indirect and Cumulative Effects Technical Report.*

Climate Change

40. **Comment:** As one joint federal agency analysis recognizes, "choices made today about the location and design of transportation infrastructure can have a large impact on the feasibility and cost of accommodating rising sea level in the future." Yet while the DEIS and its technical report acknowledge that climate change will cause significant sea level rise in the project area, including permanent inundation of much of the project area, the Transportation Agencies arrive at the absurd conclusion that "a Mid-Currituck Bridge would be a useful asset in reducing the impact of sea level rise on the project area's road system." This is because, unlike

much of the rest of the road system, it would remain above water, and therefore provide "the only way off the Currituck County Outer Banks." (DEIS 1-7.) This logic is flawed. By stimulating investment in road capacity and other infrastructure that would eventually remain permanently under water, the Toll Bridge would worsen the impacts of climate change. A new DEIS should include an objective analysis of the costs associated with these impacts, including the threat of hurricanes to intensive development in the area, increased bridge maintenance costs, reduced availability of fresh water and developable land on the Outer Banks, and other factors that would all seem to militate against the construction of a $600 million bridge to the area.

Response: *The DEIS and the Other Physical Features Technical Report do not say that there would be permanent inundation of much of the project area. This also is clear from the sea level rise maps presented in Appendix A of the technical report. The conclusion that "a Mid-Currituck Bridge would be a useful asset in reducing the impact of sea level rise on the project area's road system" is evident on the sea level rise maps that show the area of the Outer Banks served by a bridge not inundated, but inundation at the Dare/Currituck County line.*

Sea level rise has become an issue of concern for all low lying coastal communities in North Carolina. The issues surrounding sea level rise have been more fully articulated in the revised Indirect and Cumulative Effects Technical Report. Sea level rise has been added as an "other activity" to Tables 5-1 and 5-2 and discussed in relation to notable ecosystem and socioeconomic features, as applicable, in Section 6.0. While sea level rise is an important emerging coastal planning concern, the bridge is not found to induce unplanned development within the study area and study timeframe.

Conclusion

41. **Comment:** We request that the Transportation Agencies revise their analysis of alternatives and impacts according to the recommendations set forth herein and issue a revised Draft Environmental Impact Statement for public review and comment.

    Response: *The comments received on the DEIS from all parties were considered in the selection and refinement of the Preferred Alternative. The impact assessment was updated and revised in this FEIS as needed. No new alternatives were found to require detailed study. There is no need for a revised, new, or supplemental DEIS.*

3.2 Nature Conservancy

1. **Comment:** The Nature Conservancy appreciates the opportunity to provide comments on the DEIS and its recommendations. Here we detail our concerns regarding the proposed Mid- Currituck Bridge construction options, as well as the road widening option. After review of the DEIS, we strongly recommend more in-depth analyses of alternative concepts not carried forward as detailed alternatives in

the DEIS including multiple "no build" options, as well as a more thorough investigation of the impacts of sea-level rise on the longevity of proposed transportation infrastructure.

Response: *A more in-depth discussion of the merits of the other alternatives considered, including alternatives that would not involve building a bridge or widening existing roads, is presented in the Alternatives Screening Report in Section 2.2. This report was included on the CD that accompanies the DEIS and this FEIS. NCTA believes that the level of detail and perspective of the sea level rise analysis reflects what is needed for the assessment of this project; however, some revisions were made in the Other Physical Features Technical Report to the sea level rise analysis in response to other agency comments. The details of the sea level rise analysis were presented in the Other Physical Features Technical Report that was included on the CD that accompanies the DEIS and this FEIS.*

Direct and indirect impacts of build alternatives

2. **Comment:** As indicated, the NCTA has identified MCB4 as the recommended alternative for meeting the project's goals of relieving traffic congestion and decreasing hurricane evacuation times in the project area. We feel that the DEIS has insufficiently addressed the direct and indirect environmental impacts of the build options—the bridge options in particular—and that these effects deserve closer scrutiny before a final recommendation is made. Our specific concerns to this effect are described below.

   Response: *NCTA has responded to the specific comments below.*

3. **Comment:** Any of the bridge options would have significant, direct, negative impacts on the terrestrial and aquatic communities in the region. Specifically, bridge construction would adversely impact the biota of Maple Swamp – a state Significant Natural Heritage Area that represents one of the largest and northernmost stands of loblolly bay (*Gordonia lasianthus*) forest remaining. Past impacts to this area coupled with the proposed bridge options may push this ecosystem beyond recovery.

   Response: *The loblolly bay forest referenced has been logged. The DEIS was completed prior to much of the logging. The C1 and C2 corridor, however, did not pass through the loblolly bay forest. Avoiding the loblolly bay forest was the reason for eliminating bridge corridors C3 to C6 during the alternatives study (see pages 59 to 60 of the Alternatives Screening Report on the CD included with the DEIS and this FEIS).*

4. **Comment:** Further, all bridge options would adversely alter the existing hydrology of this system, impacting wildlife habitat availability and wildlife movement patterns. In addition to the two crossing scenarios C1 & C2, the NCTA has proposed two "design options" for bridge construction on the mainland side. Option A places a smaller bridge over Maple Swamp for the approach to the main bridge over Currituck Sound. Option B consists of an approach to the bridge along a road constructed on filled areas of Maple Swamp. Though both options would significantly alter the area's hydrology, Option B would likely have a much greater

impact, and consequently would have more of a negative impact on the region's biota. Though we do not advocate in favor of either design option, if one must be selected, we recommend Option A.

Response: *Option A is included in the Preferred Alternative. The Nature Conservancy does not indicate why they believe either Option A or B would alter the area's hydrology. From the perspective of NCTA, Option A would bridge the swamp and thus not affect Maple Swamp's hydrology. Option B could be designed so that the only impact of the design on Maple Swamp's hydrology would be small changes in flood elevations. See the response to NCDENR-DCM comment 15.*

5. **Comment:** Under all bridge scenarios, the alterations to the system would take place within the larger context of global climate change. Sea-level rise is of particular concern in North Carolina's northeastern coastal region due to the low elevation of this landscape. Therefore, careful consideration needs to be given to any proposed structures that may further limit the ability of natural communities to respond to climate-induced changes. We do not feel that the DEIS adequately addressed this issue, and we recommend incorporating a more refined assessment of the implications of climate change for the environmental impacts of the proposed project, as well as for future traffic and development patterns.

   Response: *NCTA believes that the level of detail and perspective of the sea level rise analysis reflects what is needed for the assessment of this project; however, some revisions were made to the sea level rise analysis in response to other agency comments. The details of the sea level rise analysis were presented in the Other Physical Features Technical Report in Section 3.0 that was included on the CD that accompanies the DEIS and this FEIS.*

6. **Comment:** There would also be considerable direct impacts to the aquatic habitats of Currituck Sound and the Outer Banks landing area where the proposed bridge would terminate. The bridge and landing structures would negatively impact existing submerged aquatic vegetation (SAV) beds through modification of shading, siltation and current patterns. Additionally, these structures would function as a point source of storm water runoff, resulting in the degradation of estuarine water quality in Currituck Sound. Though potentially less extensive, selection of the road widening option would also necessitate shoreline filling and armoring to protect infrastructure from wave action and storm events, further removing palustrine emergent wetlands, palustrine forested wetlands, and SAV from the system.

   Response: *Impacts to aquatic habitat of a Mid-Currituck Bridge, including SAV habitat (including existing beds) and potential SAV habitat, are assessed in the DEIS and this FEIS in Sections 3.3.1 and 3.3.4. Refinements to the Preferred Alternative and this assessment have been made in this FEIS in response to environmental resource and regulatory agency comments that reduced potential SAV impacts. Mitigation for bridge shading of SAV habitat (including existing beds) would be provided. Measures to minimize siltation during construction would be implemented. Bridge piles would have minimal effect on current patterns. Clarification on these concerns is provided in the revised Essential Fish Habitat Technical Report (Section 3.2), the revised NRTR (Section 1.3), and this FEIS (Section*

2.4.2). NCTA is committed to preparing a stormwater management plan to mitigate the Preferred Alternative's potential impact on water quality (see Section 2.1.7 of the DEIS). NCDENR-DWQ and other environmental resource and regulatory agencies participated in meetings between the DEIS and FEIS where the stormwater management plan and its components were discussed and will participate in future discussions. The NC 12 widening components of the Preferred Alternative do not include any shoreline construction. With ER2 and MCB2, the Currituck Sound shoreline would be affected for approximately 1,100 feet in central Duck. This is the only location in the project area where NC 12 is next to the shoreline.

7. **Comment:** Any of the bridge options, though not the road widening option, as proposed would also disrupt wildlife use throughout Currituck Sound, particularly for, but not limited to, waterfowl and wading birds which utilize the area as foraging, overwintering and nesting habitat. The proposed bridge alternatives are located in close proximity to an existing rookery for egrets, herons and ibis on nearby Monkey Island and may have a devastating impact on this bird community. The proposed bridge alternatives would also essentially bisect the Sound, Maple Swamp and other wetlands, significantly impacting the flight pattern of these birds as they travel to and from their foraging habitats.

   Response: *Impacts to wildlife habitat of a Mid-Currituck Bridge, including birds, are assessed in the DEIS and this FEIS in Section 3.3.3. Monkey Island is the only nesting waterbird rookery north of Oregon Inlet in North Carolina. It has been one of the most important nesting sites for great egrets, little-blue herons, and snowy egrets in the state. Other waterbird species also nest there including cattle egrets and glossy ibis. The island once occupied about 7 acres but has been eroding in recent years and was estimated to occupy about 3 acres in 2007 (NCWRC, 2007-2008 annual report). Great egret rookeries can be sensitive to human disturbances and roadways, and the optimum nesting conditions are greater than 0.3 mile from a roadway (Chapman and Howard, 1984). The average foraging distance from nesting sites of snowy egrets in North Carolina is less than 3.1 miles (USFWS, 2002), and the average distance for four species of herons and egrets are all well below 3.1 miles (Erwin et al., 1987; and Erwin and Spendelow, 1991). The bridge alignment of the Preferred Alternative is over 4 miles south of Monkey Island. Foraging waterbirds from Monkey Island could range through the sound, but are more likely to be found in association with shallow waters around marsh islands/shorelines north and south of the Preferred Alternative. It is unlikely that the Preferred Alternative would pose a significant threat to foraging birds using Monkey Island. See also the responses to USDOI comments 9 and 10 and SELC comment 21.*

8. **Comment:** The five build options presented in the DEIS would likely also have adverse impacts on Essential Fish Habitat (EFH) due to increased turbidity and sedimentation from runoff, shading and fragmentation of SAV's, and general loss of habitat. Loss of EFH would likely result in a reduction in native fish abundance, which could have both biological and socio-economic repercussions.

Response: *Measures would be taken to reduce turbidity and sedimentation from construction during peak times of biological activity to reduce the direct loss of species. There would be no dredging with the Preferred Alternative. Mitigation would be provided for the SAV habitat (including existing beds) lost as a result of bridge shading. Turbidity curtains would be in place to contain particles suspended during pile-driving in SAV habitat (including existing beds) as defined by NCMFC (see Section 3.3.4.2 of this FEIS). The issues raised in this comment are discussed further in the revised Essential Fish Habitat Technical Report.*

9. **Comment:** There is also considerable potential for lasting indirect and cumulative impacts on the region's fragile natural environment. The proposed bridge and/or widening of existing roadways, if constructed, would undoubtedly increase the number of visitors to this remote and ecologically sensitive area, setting the stage for increased residential and commercial development, and further compromising the ecological integrity of the area. These indirect impacts of the proposed project have not been fully considered in the DEIS and merit further attention.

   Response: *The Nature Conservancy did not indicate in their comment in what ways they believe indirect impacts have not been fully considered. The indirect impact assessment was refined based on other comments. The revised assessment is found in Section 3.6.2.2 of this FEIS and in more detail in the revised Indirect and Cumulative Effects Technical Report in Sections 4.2 and 6.2.*

Summary

10. **Comment:** After reviewing the DEIS, we find that each of the "build" options would result in considerable damage to the natural environment. We also find that the DEIS provides insufficient detail regarding the potential for "no build" options to meet transportation needs. The current DEIS quickly dismisses other "no build" means of expanding the transportation infrastructure such as ferries, bus transit systems and shifting rental times. These alternatives have been successfully implemented in other sensitive coastal ecosystems, thus cursory rejection of these options is unwarranted. We encourage the NCTA to seek additional information on these possible alternatives prior to making a final decision on how to proceed.

    Response: *A more in-depth discussion of the merits of the other alternatives considered, including alternatives that would not involve building a bridge or widening existing roads, is presented in the Alternatives Screening Report in Section 2.2. This report was included on the CD that accompanies the DEIS and this FEIS. The studies conducted and documented in the Alternatives Screening Report clearly demonstrated that these other alternatives could not meet the purpose and need of the project. Additional study would not change these conclusions.*

4.0 Public Comments and Responses on the Draft Environmental Impact Statement

4.1 Public Review Summary

4.1.1 Open Houses and Public Hearings

Three Pre-Hearing Open Houses and three Public Hearings were held on May 18, May 19, and May 20, 2010 as follows:

Date	Location	Time	Format
May 18, 2010	Ramada Plaza Nags Head Beach 1701 South Virginia Dare Trail Kill Devil Hills, NC	3:30 - 6:30PM	Open House
		7:00 - 8:33PM	Public Hearing
May 19, 2010	Outer Banks Center for Wildlife Education, Currituck Heritage Park on NC 12 Corolla, NC	3:30 - 6:30PM	Open House
		7:00 - 9:02PM	Public Hearing
May 20, 2010	Currituck County Center 120 Community Way Barco, NC	3:30 - 6:30PM	Open House
		7:00 - 8:51PM	Public Hearing

Public Hearings were held immediately following each of the Pre-Hearing Open Houses.

The open houses and public hearings were announced via a flyer, newspaper advertisements, and web site postings. On March 31, 2010, the North Carolina Turnpike Authority (NCTA) released a formal statement announcing the upcoming open houses and hearings.

A total of 13,131 project flyers were mailed. The mailing list included property owners, citizens who requested to be placed on the project mailing list, local officials, and resource agencies.

Advertisements for the open houses and hearings were included in the Outer Banks Sentinel (April 28, May 5, and May 12), Virginian Pilot (May 2, May 9, and May 16), and The Coastland Times (April 25, April 29, May 2, May 6, May 9, May 12, and May 16).

A web site for the Mid-Currituck Bridge (http://www.ncturnpike.org/projects /Mid_Currituck/) is hosted and maintained by NCTA. The schedule for the hearings

and open houses was posted on the web site. In addition, all materials displayed and distributed at the Pre-Hearing Open Houses and Public Hearings were made available for download on the project web site.

The Draft Environmental Impact Statement (DEIS), associated technical reports, and the public hearing maps were available on the project web site and at eight public review locations in the project area.

4.1.2 Attendance

Total attendance was approximately 386 (based on sign-in sheets) across the three days of Pre-Hearing Open Houses and Public Hearings. Some citizens attended more than one Pre-Hearing Open House and Public Hearing and some citizens opted not to sign in.

Attendees were asked to sign in at a welcome table and to take a Citizens Summary, public hearing ground rules, and a comment sheet. Attendees also signed in prior to the start of each Public Hearing. Boxes for completed comment sheets were available at Station 6 and/or at the welcome table. The Citizens Summary provided a project overview, brief explanation of the DEIS, and project schedule. Contact information was provided, including the project web site address. Attendees were encouraged to view the self-running slide show that provided background on toll roads and NCTA, a brief explanation of the project, and current project status. Following the slide show, attendees viewed the public hearing maps and other displays. Several representatives from the NCTA, North Carolina Department of Transportation (NCDOT), and private firms contracted by NCTA were present to assist with citizens' questions. Displays and handouts were the same for all three Open Houses.

4.1.3 Comments

Oral comments were delivered and recorded at the three Public Hearings. Written comments included completed comment forms distributed at the open houses, comment forms received after the open houses via fax and mail, written statements submitted at the Public Hearings, and comments received via e-mail (most through the project e-mail address: midcurrituck@ncturnpike.org).

The number of comments received by source is shown in Table 4-1.

4.1.4 Public Preferences

Table 4-2 displays the stated preferences and opposition from all comments received by unique individuals via comment sheets, e-mail, letters, and oral presentation. Where an individual stated a preference through multiple channels, their preference is counted

Table 4-1. Number of Comments Received from Public

Comment Source	Number of Comments Received
Comment Forms	168
• Received in Person at Open Houses	50
• E-mailed, Mailed, or Faxed	118
E-mail, Letter, or Fax	345
Written Statement provided at Public Hearing	11
Town Resolutions	3
Oral Comments	70
TOTAL	597

Table 4-2. Stated Preferences and Opposition of Public

Stated Preferences	
ER2	15
MCB	135
MCB2	27
MCB4	182
No-Build	65
C1	66
C2	95
Option A	76
Option B	21
Center Lane Reversal for Hurricane Evacuation	113
Addition of Third Outbound Lane for Hurricane Evacuation	30
Stated Opposition	
ER2	40
MCB	51
MCB2	31
MCB4	7
No-Build	0
C1	14
C2	18
Option A	1
Option B	9
Center Lane Reversal for Hurricane Evacuation	1
Addition of Third Outbound Lane for Hurricane Evacuation	4

once. The stated preferences are more numerous than stated opposition in part because the comment sheet questionnaire emphasized preferences.

In considering these numbers, it is important to keep in mind that they do not represent a random sample and statistically valid poll, they do not represent a vote where the majority rules, and both majority and minority opinions are important to consider.

Based on these preferences, one can see a notable number of persons favoring the No-Build Alternative and a notable number favoring MCB4. Also, there is general opposition to widening NC 12, particularly in Dare County. Preferences are divided between the two Outer Banks termini alternatives, C1 and C2. Almost all commenters favor mainland approach design Option A. In terms of hurricane evacuation improvements, commenters favor reversing the center turn lane on US 158 for use as a third outbound lane. Those who favor the No-Build Alternative did include comments indicating that they did not think hurricane evacuation improvements were needed.

4.1.5 Range of Public Comment

A broad range of comments was received in addition to the preferences indicated in the previous section. They covered a broad range of topics related to the project and its impacts. Reasons given when indicating a preference for one alternative over another included:

- Existing Road Improvement Positives.
  - Widening would improve hurricane evacuation, including the "choke point" at Duck.
  - Widening would affect the environment and quality of life less than a bridge.
  - Widening would improve traffic congestion.
  - Widening would be lower in cost.
  - Widening would not increase the number of permanent residents on the Outer Banks or day trips.
- Existing Road Improvement Concerns.
  - Widening the roads would create a safety hazard. Drivers would speed. A widened NC 12 would be like an interstate highway.
  - Widening would not have much effect on traffic congestion or hurricane clearance times, particularly since the "choke point" at Duck would remain.
  - Widening roads would not be cost effective.
  - Widening NC 12 would destroy community character, affect quality of life, harm property values, increase noise, and/or make it difficult to rent properties adjacent to NC 12.
  - A widened road would be difficult to cross to get to beaches and there is inadequate parking at the beaches.

- With widening, vegetation would be lost along existing roads.
- Widening would include the introduction of infiltration strips (ditches) and basins.
- Widening, and its associated extra expense and disruption to the environment, would not be needed with a bridge.

- Bridge Positives.

  - The bridge would alleviate traffic congestion and eliminate the need to widen existing roads. Avoiding the need to widen existing roads would save tax dollars.
  - With a bridge, NC 12 would be better utilized. Traffic operations would be similar to those before development occurred on the Currituck Outer Banks.
  - The bridge would provide an alternative route to and from the Outer Banks.
  - The bridge would improve travel times.
  - The bridge would provide for improved hurricane clearance times.
  - The bridge would offer greater safety for motorists.
  - The bridge would improve emergency response times.
  - The bridge would offer greater convenience for motorists.
  - The bridge would provide economic benefits.
  - The bridge would provide for better access to jobs. If the toll is not prohibitive, the bridge would allow low- and medium-income folks from the mainland to work in Corolla for the summer. The bridge would reduce travel times for service workers traveling between the mainland and the Outer Banks.
  - The bridge would provide better access to public services and reduce the duplication of services between the mainland and the Outer Banks. Parents with school children would want to move to the Currituck County Outer Banks because of a shorter bus trip to Currituck County schools.
  - The bridge would have environmental benefits and environmental impacts can be mitigated.
  - The bridge would reduce energy use and motor vehicle emissions.
  - The bridge would increase property values and tax revenues.
  - The bridge is supported by the County Commissioners.

- Bridge Concerns.

  - The bridge would provide inadequate traffic congestion relief on existing roads. Traffic congestion will occur at the bridge terminus on the Outer Banks and traffic will increase on NC 12.
  - The bridge would provide inadequate hurricane clearance time improvement.
  - If the bridge were built, growth would have to be managed.
  - The bridge is not wanted by many local residents. Increasing traffic flow at the expense of the people who choose to live in Corolla is unfair.
  - The bridge would hurt local property values.
  - The bridge would increase visitors to the beach and strain existing infrastructure.
  - The mainland bridge approach would damage and change Aydlett.

- The bridge would damage community character/quality of life.
- The bridge would take homes for the convenience of tourist traffic that occurs only three months of the year.
- The bridge would damage the natural environment and hastened development would cause more damage.
- The bridge would damage the local economy.
- The bridge would increase commercialization of the Outer Banks.
- The bridge would decrease the isolation of the Outer Banks.
- The bridge would bring noise.
- The bridge would increase crime on the Outer Banks.
- The bridge is proposed in the wrong place.
- The bridge would change the views from uninterrupted scenes of the Currituck Sound to views of a long concrete roadway. The bridge would destroy the existing beautiful views of the night skies.
- The bridge's cost is unreasonable. The expense of the bridge may outweigh its benefits.
- The bridge would have a long-term negative impact on North Carolina tax payers.
- The bridge should not be built and operated by a Spanish firm.
- An interchange at NC 12 and US 158 in many ways is needed even before the bridge.

- Bridge Corridor C1 Positives.

  - C1 would have the least environmental impact.
  - C1 would be shorter and/or cheaper.
  - C1 would be in the less developed corridor. C1 would have the fewest impacts on businesses and people since it would terminate in an area that has very few completed homes and established commercial properties.
  - C1 would have less wetland impact.

- Bridge Corridor C1 Concerns.

  - C1 would adversely affect residential neighborhoods along NC 12.
  - C1 would adversely affect property values.
  - C1 would make neighborhoods along NC 12 south of the bridge dangerous with speeding traffic and the need for pedestrians to cross multiple lanes of traffic.
  - C1 would cause undesirable traffic patterns.
  - C1 would result in loss of trees and dunes that shield homes adjacent to NC 12 from traffic impacts.

- Bridge Corridor C2 Positives.

  - C2 would have less residential community impact.
  - C2 would enter the Outer Banks in a commercial area, an appropriate place to accommodate more traffic.

- C2 would have fewer impacts on the local transportation network.
- C2 would increase traffic on fewer miles of NC 12.
- C2 would be more centrally located.

- Bridge Corridor C2 Concerns.

  - C2 would cost more.
  - C2 would have greater environmental impact.
  - C2 would have greater business impacts because of changes in turning patterns and displacement.
  - The C2 corridor already has too much traffic in it.

- Mainland Approach Road Option A and Option B.

  - Option A would have the least impact on the community of Aydlett.
  - Option A would have the least impact on natural resources, wildlife, and hydrology in Maple Swamp.
  - Option B would have a substantial impact on the community of Aydlett.
  - Option B would directly go against the land use plan for Aydlett.
  - Option B would involve a significant encroachment on the 100-year floodplain.
  - Cost should be a primary consideration to decide the corridor and attendant options.
  - Consider passing through Aydlett at grade with Option A.
  - Consider allowing access between the bridge and Aydlett so we can develop our land.

- Hurricane Evacuation Options.

  - Reversing the center turn lane would be less expensive, cause less environmental impact, and be sufficient.
  - A bridge would facilitate efficient evacuation. Without a bridge evacuatees in Currituck would continue to drive out-of-their-way to evacuate.
  - A bridge would not reduce hurricane clearance times.
  - Hurricane evacuation options are not needed.

The following sections presents the key comments received that went beyond a statement of preference and responses to those comments.

4.2 Purpose and Need

4.2.1 General

1. **Comment:** The alternatives that include a bridge do not achieve the stated project objectives or needs.

Response: *The ability of the detailed study alternatives, including the Preferred Alternative, to meet the project's purpose and need are presented in Section 2.2 of the DEIS and this Final Environmental Impact Statement (FEIS).*

2. **Comment:** The DEIS does not provide the source for determining whether an improvement is considered substantial or minor. Therefore, such statements have no basis.

   Response: *The definition of substantial is presented in Section 1.2 of the DEIS and this FEIS.*

4.2.2 Improving Traffic Flow

3. **Comment:** On weekends during the May-October tourist season, road congestion, bumper-to-bumper traffic, and stalled traffic on US 158 and NC 12 are sources of frustration and traffic accidents for both visitors and residents. The congestion is also a problem during summer weekdays as vacationers travel between their rental homes in Currituck County and destinations in Dare County on a daily basis. Traffic delays result in drivers diverting through neighborhoods and driving on road shoulders, which are public safety concerns. On weekends, some businesses close because traffic prevents customers from reaching them. The existing road system cannot accommodate the additional traffic associated with development that has occurred on the Currituck County Outer Banks since the early 1900s; another corridor is required.

   A bridge is logical, as the Corolla area has been developed, and its main commercial area is within five miles of US 158. At the present time, it is a 40 to 50-mile drive to get there. This is absurd and a great inconvenience and inconsideration to the residents and visitors to northern Dare County. There were far fewer people in Dare County when the Wright Memorial Bridge was built than there are now in Corolla for six months of the year.

   A toll road is needed to expedite travel to the Outer Banks, as the single access over the Wright Memorial Bridge leads to commutes of three hours or more between Coinjock and Duck.

   Response: *These positions are noted. Congestion and travel time issues observed by the commenters are reflected in the traffic forecasts included in the project's Statement of Purpose and Need.*

4. **Comment:** The bridge does not resolve traffic issues, which are principally in Dare County, specifically on US 158 south of the Wright Memorial Bridge, at the NC 12/ US 158 intersection, and NC 12 to Duck. At locations where widened roads return to two lanes there will be congestion and accidents, including back-ups on the bridge. The DEIS states that the bridge will make traffic at the eastern terminus of the bridge (south of Corolla) worse. A large percentage of the traffic along NC 12 is created by

Currituck Outer Banks residents and tourists traveling north and south on the Outer Banks to avail themselves of restaurants, shopping, and other amenities, as well as residents traveling to jobs. None of this traffic will be diverted by a Mid-Currituck Bridge.

Response: *The commenter is correct in that a Mid-Currituck Bridge would not resolve all traffic issues in the project area. However, as indicated in Section 2.2 of the DEIS and this FEIS, substantial reductions in congestion on the thoroughfares in the project area, US 158 and NC 12, would occur. Transitions from four lanes back to two lanes would include appropriately long transitions so that drivers could safely merge. Traffic forecasts used to assess the congestion reduction benefits of a Mid-Currituck Bridge took into account existing travel patterns.*

5. **Comment:** Increased traffic is not a major problem because it only occurs during a few weeks of the year. It occurs during the summer tourist season (June, July, August [through Labor Day]) and usually Thursday-Sunday, especially Saturday afternoons. For much of the year the traffic flows well. Tourists are not deterred by the traffic – they continue to come year after year despite the heavy traffic. The estimated +/- $700 million cost of a bridge to alleviate traffic problems that occur during such a small percentage of the year (i.e., tourist-season) is not justified and is irresponsible to the environment and to society, as the bridge would benefit relatively few North Carolina residents. The DEIS fails to adequately support or explain its recommendation of the toll bridge alternative, a $600 million investment to reduce travel time to a small strip of shifting, hurricane-prone barrier peninsula unsuitable for intensive development, especially in light of climate change.

   Response: *The position of these commenters is acknowledged but NCTA disagrees with the commenters that summer congestion is not important to address, particularly since it is expected to continue to worsen in the future as the NC 12 accessible area moves towards full build-out. For example, even in urban areas it is customary to strive to achieve a level of service where congestion occurs only in the 29 highest hours of traffic in the year. The project purpose and need were developed with input from both environmental resource and regulatory agencies and the public.*

6. **Comment:** The need to merge traffic from any outbound Mid-Currituck Bridge lanes will create a bottleneck south of the Knapp Bridge. Both of these presume there will be a backup at the Barco intersection. If there is no backup, there is no need for a bridge. If there is a backup, the bridge will exacerbate the problem.

   Response: *The US 158/Mid-Currituck Bridge interchange is designed to allow northbound bridge traffic to merge into US 158 traffic before the Knapp Bridge. The Mid-Currituck Bridge project would reduce congestion south of the bridge by diverting traffic from NC 12 and US 158. It would not worsen congestion north of the bridge, but it would not reduce it.*

7. **Comment:** The oil spill in the Gulf of Mexico is predicted to have a devastating effect on beach tourism to points north of North Carolina, so it is likely that the bridge is not even needed because there will be less traffic in the future. This

possibility carries more certainty than most of the conjecture in the DEIS. The true effects of the alternatives for the proposed project on the environment are a larger unknown possibility than the effects of the oil spill.

Response: *Oil from the Gulf of Mexico oil spill did not reach the North Carolina coast. The DEIS and this FEIS were prepared with the purpose of considering the potential effects of the proposed alternatives on the natural and human environment so that an informed decision on whether or not to implement the project, and in what form, could be made.*

4.2.3 Improving Travel Time

8. **Comment:** Let's keep the Outer Banks the quiet getaway it is now—it will not be long before there is no place left that is not scourged by development and the almighty dollar. Is not that worth an extra hour of travel time? It is not clear how a reduction in travel time was determined as a "need" and who established this "need." A cost/benefit analysis for the bridge should be conducted based on travel times under normal circumstances (and include a weighted average for travel times that takes into account frequency of congested days), not worst case scenarios.

   Response: *The travel time need was included because traffic studies found that travel time is expected to rise substantially in the future as a result of congestion. Transportation decision-making is made based on goals such as minimizing congestion and improving safety rather than cost-benefit analysis. The local transportation decision-making process, which is reflected in the local plans, identified a Mid-Currituck Bridge as a need. The proposed action is included in NCDOT's 2009 to 2015 State Transportation Improvement Program (STIP), the 2012 to 2018 Draft STIP, the North Carolina Intrastate System, the North Carolina Strategic Highway Corridors Concept Development Report, and the Thoroughfare Plan for Currituck County.*

9. **Comment:** The stated "substantial" savings in travel time for many travelers would only accrue to those traveling directly to Corolla. It would not benefit those going to Pine Island, Sanderling, or Duck. Also, throughout, the document makes the assumption that no vacationer using the (new) bridge would travel to Southern Shores or Kitty Hawk, although many realtors have offices south of Corolla. These visitors would travel to locations south of Corolla to pick up keys, then turn around and head north to their destinations, thereby reducing their "substantial" savings in travel time. In addition, backups of traffic from those traveling south will likely occur where the four (4) lanes widened NC 12 narrows to two (2) lanes. A "substantial" savings in travel time is a matter of perception and distance traveled. From Aydlett, a bridge would enable persons to be at the beach access in about 20 minutes, a 36-minute decrease in travel time. A driver from Moyock to Currituck Outer Banks access would see a decrease from 86 minutes to 45 minutes with a bridge. Also, as Currituck beaches have only 30 spaces for beachgoers, most Currituck beachgoers will need to travel to Dare County. These scenarios do not meet the substantial reduced travel time standard. The hour or so of time savings coming and going on a regular basis might not be worth the environmental impacts.

Response: *There would be travel time savings for drivers going to Dare County, as indicated in Table 2-3 of the DEIS and this FEIS, which shows travel time between Aydlett Road and Corolla (a route that takes drivers through Dare County) dropping from 154 minutes to 107 minutes with MCB4 (the Preferred Alternative). Current travel patterns were considered when developing the traffic forecasts. The Preferred Alternative would not eliminate all congestion problems, also as shown Table 2-3, but would make a substantial reduction in congestion. The definition of substantial is presented in Section 1.2 of the DEIS and this FEIS. The bridge project meets that definition.*

4.2.4 Reducing Hurricane Clearance Times

10. **Comment:** Much of the existing evacuation route lies very low, just a foot or so above the water table, including the section of land just above the Dare/Currituck line, between Cottage Cove Road and Ocean Trail. This is the narrowest point between the ocean and sound and has been known to flood during heavy storms. If a hurricane storm surge were to flood this area to the point of NC 12 being impassible, possibly thousands would be marooned without a mid-county bridge. Because of local development and increasing popularity of the Outer Banks, the Mid Currituck Bridge has become a necessity, as the need for expedited evacuation capacity is increased. NC 12 is, in essence, a dead-end corridor, so the bridge will solve a needed safety issue. During hurricane evacuations, traffic can back-up all the way to Coinjock (people sitting outside their stationary cars). Delay in building this bridge extends the opportunity for a major catastrophe with many lives lost. It seems that people must die in this country before transportation issues get resolved – let's not let that happen on the Outer Banks.

    Response: *These positions are noted. Reducing hurricane clearance times is part the purpose and need of the project. The benefits of the detailed study alternatives in this regard are presented in Section 2.2 of the DEIS and this FEIS.*

11. **Comment:** There is a less than critical need for additional hurricane evacuation improvements, as evacuations work well; the problem is those people who refuse to follow directions. A bridge is not needed for hurricane evacuation because adults are responsible for their own actions, and county and state governments have no obligation to protect them from the consequences of their own unsafe behavior. If better hurricane evacuation is truly the critical need, then the bridge is not sufficient; all recommended associated road widening, including NC 12 through Southern Shores and Duck, also is needed. On the other hand, such improvements would encourage others to utilize the Wright Memorial Bridge in an emergency, even though the high-density populations of Nags Head, Kill Devil Hills, Kitty Hawk, Southern Shores and Duck already do. At least one long-term resident of Corolla (12 years) has had no problem with evacuation in the threat of a hurricane. The addition of the twin spans on the Wright Memorial Bridge and the double highways up to Virginia are adequate for evacuation for the limited hurricane season each year. The peak Hurricane Season occurs when the tourist season is over, and the Outer Banks are almost deserted for eight months of the year. Because meteorologists are able to

forecast the path of a storm (not always velocity) with great accuracy, it seems that ample warning can be given to permit an orderly and safe evacuation on NC 12. The National Hurricane Center can issue storm watches and warnings in time for people to evacuate. The real estate management company program of providing "hurricane insurance" improves Outer Banks evacuation, as it promotes visitor willingness to evacuate earlier rather than later to avoid losing their rent money. This also reduces the need for another bridge. Also, rental companies should inform renters when to evacuate. Evacuation will be worse with the Mid-Currituck Bridge because there will be more people. Without improving the mainland road, all the way to I-95, the people being evacuated along NC 168 and the improved US 158 corridors will bottleneck at the Elizabeth City Causeway Bridge and in Moyock. This is magnified when the Virginia DOT closes the northbound NC 168 passage into Virginia, as has happened in past evacuations. Therefore, people will be trapped in their vehicles in an approaching hurricane, possibly even on the proposed bridge. The bridge will not help evacuation of the beach; it will just shift the traffic back-up from the beach to Barco. Since the Mid-Currituck Bridge will be south of the Knapp Bridge, all traffic from the Wright Memorial Bridge and the proposed Mid-Currituck Bridge will merge onto US 158. Without improving NC 12 going south by adding at least a middle lane for turns, the addition of the bridge will not facilitate hurricane evacuation or improve traffic flow to the south. Also, the increased transient and permanent population that the bridge will bring negates any net traffic flow improvement, especially in an evacuation. Passage through the False Cape Back Bay Wildlife Reserve has been used in the past when necessary during hurricane evacuations, so the bridge is not needed. Evacuation will be worse with a Mid-Currituck Bridge because it would induce development and there will be more people to evacuate.

Response: *The model that estimates hurricane clearances takes into consideration travel behavior during past evacuations of the Outer Banks. The modeling revealed that the current "bottleneck" during an evacuation is US 158 from its intersection with NC 12 to NC 168. Improvements in that part of the project area were found to reduce clearance times. NC 12 back-ups result from people waiting to turn from NC 12 to US 158. This is why with a bridge the proposed hurricane evacuation improvements focus primarily on US 158 between the bridge and Barco. To achieve further reductions, US 158 would need to be widened to Elizabeth City. The need to widen US 158 to Elizabeth City is indeed magnified by the potential for Virginia to close the border when they are trying to evacuate the Hampton Roads area. Irrespective of improved weather forecasting, 18 hours is the preferred maximum hurricane clearance time, as legislated by the North Carolina General Assembly (NC General Statutes § 136-102.7, "Hurricane Evacuation Standard"). Like the traffic modeling, the hurricane clearance time modeling assumed full build-out of the NC 12-accessible Outer Banks so traffic growth that would negate project benefits is not expected. Passage through the False Cape Back Bay Wildlife Reserve would only be useful for those living or staying in Carova because there is no paved road to that exit from the area. The hurricane evacuation clearance times presented in the DEIS assume full build-out of the NC 12 accessible Outer Banks.*

4.2.5 Other

12. **Comment:** The new bridge would reduce travel times for school-age children, who live on the Currituck County Outer Banks and travel approximately two hours each way for school unless they take the ferry, and for law enforcement, who travel almost two hours between the satellite office in Corolla and the Courthouse and magistrate's office on the mainland. One cannot get back from the airport on weekends after business trips due to traffic backed up to the Virginia line. The Currituck County tax base is derived from investment properties—not so much the tourists, and land will be developed with or without the bridge.

    Response: *These additional benefits of a Mid-Currituck Bridge are noted.*

13. **Comment:** There are more pressing needs in our community, state, and nation than a bridge for developmental gains and for providing an optional route for the convenience of visitors to Corolla. Why build a $700 million bridge that is not wanted and not needed when the state has so many other useful bridges that are desperately in need of major structural repair? North Carolina has a total of 18,307 bridges, with 5,476 that are structurally and/or functionally deficient. That means 30 percent of North Carolina's bridges are in need of repair/replacement. This includes the Yadkin River Bridge and the Bonner Bridge, which serves Hatteras Island, and which is needed far more than this one is. That bridge is needed for the people that live in those communities to travel to and fro and so they can get much needed services. The state needs to direct the funds and resources on this effort into that bridge. This Mid-Currituck Bridge will take much needed money, $15 million a year (NC now faces a $9.4 billion true debt burden), away from fixing these failing bridges.

    Response: *The state has funding in place for the replacement of Bonner Bridge. The commenters' position making other bridge projects in the state a higher priority is noted.*

14. **Comment:** A great deal of corruption surrounds NC politicians, NCTA, and NCDOT. This calls into question the true intentions of the NCTA and the purpose of the project, as many of those involved have ties to the real estate industry. The Mid-Currituck Bridge seems to work well for a few development interests in Corolla, for the politicians of Currituck who crave an increased tax base, and for the residents of Southern Shores and Duck who tire of the summer Saturday traffic. They are all for it if someone else is paying the bill. If Currituck County residents were asked to fund this alternative, it is doubtful they would be so supportive. No changes should be made, because they are not needed for the vast majority of people. This entire action is beneficial to only a small portion of the population, but the majority of taxpayers will fund this monstrosity.

    Response: *The commenter's position is noted.*

15. **Comment:** This study has gone on for a long time, far too long, and much money has already been invested. The bridge is overdue and should have been built 15

years ago. Waiting to build the bridge and widen NC 12 is just putting off the inevitable, which will result in a much higher cost years from now.

Response: *The commenter's position is noted.*

16. **Comment:** The DEIS needs to provide traffic and population projections and impacts for the Outer Banks once the bridge is built.

    Response: *The population forecasts used to generate the traffic forecasts assume full build-out on the NC 12-accessible Outer Banks by 2035. Therefore, the bridge is not expected to induce additional population and associated traffic. Traffic forecasts are presented in Section 2.2 of the 2035 Traffic Alternatives Report included on the compact disc (CD) that accompanied the DEIS and this FEIS.*

4.3 Alternatives

4.3.1 Widening Existing Roads

17. **Comment:** NC 12 should be designated a historic road so that no widening can take place and jeopardize the lives of thousands of people who walk and ride their bikes along the road.

    Response: *The suggestion is noted.*

18. **Comment:** The only acceptable widening of NC 12 would be to make it a three-lane road to ease the flow of traffic when needed. No one has been able to explain what necessitates widening NC 12 to four lanes, as the bridge is two lanes. The need to have a one- to two-mile stretch of NC 12 with two lanes in each direction is unclear if the rest of the roads to the north and south are only one lane in each direction

    Response: *The Preferred Alternative includes widening NC 12 to four lanes at what are or will be three heavily used intersections, the bridge terminus, Albacore Street, and Currituck Clubhouse Drive. Left turn lanes are provided at other intersections. The additional lanes are needed because drivers are slowing down and stopping to make turns. If NC 12 were like the bridge and had no driveways or cross streets, the forecast NC 12 traffic could be handled with two lanes.*

19. **Comment:** On NC 12, reexamine all cross street intersections between the US 158/ NC 12 junction and the existing three-lane segment in Duck for additional left-turn lane enhancements. Extend the three-lane segment of Ocean Boulevard (NC 12) in Southern Shores to the Ocean Boulevard/Duck Road fork with improvements to allow a smooth merge to two lanes. Or, extend the three-lane segment to Chicahawk where there is a traffic signal that can be optimized based on traffic needs.

    Response: *The Preferred Alternative does not include improvements at the locations described by the commenter since neither ER2 nor MCB2, which included NC 12 improvements in Dare County, was selected as the Preferred Alternative.*

20. **Comment:** Changes at Seashell Lane are not clear. There is not land available there to widen the road without taking private property. Perhaps end the four-lane section at the Harris Teeter traffic light with a right-turn only lane.

    Response: *Improvements to NC 12 in Currituck County do involve the purchase of private properly, primarily for permanent drainage easements. At the Harris Teeter traffic light (Currituck Clubhouse Drive), four lanes are needed on both sides of the intersection to provide for through travel. A roundabout would replace the signalized intersection.*

21. **Comment:** With ER2 or MCB2, do not build a straight road along US 158 in Kitty Hawk. Instead, provide curves: 1) curve to the right from the bridge to Amandas Avenue; 2) curve to the left before Victory Chevrolet and Islander Flags, including the bridge over Jean Guite Creek, 3) curve back to the right in front of Kitty Hawk Estates; 4) continue to the Marketplace; 5) only the ABC store would be affected. This design would have the least disruption to existing businesses. Although it might be more expensive to build, it would be less costly than buying out existing commercial properties.

    Response: *The Preferred Alternative includes a limited amount of US 158 widening that would not require new right-of-way. The introduction of the curves described for US 158 with ER2 and MCB2 would not be practical for two reasons. First of all, from a roadway operations perspective, the straight alignment of the existing facility would operate at a better level-of-service. Second, the substantial re-construction of the existing roadway that would be required to go from the existing straight alignment to an alignment with multiple curves would be challenging from the perspective of maintaining traffic movement during the construction period. The improvements on US 158 included in ER2 and MCB2, however, would require only limited right-of-way purchase as discussed in Section 2.1.8 of the DEIS and this FEIS.*

22. **Comment:** Widening NC 12 could be dangerous because of roadside ditches.

    Response: *Roadside ditches (infiltration strips) are used to carry road drainage on any road that does not have curb and gutter. They would be designed so they would not be a hazard.*

23. **Comment:** Several years ago NCDOT studied this situation and concluded that improvements to existing roadways provided the best approach to solve traffic problems. What is needed is US 158 and NC 12 to be worked out for a better flow.

    Response: *The greatest reduction in traffic congestion in the project area would involve an alternative like ER2, but with four lanes on NC 12. This alternative was evaluated as ER1 and dropped from consideration because of substantial community impacts, including over 200 home and business displacements. (See Section 2.5 of the DEIS and this FEIS, as well as Section 2.1 of the* <u>*Alternatives Screening Report*</u> *included on the CD that accompanied the DEIS and this FEIS.)*

24. **Comment:** If the DEIS states that the worst congestion occurs in NC 12 just south of Southern Shores and Duck and on US 158 east of the Wright Memorial Bridge, these areas ought to be fixed first.

    Response: *The Mid-Currituck Bridge project would divert traffic from the areas noted by the commenter, reducing traffic in those areas.*

4.3.2 NC 12 Drainage Improvements

25. **Comment:** NC 12 needs drainage immediately.

    Response: *All of the detailed study alternatives, including the Preferred Alternative, include drainage improvements on NC 12 where NC 12 would be widened.*

26. **Comment:** Installation of drainage ditches along NC 12 in Southern Shores is opposed. The ditches would further reduce the vegetation and yard space, impact septic drain fields, exacerbate the risk of injury should a vehicle go off the road, and be a breeding ground for mosquitoes, and reduce property values.

    Response: *The position of the commenter is noted. No improvements to NC 12 at Southern Shores are included in the Preferred Alternative. Note that the infiltration basins would remain dry except during a storm, at which time the water accumulated in the basins would infiltrate into the soil. There would be no standing water to breed mosquitoes.*

27. **Comment:** Where drainage along NC 12 is discussed in the DEIS (Page 2-24), it is not clear how infiltration is appropriate, as NC 12 will be widened to four lanes in the same area that floods during heavy rain events. The 21-foot buffer zones and two acres of storm water detention basins will dislocate far more than the 6 or 10 residents noted in the DEIS, particularly in the northern section of Ocean Sands.

    Response: *Infiltration is the primary way rainwater is currently handled along NC 12. The purpose of the infiltration strips and basins is to receive the waters that currently cause flooding. The infiltration strips and basins would provide a place for the water to go besides all over the road and adjoining properties prior to infiltration. The displacement counts are estimates based on preliminary design.*

28. **Comment:** Drainage ditches from the Food Lion north to C1 are unnecessary, as drainage canals were installed in spring 2010 in Whalehead, from the 900 block south. There has been no flooding from the 900 block to C2. Although it does not show on aerial photos, there is a big, deep canal about 20 feet wide in the backyards of about six homes at 942 Corolla Drive. The canal is full of sedges and willows, and is never full during heavy rains.

    Response: *The infiltration strips are needed to handle drainage from the road. The location and design of the infiltration ditches will be finalized based on detailed hydraulic studies conducted during final design.*

29. **Comment:** Businesses at 6146, 6150 and 6156 North Croatan Highway are interested in creating underground storage that could drain to adjacent property. This would minimize the area needed to widen the road on the south side of US 158 in front of these properties.

    Response: *No improvements are proposed on the south side of US 158 with the Preferred Alternative.*

30. **Comment:** The idea of the overly large drainage ditches is seen as a way to work in a four-lane road if neither ER2 nor MCB2 is selected. The NCDOT can later convert those ditches to two lanes of highway.

    Response: *The infiltration strips shown are needed in part to address existing drainage problems caused by stormwater runoff from NC 12 and, in the case of much of Dare County, runoff from private development as well. NCDOT would not widen NC 12 in the future by using the area required for the infiltration strips and to do so would cause the existing drainage problems to return.*

31. **Comment:** The additional cost of catch basins for storm water is presented as an option with a cost of $10 million (DEIS Page 2-26). It is not clear if this cost was factored into MCB2 and MCB4.

    Response: *The cost of bridge drainage features, including the estimated $10 million for catch basins with bridge drainage Option 2 (see DEIS Section 2.1.7.2), was included in the DEIS cost estimates for the preliminary design for each of the detailed study alternatives (see the footnote below DEIS Table 2-4). For this FEIS, the cost of bridge drainage features with Option 2, including the catch basin cost estimate (see FEIS Section 2.1.7.3), also is included in the updated FEIS cost estimates for all of the detailed study alternatives except for the Preferred Alternative (see the footnote below FEIS Table 2-4). For the Preferred Alternative, catch basins on the bridge are not included in the cost estimate, but the cost estimate includes higher mitigation costs than for the other detailed study alternatives because advanced mitigation planning (including the costs for bridge stormwater impacts mitigation) has occurred in coordination with environmental resource and regulatory agencies.*

4.3.3 Mid-Currituck Bridge

32. **Comment:** A four-lane bridge is preferred over a two-lane bridge. It is poor planning to build it with only two lanes, as almost no two-lane bridges or highways, or four-lane bridges or highways, were not inadequate in size almost immediately upon opening. A future expansion to four lanes will be unable to utilize the current bridge foundation structure, requiring a second round of pile driving, and the grade surface approaches would require a second roadway site work project, at a most likely doubled expenditure.

    Response: *Traffic forecasts that assume full build-out on the NC 12 accessible Outer Banks indicate that two lanes would be sufficient through 2035. To build an additional two lanes before they are needed would mean paying interest on borrowed money for a facility that is*

not needed to meet the need. An additional two lanes would require their own bridge foundation (a parallel bridge similar to the Wright Memorial Bridge). The cost would essentially double whether the second two lanes are built now or later (if they are ever needed).

33. **Comment:** The C2 terminus would make use of a 1.7-acre parcel purchased by NCDOT in 1995, and it seems prudent to utilize land already owned by the state. Perhaps this is one reason the C2 option is somewhat less costly than C1.

    Response: *The C2 terminus would not use the 1.7 acre parcel purchased by NCDOT in 1995. It is expected that this parcel would be sold.*

34. **Comment:** Any incident on the bridge, from minor breakdown to major single or multi-vehicle accident, not only would cause significant back-up congestion in both directions, but would create a significant challenge to both Corolla and mainland rescue teams. Planning documents that detail accident scene management and victim export (not to mention getting wreckers in and out) should be developed, as well as expanding fire, EMS, police, and medical facilities. It would not be prudent to build the bridge without consideration of funds to expand rescue operations and published.

    If a multiple-vehicle accident occurs, the only way rescuers can work the scene is from either end. A fire within the accident could be catastrophic, since the rescuers could not get their equipment directly to the fire. This is not the case with the Wright Memorial Bridge, because fire apparatus could muster on the second span. Also, the bridge location places it in shallow water, negating the possibility of deploying fireboats or other large watercraft. This was confirmed by the International Fire Fighters Association and the American Society of Industrial Engineers, who concluded that, in its current design, the proposed Mid-Currituck Bridge poses a clear and present danger to public safety, particularly for first responders to a disaster; the Corolla Fire Department does not have sufficient equipment, training, or manpower. If they need to respond to a major emergency on the new bridge, it would require all of their resources, leaving the community vulnerable. Calling for assistance from neighboring jurisdictions would be futile, since a major accident on the bridge would create gridlock on NC 12, the only artery available to rescue equipment.

    Response: *An emergency response plan for the bridge would be developed between Currituck County and the bridge operators. There is, however, no reason to believe that an accident on the bridge would tax Currituck County emergency response teams any more than an accident on a surface road or on the Wright Memorial Bridge before it was widened.*

35. **Comment:** Although no left-turns are planned in the C2 terminus on the Outer Banks, people will make these turns illegally, causing additional traffic issues and, possibly, accidents.

Response: *On NC 12 improvements where left turns are restricted, medians and raised pavement would be used to make illegal turns difficult.*

36. **Comment:** The Build the Bridge-Preserve Our Roads, Inc. (BBPR) Board of Directors supports MCB4 as the best option for bridge construction, as it meets all project objectives while controlling costs, taking into account and minimizing impacts to the affected communities, and mitigating environmental concerns. BBPR has 22,779 petition signatures (13,116 residents/property owners in Dare and Currituck counties, 9,663 visitors) in favor of bridge construction without widening of US 158 in Currituck County or NC 12 through Southern Shores and Duck. This supports MCB4, with Option A, as the Preferred Alternative.

    Response: *MCB4 with Option A was selected as the Preferred Alternative.*

37. **Comment:** The tables in the DEIS summarizing key environmental impacts demonstrate repeatedly that the total impacts are least with ER2. Later it is mentioned that total costs also are least with ER2. However, the recommendation is made for either MCB2 or MCB4.

    Response: *The DEIS recommended MCB4. This FEIS identifies MCB4 as a part of the Preferred Alternative. The reasons for this selection are presented in Section 2.6 of the DEIS and this FEIS. Although more expensive, MCB4 would provide approximately twice the travel benefits of ER2 (see Section 2.2 of the DEIS and this FEIS).*

38. **Comment:** The DEIS does not mention either the formal resolution by the Currituck County Commissioners unanimously opposing "Option B" or opposition by Aydlett area residents.

    Response: *Their opposition is noted in the Stakeholder Involvement for Draft Environmental Impact Statement Technical Report (see Section 3.3.2) included on the CD that accompanied the DEIS, as well as the same section in the Stakeholder Involvement for Final Environmental Impact Statement Technical Report (on the CD that accompanies this FEIS).*

4.3.4 Hurricane Evacuation Improvements

39. **Comment:** The DEIS does not analyze the impact of current widening and improvement to US 158 between Belcross and Camden and on to US 17 (Project No. 34430.3). Therefore, clearance time is likely to be overstated.

    Response: *The model used to estimate hurricane clearance time includes existing roads, roads currently under construction, and future road improvements programmed in NCDOT's STIP. For example, the widening of US 158 from east of the Pasquotank River in Elizabeth City to east of NC 34 in Belcross (STIP No. R-2414) is currently under construction and is included in the projected hurricane evacuation clearance time. In addition, US 158 is already a four-lane facility from east of the Pasquotank River to US 17 in Elizabeth City and this is also included in the projected hurricane evacuation clearance time.*

40. **Comment:** Given the length of this bridge, it would be necessary to restrict or close it when the wind reaches a certain velocity, much like the bridge to Eastern Shore, Virginia. Such wind velocity and procedure was not addressed in the DEIS.

    Response: *The same procedures would be followed as on other North Carolina coastal bridges. It is the goal of emergency management to get all evacuatees to a point of safety (beyond the storm's path or in a shelter) before gale force winds arrive at the coast.*

41. **Comment:** Because hurricane evacuation is the same approach across all three options, the issue of additional lanes or reverse lanes should have no bearing on the build or no-build approach for the bridge.

    Response: *This is the case, but with one exception. Emergency management officials have indicated that reversing the center turn lane on US 158 would not be a viable option unless the Mid-Currituck Bridge is built. They do not believe that reversing 27 miles of US 158 is logistically possible. See Section 2.1.10.4 of the DEIS and this FEIS.*

42. **Comment:** The proposed benefits do not justify the cost, as there are better and less costly evacuation alternatives to a Mid-Currituck Bridge. As an example – create four westbound lanes on US 158 using the current two westbound lanes, plus the center lane, plus the center-most eastbound lane. Similarly, convert one eastbound Wright Memorial Bridge (WMB) lane to westbound. This leaves one lane for eastbound emergency vehicle traffic. The three westbound WMB lanes would feed into four westbound US 158 lanes and probably keep them full, with building from inland traffic and towns. Traffic from the proposed northern (Mid-Currituck) bridge would merge into US 158 evacuation traffic, creating congestion and slowing. The over-arching evacuation goal is to get cars off the Outer Banks regardless of where they start. The four westbound US 158 lanes from WMB would keep moving most easily and quickly if there were no interference from merging traffic from a new Mid-Currituck Bridge. With the presence of a new bridge, the only way to avoid merging/slowing traffic would be to build an additional westbound lane just for Mid-Currituck Bridge traffic where the bridge feeds onto US 158.

    If additional bridging is critical, adding a span to the WMB is a far lower cost alternative based on length alone. And there is plenty of room for two additional traffic lanes between the bridge and Home Depot. Adding a single span to WMB and creating the potential for four westbound evacuation lanes with two new roadway lanes on the Outer Banks could further speed evacuation but should be considered only if it is a necessity and would not overload the four westbound evacuation lanes on US 158 to the point that three bridge lanes would have been adequate.

    Response: *Emergency management officials have indicated that reversing the center turn lane on US 158, as suggested in the first paragraph of the comment, would not be a viable option unless the Mid-Currituck Bridge is built. They do not believe that reversing 27 miles of US 158 is logistically possible. See Section 2.1.10.4 of the DEIS and this FEIS.*

The Mid-Currituck Bridge interchange at US 158 would be designed to facilitate merging traffic from the bridge to US 158. The bridge would reduce the amount of traffic merging into US 158 from NC 12 in Kitty Hawk.

43. **Comment:** NCTA and the FHWA recommend MCB4. Why is MCB4 the Recommended Alternative if it is not the best method for hurricane evacuation?

    Response: *As noted in Section 2.2 of the DEIS and this FEIS, the best evacuation clearance times occur with a third outbound lane on US 158. This approach could be applied to any of the detailed study alternatives, including MCB4. A third outbound lane was not included in the Preferred Alternative for the reasons presented in Section 2.6 of this FEIS.*

4.3.5 Other Alternatives

44. **Comment:** The west end of the bridge needs to be at a different location, such as:

    - At the south end of Currituck County, one mile south of Grandy at the trash collection spot; it would affect less 404 wetland acreage, be on higher ground, and would not need to traverse a swamp. People could go right over to the county line; half of them south, half north, and the roads would not have to be widened to accommodate them.
    - At Barco at the US 158/NC 168 intersection or to the south, north of the dumpster site. Either area would have less impact on the environment and have facilities to accommodate the bridge.
    - Use the existing NC 12 right-of-way from the Virginia state line to Corolla. Road improvements and relatively minor construction from NC 168 north of Moyock, to a short high-rise bridge across the Intracoastal Waterway (crossing the northern portion of the North Landing River) from Gibbs Woods to Mackey Island, then surface roads across Knott's Island to a short bridge to Carova, joining the existing right-of-way toward Corolla, would be more reasonable if the goal was to simply "get people to and from the Outer Banks." Construction of roads in National Parks and Seashores happens, if it is pursued, planned, and presented properly. Utilization of extended, raised wildlife passages would prevent negative impact in those areas. It could even serve to provide a spectacular vantage point for viewing the birds and wild areas. This action also would eliminate the "dead end" at Carova, which will not be remedied by a Mid-Currituck Bridge.

    Response: *A bridge from Grandy would terminate on the Outer Banks within the National Audubon Society-Pine Island Audubon Sanctuary after passing over several marsh islands. This would be an unacceptable impact. Beginning at Barco would necessitate a high level bridge over the Intracoastal Waterway and a bridge terminus north of the end of NC 12. An alternative that involved the extension of NC 12 would be unacceptable from the perspective of potential natural resource impacts. Numerous government policies are in place to prevent or discourage the implementation of such an alternative. They are listed in Section 4.2.4.2 of*

the Indirect and Cumulative Effects Technical Report included on the CD that accompanied the DEIS and this FEIS.

45. **Comment:** The section on wetlands impacts, which will be substantial under all alternatives, there is no mention of trying to minimize theses impacts by building an elevated roadway along Aydlett Road, rather than crossing Maple Swamp along a new right-of-way.

    Response: *The Preferred Alternative would fill 7.9 acres of wetlands. Placing an elevated road along Aydlett Road was not considered reasonable because it would end in a developed portion of Aydlett with associated displacement, local travel, and other community impacts.*

46. **Comment:** Option B is preferred, although at least one property would be severed. This could be avoided with these changes: 1) move the toll plaza 1,200 feet west; 2) provide ingress and egress from the bridge approach road into Aydlett, 3) do not remove the road through the Maple Swamp; and 4) place the cul-de-sac in the southeast corner where Narrow Shore Road parallels the sound, a location favored by the two affected property owners. If property is to be severed by Option B, provide the owners with unlimited access.

    Response: *It is not clear what property the commenter is referencing. Properties that lose access to a public road would be purchased. Moving the toll plaza 1,200 feet west would increase Maple Swamp impacts. Currituck County officials and many residents of Aydlett oppose providing access to Aydlett from the bridge approach road. Option B was not selected to be a part of the Preferred Alternative because of its impacts to Maple Swamp and concerns raised by the Aydlett community.*

47. **Comment:** The east end of the bridge needs to be at a different location such as south of the Currituck Club on land owned by the Audubon Society, where there are no homes on the east side of NC 12. If the goal of the bridge is to shorten travel to that segment of the Outer Banks and facilitate hurricane evacuation, while maximizing traffic flow along NC 12, the most central location of a terminus would accomplish this best. If traffic entered in the middle, 1/2 would travel north and 1/2 would travel south on NC 12 if the housing distribution were equal.

    Response: *Terminating on the Outer Banks at Pine Island would pass through the National Audubon Society-Pine Island Audubon Sanctuary after passing over several marsh islands. This would be an unacceptable impact.*

48. **Comment:** The plans should include widening the Knapp Bridge, which is a choke point and will slow traffic trying to exit to the new bridge, backing traffic to Barco and points north.

    Response: *The US 158/Mid-Currituck Bridge interchange is designed so that forecast 2035 summer weekend bridge traffic would not back-up onto US 158.*

49. **Comment:** There is a real problem of unrestrained growth and traffic on the Outer Banks. What is needed is a comprehensive plan to address relief of the traffic problems area-wide and a commonsense plan to key growth to maintain the unique nature of the Outer Banks, as well as the availability of services and public accommodations and the infrastructure to support the planned growth. It is not evident how the bridge by itself addresses and solves these problems.

    Response: *The county has a land use plan, transportation plan, and ordinances to regulate growth. The bridge would be an important asset to serve planned growth.*

50. **Comment:** The congestion on summer Saturdays is caused by check-in/check-out times not being sufficiently staggered, as well as short-sighted highway planning related to the Southern Shores and Barco areas along US 158. The disruption of so many innocent peoples' lives to build a bridge to address these problems is not warranted.

    Response: *Congestion also is heavy on the summer weekday. The option of shifting rental times was evaluated. The findings are presented in Section 2.2.1 of the Alternatives Screening Report included on the CD that accompanied the DEIS and this FEIS. The analysis concluded: "The Shift Rental Times Alternative would—if implemented—result in some reduction in congestion on NC 12 and US 158 during summer weekends, but it would provide no benefits during other times, including summer weekdays. Overall, the reduction in total congestion (Level of Service [LOS] E and F) would not be substantial (1 percent). This alternative also would result in a reduction in summer travel time (1 percent) that would not be substantial and would not provide any reduction in hurricane clearance time."*

51. **Comment:** The overall goal of reducing the number of cars on NC 12 could be accomplished in a few ways: one is to try running the NC 12 traffic calculations using person trips instead of vehicle trips and running them with a transportation alternative like adding a dedicated bus rapid transit lane up and down NC 12; another idea would be to try implementing measures to encourage vacationers to leave one or two cars on the main shore.

    Response: *Vehicle-trips are used instead of person-trips because the level of service of a road is dependent on the vehicle capacity of the road. Buses were examined as an alternative in Section 2.2.3 of the Alternatives Screening Report. It was concluded that: "If implemented, the Bus Transit Alternative would provide no congestion relief and no reduction in travel times to the Currituck County Outer Banks from the mainland. It makes provision only for trips on the Outer Banks. Thus, it would offer no hurricane clearance time benefit for those leaving the area during an evacuation." The same section says regarding asking vacationers to park on the mainland that: "Visitors to the project area currently come by automobile carrying personal items needed for up to a week-long stay. They often bring children. In order to capture these travelers, they would have to be willing to spend the time to load their luggage and other personal items into a bus, ride a bus with multiple stops along the way, walk with their luggage from the bus to the real estate office to check-in, board another bus with luggage to get into the general vicinity of their final destination (buses could not stop at*

every beach home), and finally walk with their luggage to their beach home or other destination. This clearly would be time consuming and inconvenient.

52. **Comment:** Southern Shores and Duck, through irresponsible development patterns, have caused the main congestion problems. Therefore, they need to put forth the most effort in solving those problems.

    Response: *The municipalities in Dare County, as well as in Currituck County, all have land use plans that guide the type and location of development. Much of the traffic on NC 12 in Southern Shores and Duck is traffic traveling through those communities to reach Currituck County. A Mid-Currituck Bridge would divert Currituck County traffic from those communities.*

53. **Comment:** Multiple studies and recommendations have been made, including rotating or spreading out the days the vacationers arrive, adjusting the timing of the traffic signals, and addressing the poor design of the area east of the Wright Memorial Bridge on US 158, as well as trolley service. Little effort has been made to address recommendations of these previous studies.

    Response: *Rotating or spreading out the days the vacationers arrive, adjusting the timing of the traffic signals, and addressing the poor design of the area east of the Wright Memorial Bridge on US 158, as well as trolley (bus) service were all evaluated in the course of selecting the detailed study alternatives assessed in the DEIS and this FEIS. The findings of these studies are referenced in Section 2.5 of the DEIS and this FEIS and described in detail in Section 2.2 of the Preferred Alternative Report included on the CD that accompanies this FEIS. It was found that none of these alternatives would make more than a minimal reduction in congestion and travel time.*

54. **Comment:** The concept of reversible lanes is discussed only in terms of hurricane evacuation, not on traffic relief during the peak 13 weekends.

    Response: *Reversing lanes could not be done on NC 12 because the road is only two lanes and one lane in each direction of travel must be maintained. Reversing lanes on US 158 would not be feasible for the same logistical reasons why it would not be feasible with ER2, as discussed in Section 2.1.10.4 of the DEIS and this FEIS.*

55. **Comment:** Modification of two intersections, one at Southern Shores, NC, (US 158/NC 12) and the other at Barco, NC, (US 158/NC 168) with flyover left turns at each, would eliminate bottlenecks that cause traffic congestion throughout Currituck County. Synchronizing traffic signal timing in Moyock would alleviate congestion in the north in Currituck County. Backup problem resolved, traffic flow substantially improved, cost is minimal in comparison to NCTA's proposal. These are expenditures that could be justified given the absence of traffic congestion during most of the year.

    Response: *The concept described would reduce traffic congestion in a manner similar to ER2 given that the primary travel benefits with ER2 are associated with the widening of US*

158 and the construction of a US 158/NC 12 interchange at Southern Shores. However, the travel benefits of ER2 would be approximately half that associated with the Preferred Alternative, as presented in Section 2.2 of the DEIS and this FEIS.

56. **Comment:** The major traffic bottlenecks are at the NC 12/US 158 intersection and along NC 12 through the Town of Duck. Traffic crawls through Duck because of the narrow right-of-way, thus allowing development too close to NC 12. The DEIS discusses the high expense of widening NC 12 through Duck, but not the total cost of road and bridge work elsewhere. This does not make fiscal sense. It would seem the DEIS has taken a position to avoid any adverse impact on Duck at the expense of Aydlett and Corolla.

    Response: *The cost and impacts of any widening proposed on US 158 and NC 12, as well as in Aydlett, are assessed in the DEIS and this FEIS. A decision was made during the alternatives screening not to evaluate in detail an alternative that would widen NC 12 to four lanes in Dare County, including Duck. This alternative was evaluated as ER1 and dropped from consideration because of substantial community impacts, including over 200 home and business displacements. (See Section 2.5 of the DEIS and this FEIS, as well as Section 2.1 of the Alternatives Screening Report included on the CD that accompanied the DEIS and this FEIS.) A three-lane widening of NC 12 in Dare County combined with no Mid-Currituck Bridge was assessed in the DEIS and this FEIS as ER2.*

4.3.6 Accommodation of Bicyclists and Pedestrians

57. **Comment:** An increase in the amount of traffic and/or number of lanes along NC 12, plus new drainage ditches, will make it more difficult for pedestrians to cross safely, especially during the summer season. Additional designated pedestrian walkways will be required, such as walkways over NC 12, walkways across drainage ditches and, at Whalehead, a walkway across NC 12 from each east-west street to enable pedestrians to reach the beach on foot from Monteray Shores, Corolla Bay, etc. With insufficient parking in Whalehead, pedestrian access is important. Has funding been set aside to create barriers to limit jaywalking?

    Response: *The detailed study alternatives, including the Preferred Alternative, all include the replacement of existing multi-use paths when affected by construction and, along widened parts of NC 12 where none exist, space for their future construction. Where NC 12 would be widened with the Preferred Alternative, marked pedestrian crossings would be provided at locations identified in Currituck County transportation improvement planning along NC 12, as well as at North Harbor View Drive. There are no plans to put up barriers to limit jaywalking.*

58. **Comment:** The Mid-Currituck Bridge will be an engine for increased bicycling activity and, therefore, economic activity on the Outer Banks. It is anticipated that the bridge will be as bicycle-friendly as the Virginia Dare Bridge, which has bicycle pull-off areas on the eastbound and westbound sides. It is suggested that cyclists not be charged a toll, that a "gateway" be provided so cyclists can transition onto the

bridge, and that parking be provided at the east and west termini to enable people to drive to the bridge and then bicycle across.

Response: *There are no plans to charge cyclists tolls. Parking for cyclists at or near the bridge termini is not planned.*

59. **Comment:** The project should provide biking and walking paths everywhere like they have in Florida. The footbridge and multi-use path on the north side of US 158 get an amazing amount of traffic and are great for the community. If the bridge and path need to be replaced, they could be replaced on the opposite side of the road from their existing location. Depending on the outcome of the replacement, the properties 6146 and 6156 North Croatan may be interested in acquiring the bridge and moving to be a crosswalk to connect the two properties.

    Response: *The detailed study alternatives, including the Preferred Alternative, all include the replacement of existing multi-use paths when affected by construction and, along widened parts of NC 12 where none exist, space for their future construction. With the Preferred Alternative, only limited improvements are proposed along the portion of US 158 referenced. The existing path would be re-built in its current location. The Town of Kitty Hawk has plans for a multi-use path on the south side of US 158.*

4.3.7 Bridge Cost and Financing

60. **Comment:** The state cannot afford the bridge, the cost is unjustified, and the state does not need another huge boondoggle that will doubtless run over schedule and budget. The cost of the bridge exceeds what any citizen should consider a reasonable expenditure, particularly since it is needed only a few months of the year and would benefits only a small percent of the state's population. It is unfair to burden the majority of North Carolina taxpayers with this huge cost at any time, especially during an economic recession. Tolls would pay for only a fraction of the bridge's cost which, over the next 30 years, would require state "gap funding" that is worth nearly $300 million today. The state would also have to guarantee several hundred million dollars of loans and "toll revenue bonds."

    Response: *The commenters' position is acknowledged. See the response to comment 62.*

61. **Comment:** Considering the mounting financial issues this state is facing any money going toward this bridge project could be better spent on education, existing roads and bridges, and Bonner Bridge, which should be addressed first. In a state that claims it cannot provide appropriate educational resources at the elementary, secondary, and post-secondary levels, the proposed spending of $800 million to $1 billion on a bridge to decrease seasonal traffic impacts on the Outer Banks makes us poor stewards of public funds. The $750 million per year would fund innumerable teachers, policeman, and fire trucks. The cost alone of buying all that property along NC 12 would be prohibitive.

Response: *The state has funding in place for the replacement of Bonner Bridge. The commenters' position making education and existing road and bridge improvement a higher priority is noted. The $750 million is a total cost and not an annual cost. The cost of purchasing property is included in the project costs presented in Section 2.3 of the DEIS and this FEIS.*

62. **Comment:** The availability of funds to ensure the completion of such a large effort is questionable. It is questionable whether the proposed road changes can be done in this period. Specify the guarantees to assure a quick schedule and proper funding. What kind of plan is in place for funding? Should revenues falter or the concessionaire fail, the state could be left with a debt of $685 to $973 million for which there is no contingency above the $15 million annual payment authorized by the General Assembly. There is the potential from an investment perspective for the bridge to be a fallow monolith like so many of the shopping centers during the off season.

    Response: *Regarding a quick schedule, the private concessionaire would be responsible for the completion of the construction and would only be able to start debt service payments after the project starts its operation phase and tolls are collected. Therefore, there is a clear incentive to meet the construction schedule (even the acceleration of it) in order to start the toll collection and debt payments as soon as possible. This incentive would help ensure the completion of the project on time.*

    In terms of proper funding, NCTA has entered into a predevelopment agreement with a private concessionaire that has developed a financial plan for the project. At the end of environmental studies, NCTA would make a decision to move forward or not. That decision would be based in part on the reasonableness of the financial plan. The different check points in the decision-making process ensure that the project would be constructed only if it is financially feasible.

    NCTA has two funding sources available for the Preferred Alternative. The two funding sources are state appropriations from highway user taxes and toll revenues. Based on these two funding sources three financing techniques would be used if the Preferred Alternative is selected for implementation. These techniques are:

    - *State appropriation bonds;*
    - *Toll revenue bonds; and*
    - *Private equity from the private concessionaire.*

    The possibility that revenues would falter or the private concessionaire fail would be addressed in the final concession contract to be negotiated by NCTA and the private concessionaire.

    Toll and revenue studies completed by NCTA demonstrate that between October and May, the revenues of the bridge will be great enough to ensure that the bridge would be open even during the off season.

63. **Comment:** This project was conceived in the "go-go" 1990s by pro-real estate and development factions. It would be ill advised to use scarce state resources, put bond ratings at risk, and betray the current administration's approaches to both environmental justice and smart growth to fund the project. The justifications of saving tourist commute time; hurricane evacuations and congestion will not be cured or even really addressed by construction of this bridge.

    Response: *The position of the commenter is noted. There are no environmental justice issues associated with this project. Growth in Currituck County and the three Dare County municipalities in the project area has been guided and will continue to be guided by area land use and transportation plans. The travel benefits of the detailed study alternatives, including the Preferred Alternative, are presented in Section 2.2 of the DEIS and this FEIS.*

64. **Comment:** The state has pledged more than $500 million to this project over 40 years. It is not clear if a tax increase is planned to cover the costs. It also is not clear whether the county will be tasked to provide fire, police, EMS and other services for the bridge and if this also will require a tax increase.

    Response: *The funds the state has pledged are highway trust fund accruals that for several years were diverted to the general fund by the General Assembly from their intended purpose for transportation improvements. The bridge would add only approximately seven miles to the Currituck County road system. The need for additional fire, police, EMS, and other services for the bridge is not expected. There are no plans to increase taxes either at the state or county level to fund the Mid-Currituck Bridge.*

65. **Comment:** Highway user tolls have become a way of life in most areas of our country. Therefore, a reasonable toll to offset construction and ongoing maintenance would be an acceptable way to finance this project. A toll of $5 to $10 each way for residents and $10 to $30 for vacationers likely would be acceptable.

    Response: *The commenter's position is acknowledged.*

66. **Comment:** What is the state's previous experience with public/private partnerships for transportation projects? Who has ultimate responsibility for public safety and liability related to the bridge and related infrastructure? Since the private partner will set the toll rate, the county has no say in the rate for county vehicles.

    Response: *The Mid-Currituck Bridge project would be the state's first experience with a public-private partnership for a transportation project. However, this methodology to develop projects is being used all around the United States in projects like: I-595 in Florida, IH-635 in Texas, and Denver Fast Tracks in Colorado. The ultimate responsibility for public safety and liability related to the bridge and related infrastructure is the State of North Carolina. Design, construction, and operating requirements for the bridge would be contained in the contract between NCTA and the private concessionaire. Currituck County has no role in setting toll rates and would not have a role even if a private concessionaire were not involved. Toll rate policies will be based on terms in the contract between NCTA and the private concessionaire.*

67. **Comment:** The overall investment rationale for this project is unclear, especially with a private company. When the state seeks private funding, it provides an increase in the potential for conflicts of interest, such as the source of the funding, which is complicated because these financial plans implicate massive new investments in real estate and infrastructure, which would be vulnerable to hurricanes, sea level rise, and erosion that will exact further costs.

    ***Response**: Even if traditional funding were used, the project would involve an investment by the state in right-of-way (real estate) and infrastructure (the bridge and road components of the project). NCTA does not believe the source of funding creates a potential for conflicts of interest. NCTA and the private concessionaire would enter into an agreement that specifically spells out the obligations of the private concessionaire.*

68. **Comment:** To award the project to a foreign company would be a "slap-in-the-face" to American engineering and construction industries, particularly in view of America's current economic woes. A foreign company should not be allowed to build and own the bridge.

    ***Response:** The commenter's opinion is noted. The state would own the bridge. The planned private concessionaire is led by a Spanish firm, but the private concessionaire team includes several US engineering and construction companies.*

69. **Comment:** Unless the toll is as low as possible (some will not pay $12 to $20 to cross the bridge), locals will not be able to afford to use the bridge, so it will only be for tourists and county workers. With the current economy, many people cannot afford and will not pay a high toll or perhaps any toll to get to the beach an hour sooner in the summer. Ordinary citizens of Currituck County will not add $8 to $15 or more to the cost of a day trip to the beach, grocery store, movies, school event, or other occasion. If enough drivers choose to not pay the toll, a major justification (time) for the bridge will be eliminated and, ultimately, the state of North Carolina will have to bear the costs.

    ***Response:** The bridge project's toll financing plan takes into account willingness to pay.*

70. **Comment:** The toll to use the Mid-Currituck Bridge should be less for residents and others who use the bridge frequently than for tourists who use the bridge infrequently. Frequent users could be issued coupon books at a discount, year-round discounted passes, or reduced rate passes similar to the Smart Tag used by the State of Virginia. A toll should be charged to the Outer Banks, but not to the mainland.

    ***Response:** Rules for setting toll rates would be included in NCTA's agreement with the private concessionaire being hired to design, build, operate, and maintain the bridge project. A frequent user discount policy is being considered in order to offer a cheaper toll rate for the residents.*

71. **Comment:** Operating procedures are not addressed in the DEIS, but it is apparent that collecting tolls on the bridge during a hurricane evacuation will significantly impede the flow of traffic. An additional Project Commitment by NCTA and Currituck County should be made to the effect that tolls will not be collected during a mandatory hurricane evacuation.

    Response: *The idea is noted. Toll collection policies, including conditions under which tolls would be waived, would be finalized in the context of NCTA's agreement with the private concessionaire being hired to design, build, operate, and maintain the bridge project.*

72. **Comment:** The proposed bridge funding is discriminatory. Benefits of all build options addressed in the DEIS will accrue to all travelers to the Outer Banks by reducing travel congestion throughout the project area – the first identified need of the project is "The need to substantially improve traffic flow on the project area's thoroughfares (US 158 and NC 12)." However, the cost to fund the bridge will fall almost solely on travelers going to the Currituck Outer Banks through tolls collected on the Mid-Currituck Bridge (alternatives MCB2 and MCB4). It is imperative that all travelers share in funding the project.

    Response: *The only way to accomplish what the commenter proposes is also to toll the Wright Memorial Bridge. State law requires that for all tolled projects that an alternative (and comparable) free route be available. There would be no free route across Currituck Sound if the Wright Memorial Bridge were tolled.*

4.3.8 Other

73. **Comment:** Although the traffic occurs in Dare County, the county receives no tax benefits from the substantial amount of new development in Currituck County that was permitted but not properly planned for.

    Response: *A Mid-Currituck Bridge has been planned since the early 1990s to provide a way for traffic to reach new development on the Currituck County Outer Banks without having to pass through Dare County.*

74. **Comment:** For those who will be affected, the changing project timeline makes it difficult to plan for the future.

    Response: *The concern is acknowledged.*

75. **Comment:** The project will have a long-term negative impact on North Carolina taxpayers.

    Response: *The proposed bridge does represent a substantial future commitment for North Carolina taxpayers given the commitment of the General Assembly to issue state appropriation bonds to pay debt service not covered by toll revenue bonds.*

4.4 Affected Environment and Environmental Consequences

76. **Comment:** The environmental impact portion of the DEIS is presumptive, highly speculative, and based on extrapolation of studies that may, or may not be, representative of the Mid-Currituck Bridge and its alternatives. The one sure fact related to the impact of these proposals is that the environment will in some way be negatively affected.

    Response: *The position of the commenter is noted. The impact assessment is based on the best available information and assessment methods. As with any major new public works project, there will be negative impacts on the environment. The purpose of the environmental impact assessment process is to identify those impacts and seek to avoid, minimize, and mitigate those impacts.*

4.4.1 Community Impacts

4.4.1.1 Neighborhood Cohesion and Quality of Life

77. **Comment:** The community of Aydlett is bracing for the bridge proposed by the NCTA to go right through the heart of this rural community, which will result in damage and change. Aydlett ought to be preserved as a tranquil community where people can walk and children can ride their bikes in a safe environment.

    Response: *Impacts to the Aydlett community are addressed in Section 3.1 of the DEIS and this FEIS. The Preferred Alternative would have the least impact on the community of Aydlett of the detailed study alternatives considered. There would be no changes in the vehicle, bicycle, or pedestrian circulation patterns in the community.*

78. **Comment:** With Option A, the elevated approach to the bridge would be level with one commenter's second story bedroom windows and result in disrupted sleep. Also the property's future would be ruined, as it would not have direct access to the bridge. A ground level approach to the bridge is preferable.

    Response: *The elevated approach of Option A is included in the Preferred Alternative. This approach is considered preferable to placing the project at grade and using an overpass to maintain the continuity of Narrow Shore Road and access between the northern and southern parts of Aydlett. Public and Currituck County comment generally opposes direct access to the bridge from Aydlett.*

79. **Comment:** A $700 million project and all Aydlett will get out of it is a lot of noise, lights, litter, and air pollution. For some residents, pristine views will include a bridge in the distance and, depending on which way the wind blows, noise from vehicular traffic over the water. Bridge construction noise may result in nearby homes being uninhabitable.

Response: *The commenter is correct that the bridge would be introduced to views of the sound. This is described in Section 3.4.5.2 of the DEIS and this FEIS. The Preferred Alternative would generally not be lighted. However, the toll plaza at the US 158/Mid-Currituck Bridge interchange would be lighted. An increase in traffic noise would occur in Aydlett, but the increase is not expected to be substantial, as discussed in Section 3.4.1 of the DEIS and this FEIS. Substantial air quality impacts are not expected, as discussed in Section 3.4.2 of the DEIS and this FEIS. There would be construction noise in the community of Aydlett. The planned approach to constructing the project is described in Section 2.4 of this FEIS. Construction noise is addressed in Section 3.5.6 of the DEIS and this FEIS. The agreement with the private concessionaire would include collecting litter along the bridge project between US 158 and NC 12.*

80. **Comment:** A Mid-Currituck bridge with a C1 terminus at Corolla Bay would cut Corolla in half – pretty much preventing development of a sustainable, multi-generational, year round community.

    Response: *The C1 terminus, which is part of the Preferred Alternative, has been revised to pass through the unimproved Phase II of Corolla Bay at the south end of the subdivision. It no longer would pass through the improved portion and the middle of the subdivision.*

81. **Comment:** The C1 terminus would severely limit access to community amenities in Monteray Shores, as the bridge and proposed changes to NC 12 for bridge access would physically divide the ocean side section from the sound side section. With the widened highway and increase in traffic from C1 terminus, residents and guests will no longer be able to safely walk, bike, or push a stroller across NC 12, which will be a busy four-lane highway instead of the present two-lane road, and there is insufficient parking in Whalehead for them to drive. Homes on North Harbor View that back-up to NC 12 would lose their easement and have a new drainage ditch at the edge of the four-lane highway in their backyards. In addition, widening the road would eliminate the trees along the roadside that buffer the road noise, resulting in increased noise from traffic. With the C1 terminus, what is now a quiet street (North Harbor View Drive) with a small amount of traffic, wonderful for bike riding and easy access to the recreation area, will be turned into a constant flow of traffic exiting and entering onto NC 12.

    Response: *Although the C1 terminus was selected to be part of the Preferred Alternative for reasons documented in Section 2.6 of this FEIS, efforts were made to reduce and minimize impacts. The road would not be widened to four lanes between North Harbor View Drive and Monteray Drive. A marked pedestrian crossing would be provided at North Harbor View Drive. The commenter is correct regarding impacts to homes that back-up to NC 12 along North Harbor View Drive. Traffic would increase in this area. These impacts are documented in Section 3.1.2 and 3.1.3 of the DEIS and this FEIS. However, the connections between NC 12 and North Harbor View Drive would be similar to what they are today. In addition, North Harbor View Drive does not serve as a through route to NC 12 from adjoining subdivisions. Finally, there would be no direct connection from North Harbor View Drive to the bridge. For these reasons, it is unlikely that bridge traffic would use North*

Harbor View Drive to reach the bridge instead of NC 12. FHWA research has shown that a vegetative barrier must be approximately 100 feet wide to provide a 3 dBA reduction in noise levels – a change that is only barely detectable to most people. The presence of a single tree or row of trees has essentially no effect on reducing noise levels.

82. **Comment:** C1 could adversely change the character of the nearby residential communities, whereas C2 is located in an area with a more commercial character**.**

    Response: *Although the C1 terminus was selected to be part of the Preferred Alternative for reasons documented in Section 2.6 of this FEIS, efforts were made to avoid and minimize impacts.*

83. **Comment:** The bridge and three- or four-lane highway with median barriers on NC 12 will ruin the uniqueness, tranquil beauty and quiet ambiance of the beach communities. It also will create noise, pollution, and disturb the quality of life for people living in and visiting the Aydlett, Corolla and Sanderling communities.

    Response: *The Preferred Alternative would have no impact on the Sanderling community. Impacts to the Aydlett and Corolla communities are addressed in Section 3.1 of the DEIS and this FEIS. The Preferred Alternative would have the least impact on the community of Aydlett of the detailed study alternatives considered. Between the DEIS and this FEIS, revisions were made in proposed NC 12 improvements to reduce community impacts in Corolla. Community impacts of the Preferred Alternative incorporating these revisions are presented in Section 3.1 of this FEIS.*

84. **Comment:** Perhaps it is time to stop building new areas from Corolla to the end of NC 12. The best solution is to buy back the land from Corolla Shores north if this bridge must be built.

    Response: *The commenter's suggestion is noted.*

85. **Comment:** NC 12 floods along much of its length during typical rain events, not just at the three or four intersections mentioned in the DEIS. The discussion of the MCB4 alternative fails to address this condition beyond the intersections proposed to be (re)constructed.

    Response: *All of the detailed study alternatives assessed in the DEIS included provisions for NC 12 drainage, both new drainage from wider pavement and existing drainage that causes problems. Drainage provisions are discussed in Section 2.1.7.1 of the DEIS and this FEIS.*

86. **Comment:** Heavy rains have affected North Harbor View; an overflow of a ditch would flood the street and adjacent homes. This street has a low area that floods during heavy rains. The Currituck County flood maps show at least four homes on the west side of the street are in the worst flood zone category possible.

    Response: *All of the detailed study alternatives assessed in the DEIS included provisions for NC 12 drainage, including in the area of North Harbor View Drive. The infiltration strips*

proposed are described in Section 2.1.7.1 of the DEIS and this FEIS. Federal flood insurance maps show the North Harbor View Drive area (and most of the Currituck County Outer Banks) is Zone X, which is the classification given when property is in the 500-year floodplain or areas of 100-year floodplain with depths of less than 1 foot.

4.4.1.2 Relocations

87. **Comment:** The basis for the conclusion that MCB4 results in the fewest relocations is not clear, as MCB4 includes widening NC 12, inserting storm water buffer areas, and Ocean Sands residents are very near NC 12.

    Response: *The relocations presented for all of the detailed study alternatives take into account NC 12 widening and the proximity of existing homes to NC 12. The stormwater infiltration strips would not displace homes along NC 12.*

88. **Comment:** The cemetery at Barco, North Carolina has a long history in that community. It is a shame to lose a part of history, especially to those who live in Currituck County and to others, about the early American settlers of this community.

    Response: *The Preferred Alternative would not affect the cemetery at Barco.*

4.4.1.3 Access Change and Congestion

89. **Comment:** With Option B, all traffic going north from Grandy and Macedonia Church Road must use Narrow Shore Road to get to the toll plaza. Also, Aydlett Swamp Road will be removed, and access to property will not be possible. Although the property will be bought, the owner does not wish to sell.

    Response: *With Option B, traffic going north would not be able to use Narrow Shore Road to get to the toll plaza. Option B includes no access to the toll plaza from Aydlett. These travelers would reach the toll plaza via the US 158 interchange. Aydlett Road is not removed with the Preferred Alternative and Option B is not a part of the Preferred Alternative.*

90. **Comment:** Ocean Forest Court in Corolla is within yards of the C1 terminus. With C1, a left-turn from Ocean Forest Court onto NC 12 will not be possible, and motorists must drive over two miles south to an approved turnaround.

    Response: *Those wishing to turn left from Ocean Forest Court to NC 12 with MCB2/C1 and MCB4/C1 could turn right and then make a U-turn at North Harbor View Drive, a distance of 800 feet south. The Preferred Alternative would place no restrictions on turns at Ocean Forest Court.*

91. **Comment:** Some traffic will be diverted through northern Monteray Shores onto private roads (North Harbor View Drive) maintained by the Monteray Shores property owners association, adding congestion and reducing property values.

Response: *The Preferred Alternative includes a second, northern intersection on NC 12 and North Harbor View Drive. Residents of the subdivision at the north end of North Harbor View Drive would not need to use the Monteray Shores portion of North Harbor View Drive to reach their homes.*

92. **Comment:** All great vacation destinations have traffic problems at times, but increasing traffic flow at the expense of the people who choose to live in Corolla is unfair. Please consider a three-lane NC 12.

    Response: *A third turn lane would add some capacity to the road system, but much less than four lanes. Between the DEIS and this FEIS, the design along NC 12 for the Preferred Alternative was refined to reduce natural resource and community impacts on the Currituck County Outer Banks. The Preferred Alternative includes less widening to four lanes on NC 12 than the detailed study alternatives assessed in the DEIS.*

93. **Comment:** There also is a safety issue regarding the portion of NC 12 just north of the North Harbor View intersection. A dangerous "S" curve has been the scene of many accidents. In fact, two motorcyclists were killed in an accident there in April 2010. With a C1 terminus, the increased traffic on that section of NC 12 would make a bad situation worse.

    Response: *These curves are currently designed for driving 35 mph, the posted speed limit in the summer months. Increasing the design speed to 45 mph was considered in developing MCB2/C1, MCB4/C2, and the Preferred Alternative; however, it would have resulted in the displacement of four homes. Therefore, the decision was made to retain the 35 mph curves.*

4.4.1.4 Environmental Justice

94. **Comment:** The environmental justice impacts are not adequately addressed in the MCB2 and MCB4 options as the minority and poverty level residents who commute to work in Corolla are not considered.

    Response: *Section 3.1.5 of the DEIS and this FEIS notes that "With these alternatives [MCB2 and MCB4], low income households may choose not to pay the toll or use the bridge less frequently. They could, however, continue to use existing roads and would benefit from less congestion on those roads. In addition, mainland low income persons who choose to use the new bridge to the Outer Banks would benefit from reduced travel distances (and associated costs) to many Outer Banks service jobs."*

4.4.1.5 Business Impacts

95. **Comment:** Businesses along US 158 on the mainland and Outer Banks will see the number of prospective customers diminish substantially as the Mid-Currituck Bridge siphons off travelers that might otherwise patronize them. Are there any plans for the state to provide any assistance to these businesses?

Response: *The impact described is added to Section 3.1.7 of this FEIS. With new transportation improvements, assistance is not provided to businesses that may be affected by associated changes in travel patterns.*

96. **Comment:** With C2, more small businesses will be pushed out of business than with C1. C2 can save the business by running the bridge 200 yards off the end of the pier and saving a bit of shoreline.

    Response: *Alteration of the C2 terminus was examined between the DEIS and this FEIS. The displacement of businesses at the terminus could be avoided with an alignment change. This change would have been incorporated into the C2 corridor alternative had C2 been included in the Preferred Alternative. This potential change to C2 was taken into account during the selection of C1 to be part of the Preferred Alternative.*

97. **Comment:** The proposal to replace the Jean Guite Creek bridge will directly impact the business of Kitty Hawk Kayaks, as well as boaters using the canal who live on the south side of the bridge. Kitty Hawk Kayaks use the waterway daily, and unimpeded access through that area is essential to their livelihood. If the bridge is replaced, it will be necessary to complete it quickly (the best times being October to February) and to assure the waterway is accessible and safe.

    Response: *The Preferred Alternative would not affect the Jean Guite Creek bridge.*

98. **Comment:** All options except the no-build will take out businesses, and the bridge alternatives will take out at least one working farm. The project also will disrupt those who make their living fishing, crabbing, and hunting.

    Response: *The Preferred Alternative would affect three working farms and displace six homes and three businesses. The Preferred Alternative would not disrupt the ability to fish the sound, as boats are assured passage under the single navigation span of the proposed bridge (if they do not fit under the approximately 16-foot minimum clearance of the other portions of the bridge). Bridge pilings with the Preferred Alternative would likely attract a different assemblage of fish available for recreational fishing. The Preferred Alternative would not affect crabbing for the same reason mentioned for fishing and the pilings could possibly attract more crabs. The proposed bridge pilings would only remove a small amount of sound bottom from use. Three duck blinds on public trust waters would need to be moved away from the proposed bridge beyond the 0.25 mile range of the typical shotgun and shells used for duck hunting. (See the response to comment 110.)*

4.4.1.6 Parks, Recreation Opportunities, and Other Community Services and Facilities

99. **Comment:** Can the design and plan on the Outer Banks be modified for the least impact on a one-of-a-kind historical, nautical community? Or could other services be provided to mitigate the need for the bridge as proposed? For example, a 24/7 urgent medical care facility, satellite campus of a North Carolina community college

or university, or a K-12 charter school could be built to withstand storm forces and serve as a safety center.

Response: *Between the DEIS and this FEIS, the design along NC 12 for the Preferred Alternative was refined to reduce natural resource and community impacts on the Currituck County Outer Banks. Decisions to add additional services on the Outer Banks are the responsibility of Currituck County.*

100. **Comment:** The type of bridge proposed will be a major hindrance to water-based recreation in the area of the proposed bridge, which includes sailing, sailboarding, boating, water skiing, and swimming. Also, one raised section of the proposed bridge is inadequate. Some waterfowl hunting craft and commercial fishing vessels have extended cabins that require eight to 10 feet of clearance. Some sailboats extend as much as 25 to 30 feet above the water. Therefore, a bridge with just one section of high-rise will not be sufficient to maintain current use of the Currituck Sound.

Response: *The bridge would hinder some water-sport recreational activities in the area of the propose bridge in that, for example, it would not be safe to water ski under the bridge. However, that would not pose a substantial limitation for those activities in that the sound is a large area and the bridge's approximately 16-foot minimum clearance would allow small craft to pass under the bridge. The bridge's 16-foot minimum clearance also would not affect waterfowl hunting craft, and commercial fishing vessels have extended cabins that require eight to 10 feet of clearance. The highest clearance vessels noted by the commenter likely require a deep draft and their operation confined to the deeper parts of the sound on the west. This is where the single navigation span is proposed, which is currently proposed to have a 35-foot clearance. Final navigation clearance requirements would be determined by the US Coast Guard after they solicit comments from Currituck Sound boaters. Initial surveys conducted by NCTA in the context of the DEIS review period indicate that the bridge as proposed would be sufficient to accommodate most boaters in Currituck Sound.*

4.4.1.7 Crime

101. **Comment:** The DEIS erroneously concludes that the bridge project is unlikely to affect crime rates. The analysis is based only on what appears to be planned criminal activity. It ignores crimes such as vandalism and alcohol- or recreational drug-related behavior, the types of crimes that will result from the increased day trips the bridge will induce. The DEIS then assumes that the 23-minute travel time savings would not increase the likelihood that criminals would target crime in the area. The stated 23-minute time savings is based on uncongested times. Since a major project purpose is to relieve congested travel times, the analysis should be based on congested time savings. The 23-minute time savings is based on travel times to Kitty Hawk (without the bridge) and to Corolla (with the bridge). The analysis should compare travel times to Corolla in both instances. This would result in uncongested time savings of over an hour, certainly more than enough to "introduce new population or activities into the project area."

The DEIS fails to note that the majority of homes in Corolla are empty during the off-season, and crime has been a problem. The bridge would provide: access; availability; convenience; opportunity; and ease to commit additional off-season burglaries. Evidence exists nation-wide of substantial increases in serious crime spurred by increasing ease of access to and egress from geographic areas. A toll will not deter people when they can take property that is much more valuable than the cost of a toll.

Response: *The commenter presumes that non-resident visitors are more prone to vandalism, drunkenness, and drug use and if this were to be the case that Currituck County could not enforce associated laws. A beneficial impact of a bridge from the perspective of crime is that the travel time for police and other emergency personnel between the mainland and Outer Banks would be reduced. The use on non-congested times is appropriate because the concerns expressed related to property crime are during the off-season when congestion is not a problem. The comparison was made with Kitty Hawk because that is currently the closest point of access to Outer Banks homes from the mainland. As indicated in Section 3.1.11 of the DEIS and this FEIS, the introduction of a Mid-Currituck Bridge would reduce the mileage from the nearest point on the Outer Banks to Norfolk by 16 miles (from Kitty Hawk versus from Corolla with a bridge) or 23 minutes. The conclusion of the crime analysis was that if vacant property burglaries are not a problem in Kitty Hawk today that there is no reason to believe that an additional 23 minute savings would create problems if the Corolla area were to become the closest point of access to the Outer Banks from home on the mainland.*

There is scant research on the actual correlation between increased tourists and increased rates of crime. What research exists does not establish a correlation between the two. One study from New Zealand finds a correlation between proximity to alcohol-serving establishments and related crime. Another study in New Zealand looked at vehicle crime at outdoor recreation areas. It found that, although there was a perception that this was serious and growing, it in fact occurred at below normal rates. In the most comprehensive research on US resorts to date (Grinols, Mustard, Staha, 2009, http://ssrn.com/abstract=1368447), a study of national parks and crime indicated that park visitors were not statistically correlated to any discernable change in crime rates for either violent crimes or property crimes. They also found that there is no discernable difference in crime rates if the visitors are day visitors or overnight visitors.

4.4.2 Natural Resource Impacts

4.4.2.1 Water Quality

102. **Comment:** Some vehicles passing over the bridge will leak gasoline and/or oil. Has the amount that will enter the sound been calculated? Is there a plan to monitor this? If runoff from the bridge drains directly into the sound, it will be detrimental to wetlands and to the fish and migratory birds that rely on these waters for sustenance. The storm water runoff must be collected and appropriately treated before discharging to the sound.

The damage to the environment of this "sportsman's paradise" and its wildlife sanctuaries will be devastating – oil slicks on the Currituck Sound and its marshes from oil condensation runoff from the road surface of the bridge, destruction of wildlife habitat caused by bridge construction, noise pollution, etc. The state and federal governments recognize the potential for such adverse environmental impacts!

Response: *The length of the bridge precludes capturing runoff from the bridge for its entire extent. These challenges were documented in Section 2.1.7.2 of the DEIS and this FEIS. Between the release of the DEIS and this FEIS, discussions were held with environmental resource and regulatory agencies on a stormwater management strategy for project bridges and roads. The basic strategy is described in Section 2.1.7.2 of this FEIS. It will be finalized in the context of obtaining water quality permits. State and federal environmental regulatory agencies must be satisfied that the project would not have a substantial detrimental impact to water quality before they will issue permits.*

Section 404 of the Clean Water Act (enforced by the US Army Corps of Engineers [USACE]) regulates the discharge of fill material into waters of the US. Section 401 (enforced by the North Carolina Department of Environment and Natural Resources, Division of Water Quality [NCDENR-DWQ]) requires that the state provide a Section 401 (of the Clean Water Act) certification that any activity authorized under Section 404 is in compliance with effluent limits, the state's water quality standards, and any other appropriate state law requirements. Before NCDENR-DWQ grants a permit for the project, NCTA has to institute appropriate measures and design features to ensure that water quality standards are met and designated uses are not degraded or lost.

The Magnuson-Stevens Fishery Conservation and Management Act (16 USC 1801 et seq.) requires the US Secretary of Commerce to develop guidelines assisting regional fisheries management councils in the identification and creation of management and conservation plans for essential fish habitat (EFH). Each council is required to amend existing fisheries management plans (FMPs) to include EFH designations and conservation requirements. The act also requires federal agencies to consult with the Secretary of Commerce on all actions, or proposed actions, authorized, funded, or undertaken by the agency that might adversely affect EFH. Consequently, an Essential Fish Habitat Technical Report was prepared to assess impacts to EFH and submitted to the National Marine Fisheries Service (NMFS) for their concurrence that the project would not have an adverse long-term affect on EFH.

103. **Comment:** Given the bioavailability of the contaminants from runoff, especially metals, how can persistence in the fish population be prevented? How will the consumption of such contaminated fish and/or shellfish be prevented, and what will this do economically to the environmental justice-related residents of the communities, especially on the mainland, that subsist on fish and/or shellfish?

Response: *NCTA is committed to developing a stormwater management strategy for the proposed bridge that meets or exceeds state requirements, including frequent deck cleaning.*

A post-construction water quality monitoring program would be in place to ensure water quality surrounding the bridge meets state requirements and NCTA would make adjustments to the deck cleaning program if those requirements are not met. Generally, the state monitors major water bodies and will post warnings not to consume fish or shellfish, or reduce consumption, if contaminates reach certain thresholds. Most of Currituck Sound and all waters of the project area are currently closed to harvesting shellfish for direct marketing purposes or human consumption.

104. **Comment:** Will vehicles carrying petroleum products or other hazardous materials be restricted from using the bridge? What contingency exists for hazmat response should a spill incident occur on the bridge or its approaches? The closest USCG response unit is in Elizabeth City, an hour away, and the EPA field office is in Atlanta. The state hazmat response is based out of the Raleigh area.

    Response: *The likelihood of hazardous materials being carried across the bridge would be similar to that for every other bridge serving the Outer Banks. The most likely products would be gasoline or consumer products that contain hazardous chemicals. There are no industries on the Outer Banks that use hazardous materials in large quantities, nor is NC 12 a route traveled by truckers carrying large quantities of hazardous materials from their point of manufacture to a point of use outside the project area. In the event of hazardous waste or oil spills, the emergency response procedures established under the North Carolina Oil Pollution and Hazardous Substances Control Act of 1978 would be followed. In addition, the details of a hazardous materials response plan would be developed by NCTA prior to the project opening to traffic.*

105. **Comment:** The text states that turbidity levels would be negatively affected during construction. Explain how revegetation would occur post-construction and how the increased algal growth will be mitigated.

    Response: *Areas of Currituck Sound affected by bridge construction would become re-established with vegetation once construction ceases via the seed bank present in the area and seed dispersal from surrounding vegetated areas. Increased algal growth would not result from changes in turbidity (bottom sediments suspended in the water). Increased algae growth is more often associated with low grazing pressure, eutrophication (addition of artificial or non-artificial substances, such as nitrates and phosphates, through fertilizers or sewage, to a fresh water system), and increased nutrient levels (this can also lead to eutrophication). Changes in turbidity levels would be minimized through construction measures such as turbidity curtains and shrouds in SAV habitat (including existing beds) and driven (instead of jetted) piles. Section 2.4 of this FEIS describes the currently proposed approach to Currituck Sound bridge construction. This approach would be refined in association with environmental resource and regulatory agencies during the permitting process. Section 3.3.6.4 of this FEIS and Section 5.6.2 of the revised Natural Resources Technical Report (NRTR) contain information on potential mitigation options.*

106. **Comment:** Further investment in bridge planning should be put on hold until the existing flooding and drainage issues of the northern Outer Banks are corrected, especially at Whalehead Beach and along NC 12 north of Albacore Street.

Response: *The detailed study alternatives, including the Preferred Alternative, all include infiltration ditches or basins to handle drainage along NC 12 and address existing flooding and drainage issues.*

4.4.2.2 Biotic Resources

107. **Comment:** Any of the bridge options would have significant, direct, negative impacts on the terrestrial and aquatic communities in the region. Specifically, bridge construction would adversely impact the biota of Maple Swamp – a state Significant Natural Heritage Area and could push this ecosystem beyond recovery. All bridge options would adversely alter the existing hydrology of this system, as well as the availability of wildlife habitat and wildlife movement patterns.

    Response: *The Preferred Alternative would bridge Maple Swamp at a location parallel to an existing power line right-of-way through Maple Swamp and more recently logged. The presence of bridge piers in Maple Swamp would not change either the groundwater or surface water hydrology of the swamp. Wildlife would be able to pass under the bridge for almost the full length of the swamp where the bridge crosses the swamp.*

108. **Comment:** With MCB2 and MCB4, which will fill Maple Swamp for the bridge structure, and with the Option B mainland approach road, mammals, reptiles, amphibians, and avian species will be road kill concerns.

    Response: *If Option B had been selected as a part of the Preferred Alternative, provisions would have been made for wildlife passage as described in Section 2.1.2.4 of the DEIS and this FEIS. The fill sections would have been fenced to help channel wildlife to the crossings. Wildlife would pass under the Maple Swamp bridge with the Preferred Alternative (Option A).*

109. **Comment:** The DEIS does not address how the bridge would contribute to nonpoint source runoff, affecting habitat for wintering waterfowl and essential primary and secondary nursery areas for various fish species, including impacts to phytoplankton and aquatic vegetation.

    Response: *Options for treating bridge runoff were discussed in Section 2.1.7.2 of the DEIS. Between the release of the DEIS and this FEIS, discussions were held with environmental resource and regulatory agencies on a stormwater management strategy for project bridges and roads. NCTA is committed to developing a stormwater management strategy for the proposed bridge that meets or exceeds state requirements, including frequent deck cleaning. A post-construction water quality monitoring program would be in place to ensure water quality surrounding the bridge meets state requirements and NCTA would make adjustments to the deck cleaning program if those requirements are not met. The current stormwater management strategy is described in Section 2.1.7.2 of this FEIS. It would be finalized in the context of obtaining water quality permits. State and federal environmental regulatory agencies must be satisfied that the project would not have a substantial detrimental impact to water quality before they will issue permits. Impacts to land and aquatic wildlife were discussed in Sections 3.3.3.1 and 3.3.3.2 of the DEIS and this FEIS.*

110. **Comment:** The bridge will displace several blinds used for both recreation and livelihood by those who hunt and/or guide for migratory fowl.

Response: *An analysis of impacts to duck blinds is included in this FEIS in Section 3.1.9. Three private duck blinds in the area would be within 0.25 mile of the Preferred Alternative and would not be able to remain safely in their current location because there would be a risk of accidently shooting vehicles on the bridge. The Currituck Game Commission, which issues the duck blind permits, will notify the affected blind holders once construction of the bridge is set to begin. The Game Commission has a number of options in dealing with the affected duck blinds, including moving the blinds, licensing a new location for the blind holder, or, as a last resort, revoking the blind license. All decisions made by the Game Commission can be appealed to district court.*

111. **Comment:** Watermen who crab or net fish will be negatively impacted, at least during the construction of the bridge.

Response: *During construction of the Currituck Sound bridge, only the area surrounding the construction site would not be available to crabbers and fishermen. Post construction, the bridge would not disrupt the ability to fish the sound; based on the bridge's approximately 16-foot minimum clearance, most boaters would be able to pass under the bridge wherever they choose, and vessels with the highest clearance needs would be able to pass under the single proposed navigation span, which is currently proposed to have a 35-foot clearance. Final navigation clearance requirements would be determined by the US Coast Guard after they solicit comments from Currituck Sound boaters. In addition, the bridge pilings may possibly attract more fish which would benefit fishermen. The Preferred Alternative would not affect crabbing for the same reason mentioned for fishing and may possibly attract more crabs. The proposed bridge pilings would only remove a small amount of sound bottom from use.*

4.4.2.3 Waters under the Jurisdiction of the US Army Corps of Engineers

112. **Comment:** Much of Maple (Laurel) Swamp will be affected by changing the entire ecosystem and natural functions of the swamp. The planned bridge will cut through Maple Swamp, harming many species of wildlife and the natural flow of the swamp, both in regards to the water drainage and wildlife movement. However, there are no statements made as to the mitigation efforts for these impacts. What are the mitigation measures?

Response: *The Preferred Alternative would bridge Maple Swamp at a location parallel to an existing power line right-of-way through Maple Swamp and more recently logged. The presence of bridge piers in Maple Swamp would not change either the groundwater or surface water hydrology of the swamp. Wildlife would be able to pass under the bridge for almost the full length of the swamp where the bridge crosses the swamp. Project decision-making first looks at ways to avoid impacts, then minimize impacts, and finally mitigate impacts. Bridging Maple Swamp (Option A) as a part of the Preferred Alternative avoids and minimizes impacts to Maple Swamp.*

113. **Comment:** Preserve the wetlands and sand strips on the Outer Banks. Prior to 1980, sand hills and wetlands dominated the Outer Banks from Currituck Club to Corolla. In 30 years, all of the sand hills have been flattened and covered by development; wetlands continue to give way to development.

Response: *The Preferred Alternative would fill 1.1 acres of wetlands on the Outer Banks and for the most part would only affect the existing NC 12 right-of-way.*

114. **Comment:** It is assumed that the least amount of environmental impact possible would occur to Jean Guite Creek, Kitty Hawk Woods, and surrounding wetlands through mitigation.

Response: *The Preferred Alternative would not affect Jean Guite Creek, Kitty Hawk Woods, and surrounding wetlands. The other detailed study alternatives all would affect the US 158 bridge across Jean Guite Creek, but impacts to the creek would be mitigated. Kitty Hawk Woods also would not be affected by any of the DEIS detailed study alternatives.*

4.4.2.4 Threatened and Endangered Species

115. **Comment:** A pair of nesting American bald eagles has been observed within one mile of the proposed western terminus, as well as three osprey feeding/hunting within the one-mile radius. In the summer of 2009, sea turtles (not snapping turtles) were observed feeding near a pier in the Aydlett area. These impacts are inadequately analyzed in the DEIS.

Response: *The Mid-Currituck Bridge project is not expected to affect feeding/hunting of eagles or osprey because of their wide foraging range that includes numerous water bodies throughout the area and the lack of significant impacts to fishery food sources. The project has the potential to disturb future nest sites if they occur in close proximity to construction and completed project activities but other sites would still be available. Furthermore, construction would follow US Fish and Wildlife Service (USFWS) guidelines for the protection of bald eagles. All confirmed eagle nest sites are discussed in Section 5.8 of the NRTR. Impacts to sea turtles are addressed in Section 3.3.8.1 of the DEIS and this FEIS, as well as Section 5.7 of the NRTR. As required by Section 7 of the Endangered Species Act, a Biological Assessment was prepared and submitted to the Protected Species Division of NMFS for their concurrence that the project is not likely to adversely affect sea turtles and shortnose sturgeon, either directly or indirectly by habitat degradation.*

4.4.3 Other Physical Impacts

4.4.3.1 Traffic Noise

116. **Comment:** The DEIS treatment of noise impacts is inadequate. The DEIS purports to address project related noise impacts in Section 3.4.1. It seems to identify, depending on the option selected, approximately 400 sensitive receptors (residences), most on the Currituck County Outer Banks and some on the mainland, where the project would exceed federal noise abatement criteria. Nowhere does the

discussion indicate a specific decibel level, and nowhere does the discussion address in layman's terms what the project noise levels would be equivalent to at a given distance.

Response: *Predicted noise levels are presented in Section 2.6 of the Traffic Noise Technical Report included on the CD that accompanied the DEIS and this FEIS. Typical comparative noise sources are presented in Table 1 of the Traffic Noise Technical Report. The DEIS and this FEIS presented key findings considered important to a decision on a Preferred Alternative. The technical reports were provided for people like the commenter who wanted more information on a particular topic.*

117. **Comment:** The DEIS has identified what is clearly a potentially significant noise impact. What it does not do is recommend adequate mitigation for the impact. It leaves the extent and effect of the mitigation measures for a future decision.

Response: *Noise abatement opportunities were presented in Section 3.4.1.5 of the DEIS and this FEIS. It is necessary to leave the final decision on the implementation of noise abatement measures until final design. At that time, property owners eligible for noise abatement would be given the choice of whether to accept noise abatement or not. Noise abatement often takes the form of noise walls, which can be considered visually intrusive. That is why property owners are given a choice.*

Noise abatement measures must meet all feasible and reasonable criteria found within the NCDOT Traffic Noise Abatement Policy. Feasibility includes constructability, maintenance, and safety considerations, among others. Reasonableness includes cost-effectiveness and noise reduction capabilities of potential noise mitigation measures. Only preliminary determinations regarding noise barrier mitigation are included in this FEIS. Final decisions cannot be made until final design is underway and public opinion is determined.

118. **Comment:** Hopefully, no sound barrier walls will be constructed along NC 12, as they would adversely affect the lovely and natural look of the northern Outer Banks, where so many come for the views.

Response: *This concern is described in Section 3.4.1.5 of the DEIS and this FEIS.*

119. **Comment:** It is presumed that consideration is being given to the noise factor by having a heavily vegetated buffer along the new roadway.

Response: *Noise impact locations where noise barriers would potentially be effective are described in Section 3.4.1.5 of the DEIS and this FEIS. It takes at least 100 feet of dense, evergreen vegetation to affect noise levels. The rate of noise reduction through dense foliage is about 2 to 3 decibels per 100 feet. FHWA defines 3 dBA as "barely perceptible" and 5 dBA as "readily perceptible." Homes along NC 12 are less than 100 feet away from travel lanes, so a heavily vegetated buffer would not be an effective noise mitigation measure.*

4.4.3.2 Air Quality

120. **Comment:** It is not clear if idling time emissions that occur during the time it takes to make toll payments have been factored into total emissions. The DEIS states that, in the future, all tolls will be paid electronically. This may have a beneficial effect regarding emissions. However, it discriminates against the environmental justice community who are least likely to use credit cards and most likely to take day trips. More likely any emissions reductions will result from EPA's increased fuel efficiency standards.

    Response: *The commenter's observation on USEPA's increased fuel efficiency standards is noted. As a result of the reduction in miles traveled and congestion provided by the bridge, there would be reduced fuel consumption and, therefore, reduced emissions. Opportunities would be provided for those without credit cards to participate in electronic toll collection.*

121. **Comment:** The project will induce significant numbers of additional visitors and attendant growth. It could substantially increase the current carbon footprint of the Currituck County Outer Banks. To adequately address this mandate of NEPA, the DEIS in Section 3.8 needs to do a life-cycle analysis and comparison of greenhouse gas emissions with and without the project.

    Response: *Substantial increases in development and day visitors as a result of the proposed project are not expected as discussed in Section 3.6 of the DEIS and this FEIS, as well as Section 4.2.2 of the Indirect and Cumulative Effects Technical Report included on the CD that accompanied the DEIS and this FEIS. It is currently FHWA's policy not to assess changes in greenhouse gas emissions at the project level since any differences in project alternatives would be minor in the context of a problem that is global in nature. The results of such an analysis, if performed, would not likely inform decision-making at the project level while adding considerable administrative burdens to the NEPA process.*

4.4.3.3 Accelerated Sea Level Rise

122. **Comment:** Accelerated sea level rise is mentioned as a reason to support MCB4 as it would provide an elevated roadway and possibly the only access road to the Currituck Outer Banks. This analysis is woefully incomplete without consideration of how sea level rise will affect the housing stock and desirability of the Outer Banks as a vacation destination in the near- to medium-term. Accelerated sea level rise could obviate the need for this project altogether and should be carefully considered before making the substantial commitment required by this project.

    Response: *Based on the sea level rise scenarios considered for the proposed project, accelerated sea level rise generally is not expected to substantially affect the housing stock in the project area's portion of the Outer Banks except at the Dare/Currituck County Line. This is illustrated in the sea level rise maps included in Appendix A of the Other Physical Features Technical Report included on the CD that accompanied the DEIS and this FEIS.*

4.4.3.4 Hazardous Materials and Underground Storage Tanks

123. **Comment:** The rationale for determining that the potentially contaminated sites discussed on DEIS page 3-72 are low to negligible risk, especially the old USTs, is not provided.

Response: *The risk considered is the risk of monetary and/or scheduling impacts to the project. If the project is affected by contaminated sites, contaminated materials would be properly disposed of and actions would be taken to clean-up contamination on land purchased for the project. The need for clean-up would be reflected in the purchase price paid to acquire the property.*

4.4.4 Construction Impacts

124. **Comment:** Residents should be supplied with a contact name and number to call in the event there any concerns during construction.

Response: *This would be done prior to the start of construction.*

125. **Comment:** The DEIS is incorrect in claiming that construction noise impacts will be generally minimal because of a short duration in various areas. Construction noise will be heard for the duration of construction, as sound travels much farther over open areas like Currituck Sound.

Response: *Sound levels also drop with distance. Relatively loud noises, such as pile-driving, are generally unavoidable in construction activities and create sporadic, temporary, and substantial construction noise impacts in the immediate vicinity of such activities. It could be necessary for the construction contractors to schedule these activities during context-sensitive hours in the vicinity of noise-sensitive areas, to the extent practicable.*

4.4.5 Indirect and Cumulative Effects

4.4.5.1 General

126. **Comment:** The DEIS exhibits a lack of focus on the most important issue associated with the proposed bridge; in the all- important Chapter 3, 81 pages discuss the direct impacts of the bridge and the associated road widening, while 18 pages discuss the indirect and cumulative impacts, primarily the new businesses that will relocate to the US 158 bridge approach on the mainland. About 10 pages are devoted to the impacts on the Outer Banks. To use a biblical expression, this DEIS "strains at gnats and swallows camels."

Response: *The Indirect and Cumulative Effects Technical Report included on the CD that accompanied the DEIS and this FEIS presents the full assessment. It is over 175 pages long. The DEIS and this FEIS (Section 3.6) present key findings.*

4.4.5.2 Potential for an Increase in Permanent Residents on the Outer Banks

127. **Comment:** The third bullet on page 3-87 unfairly characterizes permanent residents as lacking neighbors for social interaction. Many of us interact routinely both on and off-season. This bullet makes us sound like the ugly stepchildren of Currituck.

Response: *That was not the intent of the bullet. The point being made was that the lack of nearby neighbors would discourage some from choosing to live permanently on the Outer Banks.*

4.4.5.3 Potential for an Increase in the Number of Day Trips to the Outer Banks

128. **Comment:** The Outer Banks will become too accessible, and the Currituck Outer Banks will be destroyed by day traffic. Congestion will increase.

The DEIS reports that only 5.6 percent of respondents to a mail-in survey were day-trippers. However, day-trippers typically do not stop at tourist information centers or fill out questionnaires. Thus, the DEIS does not accurately capture the current or the future use of the area by day-trippers. With day trippers, the cleanliness of the Outer Banks will deteriorate, with trash thrown in public areas and on beaches. The DEIS also ignores the day-trip impacts on both the Currituck County Outer Banks and the non-road-accessible area and the impacts of the increased activity on the wild horses, the dunes and the maritime forest in the four-wheel drive area.

The Corolla wild horses are the last truly wild horses on the east coast and are an integral part of what draws visitors to the northern beaches every year. As development encroaches, the horses' natural habitat is being destroyed.

The DEIS states that the lack of beach access, parking, and amenities will limit new visitors, particularly in comparison with Virginia Beach. The DEIS has got it backwards. Lack of parking, access, and amenities do not currently discourage an increase in day trips. The Sheriff's Department or the Corolla Wild Horse Fund would confirm this. The DEIS should acknowledge that the proposed bridge will increase an already significant burden as a result of day-trippers, and it should recommend mitigation that includes provision of visitor-serving facilities and increased public access.

Response: *The comment contains unsupported claims about the behavior and impacts of day visitors presumably in comparison to overnight visitors. Nevertheless, the comment is duly noted. The issue of day visitors is addressed in a revised analytical scenario in Sections 4.2.2 and 7.4 of the revised* <u>*Indirect and Cumulative Effects Technical Report*</u>*. This analysis has been reflected in Section 3.6.1.4 of this FEIS. A bridge would have the potential effect of increasing the potential demand for day trips to the beach areas. There are, however, important mitigating factors that would constrain demand. Local policy and action by Currituck County would be required to determine desirable levels of increased tourism and to develop a plan to accommodate it.*

129. **Comment:** The bridge will ultimately result in more visitors to the beach and cause a strain on existing Corolla and Currituck County infrastructure and services, including beach access and water and sewage treatment. These impacts need to be addressed in the County's long-term services plan. Are there plans to assist the county in providing parking areas, bathhouses, and other facilities for these one-day visitors? There need to be plans to resolve the increased influx of day-trippers, which would exacerbate the daily traffic problems in the four-wheel drive areas of the northern reaches of the Currituck Outer Banks (beyond the northern extent of NC 12). Perhaps the state intends to open up access to all of its beaches to vehicular traffic to disperse the growing problem.

Response: *The comment is duly noted. A more detailed discussion of potential increased demand by day visitors, as well as a discussion of limiting factors on that demand, has been included in a revised analytical scenario in Sections 4.2.2 and 7.4 of the revised Indirect and Cumulative Effects Technical Report. This analysis has been reflected in Section 3.6.1.4 of this FEIS.*

130. **Comment:** The State's own economic justification package depends heavily on a very large increase in traffic flow to the Currituck Outer Banks from the "day-tripping" residents of the Tidewater area.

Response: *The project's economic justification package, including the bridge financing plan, is not dependent on day trips.*

131. **Comment:** The text and table show a mean reduction of approximately 80 million vehicle miles traveled (VMT). This is based on the assumption that those persons using the toll bridge will remain in Corolla. This is a false assumption. It fails to factor in tourists who must pick up keys south of Corolla, and day visitors from the Hampton Roads area (a later statement says they will not come to Corolla because they have Virginia Beach). Many visitors and part-time residents reside in the Hampton Roads area. Corolla and Virginia Beach are in no way equivalent and do not offer the same attractions.

Response: *Project traffic forecasts take into consideration existing travel patterns on the project area's thoroughfares.*

132. **Comment:** The DEIS cites as fact that day trips to the Currituck County Outer Banks will not result in more than "some potential for increased day trips" (page 3-84) because of "the closer and comparable options in Virginia" (presumably Virginia Beach). However, this does not consider that Virginia Beach is an urban experience and the Currituck County Outer Banks are not. Because the two destinations are not comparable, the comparison is not valid.

Response: *A more detailed discussion of potential increased demand by day visitors, as well as a discussion of limiting factors on that demand, has been included in a revised analytical scenario in Sections 4.2.2 and 7.4 of the revised Indirect and Cumulative Effects Technical Report. This analysis has been reflected in Section 3.6.1.4 of this FEIS.*

133. **Comment:** The DEIS does not address the increased numbers of day-trippers the bridge will induce in the non-road-accessible area, or the irreversible impacts this will have on resources that are already undergoing significant stress. The DEIS (page 3-88) does acknowledge some increase in day trips to the non-road-accessible area, but dismisses any potential for significance ("... the number of increased trips is not expected to be notable"). One reason cited is, "this is a specialized beach experience that would require a four-wheel drive vehicle." This ignores the widespread use and availability of four-wheel drive vehicles. The DEIS also mentions lack of bathroom facilities in concluding, "There is no evidence that a significant unrealized demand exists for this form of rustic beach trip," but does not provide a baseline for the existing numbers of day-trippers to the non-road-accessible areas. A check with the Sheriff's Department, Beach Marshall, or Corolla Wild Horse Fund would show that the amount of day-trippers in the summer season far exceeds the area's capacity. It is no longer the "rustic" experience cited in the DEIS, and the numbers are increasing each season, primarily because the Cape Hatteras National Seashore is closed to four-wheel drive traffic, much of which now goes to the Carova non-road-accessible area.

Response: *A more detailed discussion of potential increased demand by day visitors, as well as a discussion of limiting factors on that demand, has been included in a revised analytical scenario in Sections 4.2.2 and 7.4 of the revised Indirect and Cumulative Effects Technical Report. This analysis has been reflected in Section 3.6.1.4 of this FEIS.*

134. **Comment:** Even the current levels of traffic are adversely affecting the continued heath and viability of the wild horse herd, as harmful interactions with visitors occur on an almost daily basis in the summer. The additional day trips the bridge will induce will exacerbate this condition. The non-road-accessible area has been designated a wild horse sanctuary. Legislation to declare the Outer Banks wild horse to be the State Horse is pending in the North Carolina House. The DEIS itself (Table 3-17) lists the wild horses as a "Notable Eco-System Feature," but fails to address the potential significant damage to an already threatened resource as a result of significantly increased day trips induced by the proposed bridge.

Response: *A more detailed discussion of potential increased demand by day visitors, as well as a discussion of limiting factors on that demand, has been included in a revised analytical scenario in Sections 4.2.2 and 7.4 of the revised Indirect and Cumulative Effects Technical Report. Revised analysis has also been added to Sections 6.2.2.12 and 6.3.2.12 of the revised Indirect and Cumulative Effects Technical Report. This analysis has been reflected in Section 3.6.1.4 of this FEIS. Actions by Currituck County to control driving in the non-road area would be the most important factor safeguarding the horse herd.*

135. **Comment:** The non-road-accessible area is also home to the Currituck Banks National Estuarine Reserve and the Currituck National Wildlife Refuge. These are in turn home to the Maritime Forest (which the DEIS also lists at Table 3-17 as a "Notable Eco-System Feature") and several important fish and wildlife species. The dune system is also listed as a "Notable Eco-System Feature" in Table 3-17. The

DEIS does not address potential damage to these resources resulting from increased bridge-induced traffic. The additional traffic induced by the bridge will further contribute to dune erosion in the non-road-accessible area.

Response: *Driving is currently not permitted in the Currituck Banks National Estuarine Reserve or the Currituck National Wildlife Refuge except on the beach right of way. A Mid-Currituck Bridge would not be expected to change this.*

136. **Comment:** The DEIS ignores the potential for project-induced vacation rental growth. In attempting to analyze the types of indirect impacts, the DEIS (pages 3-86 to 3-88) looks at two possibilities: 1) increase in the number of permanent residents, and 2) increase in the number of day trips. It ignores the potential for increasing numbers of the current dominant use, the one- and two-week vacation rentals. In its attempt to analyze the possibility of increased numbers of day trips induced by the bridge, the DEIS in effect dismisses this possibility. It reaches this conclusion because of a number of errors. It uses for the baseline travel time reduction from the Hampton Roads area a decrease from 156 to 80 minutes (nearly 1.5 hours) during the non-congested hours (page 3-88), and cites this as not enough of time savings to encourage more trips. First, the savings of 1.5 hours is, for most people, significant time savings, one that would certainly encourage vacation trips and day trips. Second, since Chapter 1 stresses the project's purpose and need to be the reduction of travel time and congested hours, a more accurate baseline to calculate the potential for increased day trips would be during congested hours, when the time savings and resultant trip inducement would be greater.

Response: *The DEIS does not ignore vacation rental growth. It is discussed in Section 3.6.1.4 of the DEIS and this FEIS, and in greater detail in analytical scenarios in Section 4.2 of the Indirect and Cumulative Effects Technical Report. The traffic analysis assumed full build-out on the NC 12-accessible portion of the Outer Banks and continued growth north of the end of NC 12 to the Virginia border. The assessment has been revised in this FEIS to provide additional analysis on the potential for the No-Build Alternative to inhibit growth so the full build-out would not occur because of high levels of summer congestion. (See Section 3.6.4 of this FEIS and Section 4.2.3 of the revised Indirect and Cumulative Effects Technical Report.)*

A more detailed discussion of potential increased demand by day visitors, as well as a discussion of limiting factors on that demand, has been included in a revised analytical scenario in Sections 4.2.2 and 7.4 of the revised Indirect and Cumulative Effects Technical Report. Revised analysis also has been added to Sections 6.2.2.12 and 6.3.2.12 of the revised Indirect and Cumulative Effects Technical Report. This analysis has been reflected in Section 3.6.1.4 of this FEIS. Contrary to the comment, the analysis finds that the most likely time for increased day visitors is not during the peak congestion periods, but rather during the uncongested periods.

137. **Comment:** With respect to permanent development, the DEIS concludes (page 90) there will be "... no reasonably foreseeable change in the location, rate or type of development." It further states that the "... lack of accessibility both makes it

attractive and helps limit development." These two statements ignore the nearly 1.5 hours in time savings (during the uncongested hours) from Hampton Roads that will occur with the bridge, which will substantially affect that very inaccessibility the DEIS cites as the reason development will not increase.

Response: *The text quoted appears on page 3-89 of the DEIS related to development in the non-NC 12 accessible portion of the Outer Banks. The lack of accessibility referenced is the lack of a paved road. This lack would not change with the project.*

4.4.5.4 Potential for a Change in Development in the Paved-Road-Accessible Outer Banks

138. **Comment:** Once the bridge is built, there will be a tremendous amount of development around it and, in the end, it will lead to the same type of overcrowding that the bridge is intended to alleviate. The DEIS fails to address the traffic issues resulting from acceleration of the build-out of the remaining unimproved lots on the Currituck Outer Banks.

    The DEIS also fails to adequately address the acceleration of traffic issues due to the build-out of remaining unimproved lots on the Currituck Outer Banks, which will impact traffic congestion along the problem areas of NC 12 and US 158 in Dare County. Most service vehicles – construction and building trades in particular – will travel from Dare and will not utilize the proposed bridge. Increased permanent residents will also increase the volume of traffic. This was mentioned in workshops as early as 2004 and is not adequately addressed in this DEIS.

    Response: *The population forecasts used to generate the traffic forecasts assume full build-out on the NC 12-accessible Outer Banks, including the remaining unimproved lots. The potential for increased permanent residents is discussed in Section 3.6.1.4 of the DEIS and this FEIS, as well as in greater detail in Section 4.2.1 of the Indirect and Cumulative Effects Technical Report included on the CD that accompanied the DEIS and this FEIS.*

139. **Comment:** If the bridge proves to have the expected effect of spurring development on the Currituck Outer Banks, the increased population will exacerbate the traffic problems unless a comprehensive area-wide traffic management plan, along with its infrastructure, is in place before the first vehicle crosses the bridge. Growth will need to be managed like other major coastal success stories.

    Response: *Currituck County manages its growth via a land use plan and various development ordinances. The Mid-Currituck Bridge is included in the county's thoroughfare plan. The population forecasts used to generate the traffic forecasts used to assess the benefits of the bridge project assume full build-out on the NC 12-accessible Outer Banks.*

140. **Comment:** The bridge will encourage over development. Next come the high rises, McDonald's and away with the wild horses - roads in the wild horse area will not be far behind.

Response: *Currituck County manages its growth via a land use plan and various development ordinances. Planned Unit Developments in the NC 12-accessible portion specify specific levels of residential, hotel, and business development. High rise development is not expected. The extension of NC 12 is not expected for reasons described in Section 4.2.4.2 of the Indirect and Cumulative Effects Technical Report included on the CD that accompanied the DEIS and this FEIS.*

141. **Comment:** The DEIS attempts to paper over the failure to acknowledge a clearly substantial adverse environmental impact with statements such as on page 3-89 that the area is "largely developed." Nowhere is there any quantification or other support for this conclusion. The DEIS also states (page 3-89): "The types of development called for in the land use plans of Currituck County, Kitty Hawk, Southern Shores and Duck are similar." Nowhere is there a justification for this concluding and misleading statement. The DEIS states (page 3-89): "Current development regulations and past trends associated with implementation of these (land use) plans are indicative of the local jurisdictions' commitment to implement these plans as they stand." Nowhere is there an analysis or justification for this statement, and it has not been the experience of many of the citizens who have had land use issues before the Currituck County Board of Commissioners.

    Response: *The text referenced in the DEIS summarizes the more detailed findings of Section 4.2.3 of the Indirect and Cumulative Effects Technical Report included on the CD that accompanied the DEIS and this FEIS.*

142. **Comment:** Although many or most tourists say they come to Currituck due to the isolation, the population on the Outer Banks is growing. There are rumors of plans for a large multi-use development being planned for the Pine Island area and undoubtedly, as the economy improves, home construction will resume in earnest. The continuing urbanization of Corolla without a bridge is reflected in recent county approval of a 100-room hotel, 32 condo units, and 22,000 square feet of retail space, all on 13 acres of beachfront land. Growth on the Currituck Outer Banks took off in 1986 after NC 12 north of the Dare County line opened to the public when there was no expectation of a bridge, and this growth continues unabated. The county has platted over 3,000 building sites in the four-wheel drive area, and many are now being developed. A recent completion in the four-wheel drive area is a 23-bedroom, 27-bath rental unit. Commercial activity advertising four-wheel tours, Segways, and ATV rentals to view the horses has become so great that a fence is being considered to protect the herd. All of this has occurred without a bridge.

    Response: *The bridge is being proposed to reduce congestion on NC 12 created by existing and proposed development.*

143. **Comment:** The delay of the long-planned Mid-Currituck Bridge has not discouraged people from throughout the US from becoming regular visitors or residents of the Currituck Outer Banks. Currituck is probably 80 percent or more built out where residences are allowed, especially south of the recommended bridge landing point. One must consider the reason for the ongoing development. The

northern Outer Banks are a popular vacation destination, in part because there are no multiple high-rise condominiums along the ocean front, there is not a putt-putt golf course on every other corner, and there is no bar scene. The northern Outer Banks is a predominantly residential community that attracts vacationers seeking quiet, peaceful family time.

The residents, tourists, and non-resident Currituck Outer Banks property owners visit and live in the area because of its remote, pristine nature, not in spite of it. They choose to embark on a long journey and pass the many larger, more developed beach communities that populate the entire east coast of the United States to vacation here. The building of the bridge will forever alter the remote/quiet nature of the Currituck Outer Banks and the sound communities on the Currituck mainland. Another Wildwood, Ocean City, Myrtle Beach, Atlantic City or Virginia Beach is not needed.

Response: *Currituck County has managed its growth via a land use plan and various development ordinances. The character of development on the Currituck Outer Banks reflects the outcome of this growth management. Planned Unit Developments in the NC 12-accessible portion specify specific levels of residential, hotel, and business development. High-rise development, such as that associated with the beach communities listed by the commenter, is not expected. It is a development goal listed in the Currituck County land use plan to avoid taking or approving actions related to infrastructure and the provision of services that could induce intensive development in environmentally fragile areas, including the northern beaches of the Outer Banks.*

144. **Comment:** The DEIS section on cumulative and future impacts does not reflect the current state of development in the Currituck Outer Banks and the public relations engaged in by the developers and real estate agents who have repeatedly told prospective clients that the bridge is a foregone conclusion and paved road will be extended to both Carova and Swan Beach.

Response: *Section 3.3.1 of the DEIS and this FEIS includes a description of existing development. What real estate agents tell prospective clients may or may not accurately reflect public policy. The DEIS and this FEIS reflect the State of North Carolina's interest in building a Mid-Currituck Bridge. The extension of NC 12 is not expected for public policy reasons described in Section 4.2.4.2 of the Indirect and Cumulative Effects Technical Report included on the CD that accompanied the DEIS and this FEIS.*

145. **Comment:** The DEIS states that the bridge will only shift the rate and pattern of development from Dare County to the Currituck County Outer Banks, in itself is a substantial adverse environmental impact. However, this conclusion is not supported by evidence. The discussion in Chapter 1 shows that the bridge will significantly alleviate congestion and travel time on US 158 and NC 12. This will improve the ease of access to the entire Outer Banks, including Dare County, and will result in subsequent growth. If the bridge would merely relocate growth from Dare County to the Currituck County Outer Banks, one would anticipate opposition

from entities such as the Dare County Chamber of Commerce and the Dare County Board of Realtors. However, the opposite is the case.

Response: *The shifting referenced is a change in the order in which lots are developed. The same planned level of development is still expected to occur. The traffic forecasts used assume full build-out on the NC 12-accessible Outer Banks, including in Dare County.*

146. **Comment:** The new DEIS provides virtually no specific information addressing the concerns from the 1998 DEIS regarding the indirect and cumulative impacts caused by increased development. Indeed, the current DEIS now presents the analysis of indirect impacts by making only concluding statements such as "[f]orecast development would be the predominant contributor to cumulative impacts, irrespective of whether a detailed study alternative is implemented" and "the extent of development on the Outer Banks by 2035 would be the same with or without the bridge" (DEIS page xx, Table S-1). The DEIS fails to support this assertion or to present an adequate analysis of the significant secondary and cumulative effects that clearly would result from building the toll bridge.

Response: *A discussion of the differences in conditions between the current analysis and the 1998 DEIS is presented under USACE's comments 1 and 18 in Section 2.1.1 of this technical report. The 2010 DEIS and this FEIS concluded that new development would not occur beyond that already anticipated in Currituck County's land use plan. This conclusion was supported by the detailed indirect and cumulative effects assessment in the Indirect and Cumulative Effects Technical Report (see Section 4.2) included on the CD that accompanied the DEIS and this FEIS. In response to other comments, the indirect and cumulative effects assessment was refined to include detail related to the potential for the No-Build Alternative and ER2 to constrain the construction of planned development. (See Section 3.6.1.4 of this FEIS and Section 4.2 of the revised Indirect and Cumulative Effects Technical Report.)*

147. **Comment:** The basis for the DEIS statement on page 3-89, that "...transportation improvements have little effect on the demand for and rate of development" is not clear. This statement contradicts decades of land use and transportation experience, as well as federal and North Carolina case law.

Response: *The commenter does not refer to the context of the statement quoted, which states why this conclusion was reached in the case of this project. The full statement reads "Transportation was once an important determinant of development in the area. Today, given the complex network of streets and roads that now exists, and that much of the NC 12-accessible Outer Banks has been subdivided, transportation improvements have little effect on the demand for and rate of development. Transportation improvements could, however, influence the location of development that occurs first."*

148. **Comment:** The principals of Smart Growth and future growth, which the document states NCDOT and FHWA have no interest in, have not kept pace with the current approaches. USEPA, NCDOT and FHWA have entered into a joint policy to consider consequences of future growth when funding future

transportation projects and are currently holding webinars on this issue to inform the public of the new policies.

Response: *Smart growth is not discussed in the DEIS. Therefore, the DEIS does not state that NCDOT and FHWA have no interest in smart growth. Smart growth is a concept that proposed that growth be concentrated in compact walkable urban centers to avoid sprawl. The Outer Banks today contains a complex network of streets and roads and much of the NC 12-accessible Outer Banks has been subdivided. Development patterns are firmly established for the Outer Banks and providing additional transportation infrastructure capacity to serve existing and planned development is not expected to change those patterns.*

149. **Comment:** This bridge could have unintended consequences. Can the NCTA afford to condemn homes to widen NC 12? How many more millions would that cost?

Response: *It is assumed that the commenter is presuming the bridge project would increase levels of development, thereby creating an added need to widen NC 12, with the consequence being the condemnation of homes to provide the needed right-of-way. The traffic forecasts used to determine the travel benefits of the detailed study alternatives, including the Preferred Alternative, assume full build-out on the NC 12-accessible Outer Banks, and continued growth in the non NC 12-accessible Outer Banks. Thus, the impact on traffic of future development with the bridge is taken into consideration. The bridge would divert traffic from NC 12, reducing the potential for considering a widening of NC 12 in the future. Recognizing that widening NC 12 to four lanes in Dare County would result in the displacement of numerous homes and businesses, such an option was rejected as a component of the widening alternative (ER2) evaluated in detail in the DEIS and this FEIS.*

150. **Comment:** The first issue is the bridge-induced growth that will occur on the Currituck County Outer Banks. The DEIS is legally inadequate in that it fails to quantify, and consequently does not recommend mitigation for, the substantial adverse impacts associated with this bridge induced growth. The DEIS (page 3-88) states: "The introduction of a Mid-Currituck Bridge ... would substantially reduce travel time from points north on the mainland to the Currituck County Outer Banks. As such, the order on which available lots on the NC 12 accessible Outer Banks would develop in response to market demands would likely change, with more Currituck County lots developing before Dare County lots." This statement acknowledges a potentially substantial adverse impact as a result of Mid-Currituck Bridge construction, as has occurred at the terminus of the Wright Memorial Bridge.

Response: *Potential opportunities to minimize indirect and cumulative impacts are presented in Section 3.6.3 of the DEIS and this FEIS, as well as Chapter 8 of the Indirect and Cumulative Effects Technical Report included on the CD that accompanied the DEIS and this FEIS.*

4.4.5.5 Development on the Non-Road Accessible Outer Banks.

151. **Comment:** The DEIS fails to analyze the secondary and cumulative impacts of the toll bridge, claiming without basis that the bridge would not significantly encourage development along the northern Outer Banks and would not result in any significant environmental impacts associated with that increased development. For example, on page 3-89, the DEIS states that, for the non-road-accessible communities, no reasonable change can be seen in the foreseeable future. However, this flies in the face of ongoing activities, as local realtors are telling future clients that the paved road will come as soon as the bridge is built and that Carova, Swan Beach, etc., are the next big development areas on the Outer Banks. In fact, On May 17, 2010, the Board of Commissioners approved a Special Use Permit for a 12.75-acre multi-family residential, hotel, restaurant, and retail stores development in an ocean side area designated as a Natural Heritage Area. This was in clear violation of the County Land Use Plan and, consequently, its Uniform Development Ordinance, and was done in the face of the County Planning Commissions' recommendation to deny the permit. These issues are not reflected in the DEIS.

    Response: *What real estate agents tell prospective clients may or may not accurately reflect public policy. The extension of NC 12 is not expected for public policy reasons described in Section 4.2.4.2 of the Indirect and Cumulative Effects Technical Report included on the CD that accompanied the DEIS and this FEIS. The May 17, 2010 Board of Commissioners action was taken after the DEIS was completed. This action and its relevance to the indirect and cumulative impact assessment are now discussed in Section 3.6.1.4 of this FEIS and Section 4.2.4 of the revised Indirect and Cumulative Effects Technical Report on the CD included with this FEIS.*

152. **Comment:** The DEIS states there is essentially no potential for change in development location, rate, or type in the non-paved road-accessible Outer Banks. The basis for this finding is limited and poorly considered. For example, the Washington Post reported (May 17, 1998) in their Sunday travel section, "… on a prime summer weekend, a thousand folks will head out to Carova Beach, at the northern tip of the Outer Banks, just to do the Daytona thing." And, "In summer, so many autos get stuck [in the sand] that a local tow operator stations a truck at the entrance to save time." This was still true in the summer of 2009 and would be expected to increase with the improved accessibility the bridge would provide.

    Response: *Two issues were included in this comment. First was the issue of development of new structures in the non-paved road accessible beaches. This was discussed in an analytic scenario in Section 4.2.4 of the Indirect and Cumulative Effects Technical Report. The issue implied in the referenced Washington Post article was about beach driving as a day activity. The anecdote given was for the purpose of describing being stuck in the sand and not specifically analytical about the number or nature of beach drivers. Nonetheless, beach driving on peak summer weekends is a major activity. An extended discussion of potential increased demand by day visitors, as well as a discussion of limiting factors on that demand, has been included in a revised analytical scenario in Sections 4.2.2 and 7.4 of the revised Indirect and Cumulative Effects Technical Report. Revised analysis has also been*

added to Sections 6.2.2.12 and 6.3.2.12 of the revised Indirect and Cumulative Effects Technical Report. This analysis has been reflected in Section 3.6.1.4 of this FEIS.

4.4.5.6 Potential for Change in Development on the Mainland

153. **Comment:** The projected impact of economic development on mainland Currituck is over-estimated. In lower Currituck, the economic impact of the Wright Memorial Bridge, in place for at least 40 years, is almost non-existent—and the Wright Memorial is a free bridge.

Response: *As discussed in Section 4.2.5.1 of the Indirect and Cumulative Effects Technical Report, the amount of economic development estimated on the mainland is based in part on Currituck County's intent to actively pursue economic development at the west end of the proposed bridge. Also as discussed in Section 4.2.5.1, Currituck County's economic development goals for the west end of the proposed bridge are presented in the Economic Development Strategy "Vision Plan" for Currituck County, North Carolina (Lane and Jolley, 2008).*

154. **Comment:** The residents of Aydlett may disagree with the statement on page 3-90 that no reasonably foreseeable difference can be found, as stated in the last paragraph. However, given that small businesses are the backbone of the American economy, there is little to recommend moving and disrupting their lives or those of the residents, especially those most impoverished. The document as a whole is insensitive to both the culture and sense of community of residents of Aydlett and the other small mainland communities.

Response: *As discussed in detail on pages 3-90 and 3-91 of the DEIS and pages 3-109 and 3-110 of this FEIS, NCTA found that there would be no reasonably foreseeable difference of note in future mainland residential development characteristics and concentrations between the detailed study alternatives, including the Preferred Alternative, and the No-Build Alternative. As is reflected in the community impact analyses in the DEIS and this FEIS, an effort was made to be sensitive to both the culture and sense of community of residents of Aydlett and other small mainland communities in the selection and assessment of the detailed study alternatives, including the Preferred Alternative. Although it is not possible to introduce a major infrastructure project into an area without some impact to existing communities, businesses and residents displaced by the project would be relocated, including being paid the cost of moving and being provided assistance in locating comparable housing.*

4.4.5.7 Facilities for Induced Development and Day Trips

155. **Comment:** There needs to be plans to expand and increase staffing for fire and rescue facilities and personnel, law enforcement, ocean rescue and medical facilities to accommodate the increased population (year-round and seasonal) on the Currituck Outer Banks. There needs to be plans for additional public accommodations to handle the added day-trippers into the Currituck Outer Banks caused by the presence of a Mid-Currituck Bridge. There needs to be plans for the

hundreds (maybe thousands) of additional parking spaces to accommodate the increased influx of day trippers.

Response: *The Currituck County land use plan includes plans to establish a "Task Force to look at the broad implications of a mid county bridge and its potential impacts, such as growth in the RO2 COBRA zone, beach access and other infrastructure needs of increased numbers of day visitors, changes in county services such as law enforcement, economic impacts on the Mainland and the Outer Banks, etc. The findings of such a task force should be made available well in advance of the construction of the bridge." Ben Woody, Currituck County Planning Director, told representatives of NCTA in a December 13, 2010 telephone conversation that the county commissioners already have plans to appoint a task force, once the bridge terminus is located. They expect this effort will take approximately one year to complete.*

156. **Comment:** Concerns over local development issues like overuse of the four-wheel drive beaches and continuing urbanization are truly issues of concern, but these need to be addressed by the county and will not be resolved by preventing a bridge.

Response: *The commenter's position is noted.*

4.4.5.8 Indirect and Cumulative Impacts on the Natural Environment

157. **Comment:** The bridge will hasten development and year round populations on the barrier islands, which will adversely affect the fragile ecosystem that characterizes the Currituck Sound and Currituck Outer Banks. The bridge and resulting development also will adversely affect the natural habit of many species of plants and animals, especially maritime wildlife habitat on the Outer Banks, where existing habitat is already extremely sparse and fragmented.

Response: *This potential impact is assessed in the indirect and cumulative effects assessment presented in Section 3.5 of the DEIS and this FEIS. Additional details related to this assessment are presented in the Indirect and Cumulative Effects Technical Report included on the CD that accompanied the DEIS and this FEIS. Hard copies of the DEIS and associated technical reports were also available at eight public review locations in the project area during the DEIS review period.*

158. **Comment:** The DEIS ignores potential harm to the threatened piping plover. DEIS Table 3-13 lists the piping plover as a federally-protected species found in the project area and then erroneously concludes that the MCB2 or MCB4 alternative "May affect but it is not likely to adversely affect" the species. The piping plover nests in the dunes of the Currituck County Outer Banks such as those found in the beach road area. The increased bridge-induced day-tripper traffic to this area will result in serious harm to these nesting grounds. The record winter storms of 2009-2010 have both significantly eroded the dunes and decreased the beach area. This is bringing four-wheel-drive vehicle riders up to and on the dunes, a situation that is ignored by the DEIS. Therefore, the DEIS conclusion that the project is not likely to adversely affect the threatened piping plover is incorrect.

Had the DEIS fairly analyzed the potential impacts from greatly increased numbers of vacationers and day trippers, and had its analysts visited here recently, they would have noticed the remarkable erosion of the dunes due to the two major storms of the past winter. These dunes are vital to wildlife resources and to protection of residences. The bridge-generated increase in visitors will significantly impact this already troubled resource.

Response: *Table 3-14 of the DEIS and this FEIS addresses protected species impacts in terms of the direct impacts of the project. This material addresses the requirements of the Endangered Species Act. A Biological Assessment was prepared for the project as per the consultation requirements of Section 7 of the Endangered Species Act. Based on revisions to the indirect and cumulative effects assessment made based on DEIS comments, the Biological Assessment addressed the potential effects to threatened and endangered species from the perspective of changes in beach traffic as an indirect effect. The USFWS concurred that changes in beach traffic may affect but are not likely to adversely affect threatened and endangered species, including the piping plover. Both USFWS and NMFS concurred that the Preferred Alternative would either have no effect or may affect but is not likely to adversely affect threatened and endangered species.*

If the Mid-Currituck Bridge project is built, then from the perspective of traffic and private development, Currituck County would need to work with residents to develop wise use policies of the beaches to avoid detrimental impacts to wildlife and habitat. The NC Wildlife Resources Commission's Wildlife Diversity Program conducts annual surveys for piping plovers. Up to five pairs nested on and near the Currituck National Wildlife Refuge in the late 1980s, but the closest known piping plover nest within the past five years is near Oregon Inlet, over 40 miles to the south of the bridge corridor. Most of the nesting in North Carolina (70 percent) occurs along Cape Lookout National Seashore. David Allen with the Wildlife Resources Commission (personal communication, January 26, 2011) indicated that piping plovers have not nested on the Currituck County Outer Banks in many years because of increased traffic and development. Suitable habitat and protection from disturbances are important factors for nesting plovers. Former nesting in the Currituck Sound area occurred on and north of the Currituck National Wildlife Refuge (Carolina Bird Club, 1988). Access and disturbance to potential nesting plovers within the refuge is monitored and controlled by USFWS refuge personnel. The presence of suitable nest habitat in North Carolina areas lacking inlets, like the Currituck area, is often dependent on overwash areas and access to adequate wet/intertidal feeding areas. Nesting areas also have been subject to natural alteration by storms and erosion. Access-alteration effects from a bridge on the Outer Banks are analyzed in the revised Indirect and Cumulative Effects Technical Report in Sections 4.2.1, 4.2.2, 4.2.3, and 4.2.4. The effects on notable features are discussed throughout Section 6.0.

4.4.5.9 Other

159. **Comment:** The section discussing FHWA policy (page 3-99) needs to be revised, as the policy on cumulative impact and future growth has changed.

Response: *The text included in Section 3.6.3 of the DEIS (page 3-99) and this FEIS was approved by FHWA. It reflects current FHWA policy related to minimizing cumulative impacts.*

4.4.6 Relationship between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity

160. **Comment:** The project proposes to expend approximately $800 million to build a new bridge to a barrier island to relieve peak congestion on 26 days (13 weekends) a year. If ever a project deserved to have the "short-term uses of man's environment" balanced against "the maintenance of long-term productivity" as required by NEPA, it is this one. However, Section 3.7 provides only two paragraphs that discuss travel time improvements and compatibility with Dare County and Currituck County plans. The proposed project raises far more significant issues, and the discussion needs to be more thorough.

Response: *This discussion in Section 3.7 of the DEIS and this FEIS is required by Council on Environmental Quality regulations found in Title 43 of the Code of Federal Regulations, Section 1502.16 (Environmental Consequences). It says regarding environmental consequences, the "discussion will include the environmental impacts of the alternatives including the proposed action, any adverse environmental effects which cannot be avoided should the proposal be implemented, the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented." The material discussed in Section 3.7 of the DEIS and this FEIS is customarily presented as a summary of how material already presented in the document relates to the question of local short-term uses of man's environment and the maintenance and enhancement of long-term productivity. The local short-term impacts and the use of resources are described in the impact assessment sections that make up the bulk of Chapter 3 of the DEIS and this FEIS. The maintenance and enhancement of long-term productivity relates to project benefits documented in Section 2.2 of the DEIS and this FEIS.*

4.4.7 Irreversible and Irretrievable Commitment of Resources

161. **Comment:** The project proposes to spend over $800 million in public and private funds to build a bridge (and associated highway improvement) to a barrier island to relieve congestion that occurs 26 days a year. This, particularly in these economically troubled times, represents an irreversible and irretrievable commitment of resources that also should be addressed in Section 3.8.

Response: *This discussion in Section 3.8 of the DEIS and this FEIS also is required by Council on Environmental Quality regulations found in Title 43 of the Code of Federal Regulations, Section 1502.16 (Environmental Consequences). The use of fiscal resources are noted in the first sentence of Section 3.8 of the DEIS and this FEIS. As stated in Section 3.8, NCTA believes the commitment of the resources noted in the section is appropriate based on the reasoning that residents in the immediate area, region, and state, as well as*

visitors to the area, would benefit by increasing the capacity of the thoroughfare system in the project area, thereby reducing travel time to the Outer Banks and hurricane evacuation clearance times. Such benefits are anticipated to outweigh the commitment of resources. This position is affirmed by local area governments and the North Carolina General Assembly.

4.5 Other Comments

4.5.1 Requests for Specific Information or Outreach

162. **Comment:** I would like to have a copy of the results of the traffic count, and any other traffic survey formation taken over the Memorial Day weekend. Please send that information to this address.

    Response: *No traffic counts were taken by NCTA on Memorial Day weekend in 2010.*

163. **Comment:** We would like to request a meeting on behalf of ourselves and our tenants, and potentially our business neighbors in our corridor between the Wright Memorial Bridge and The Woods Road, to finalize concerns that may not have been addressed prior to construction of any of the alternatives.

    Response: *The Preferred Alternative would not affect the area between the Wright Memorial Bridge and The Woods Road.*

164. **Comment:** Please mail me copies of the following documents when available: the final DEIS (full copy, not a summary), applicable NEPA required Biologic Opinions from NMFS and other organizations, and the Record of Decision.

    Response: *A copy of the CD containing the DEIS and associated technical reports was provided to those that requested it. It also was available (and remains available) on the project web site. The same procedure will be followed for this FEIS and the Record of Decision once it is released.*

4.5.2 Decision-Making Process

165. **Comment:** I recently read the article in the April 13, 2010, edition of The Coastland Times relating to an interview with you (David Joyner) regarding the proposed Mid-Currituck Bridge. I was floored by your statement that, "The community has been waiting for the project to reach this milestone…" In all due respect, sir, who in the world have you been listening to? Over the last several decades, I have had the opportunity to converse with literally thousands of Currituck Outer Banks residents, non-resident property owners, and tourists and have come away with one overriding comment from a large majority of these people – we live/own/visit the Currituck Outer Banks because of its remote, pristine nature, not in spite of it!

Response: *The commenter's difference of opinion with that of Mr. Joyner is acknowledged.*

166. **Comment:** People in Corolla were denied independent town status and often have difficulty getting their voices heard and their requests objectively considered. Please seek out representatives of the Corolla Civic Association during deliberations on the project.

Response: *Hard copies of the DEIS and associated technical reports were available at eight public review locations in the project area during the DEIS review period, including a location in Corolla. In addition, one of the three open houses/public hearings was held in Corolla on May 19, 2010, at the Outer Banks Center for Wildlife Education in Currituck Heritage Park. The Corolla Civic Association did not submit comments. Comments made by Corolla residents and property owners were taken into consideration when selecting the Preferred Alternative and preparing this FEIS. NCTA is available to meet with local organizations. Contact Jennifer Harris, NCTA Director of Planning and Environmental Studies, at jhharris1@ncdot.gov or (919) 571-3000.*

167. **Comment:** At the public hearings on the DEIS, the vast majority of individuals speaking were opposed to building any bridge. It was the business community, specifically, the real estate business community, that overwhelmingly supported the bridge. At least two of the individuals who spoke for the bridge at the Barco meeting were realtors (but did not identify themselves as such). This begs the question – what is the real purpose of the bridge? Also, is it really needed, or merely "wanted" by those with real estate development interests?

Response: *The purpose and need for the project is presented in Chapter 1 of the DEIS and this FEIS. Transportation improvement needs do exist.*

168. **Comment:** While this project is not decided by politicians, the political influence is obvious. On July 19, 2009, the Daily Advance had an article titled, "DOT to Take over Turnpike Authority." The article states, "Basnight is a chief proponent to giving the Turnpike Authority control of the long-delayed mid-county bridge project. Johnson, the Basnight spokesman said, 'The Mid-Currituck Bridge is one of his top priorities.'" Other projects are much more worthy of tax dollars.

Response: *The commenter's position is acknowledged.*

169. **Comment:** Since the NCTA will be dissolved if the No-Build Alternative or ER2 is selected, the organization faces a conflict of interest. The NCTA should not be involved in the preparation of answers to questions on the DEIS or in any other activities related to preparation of decision documents on this project.

Response: *NCTA has several other current projects in the state, including one under construction in the Raleigh area, so NCTA would not be dissolved if the No-Build Alternative or ER2 were to be selected.*

170. **Comment:** It is now up to the "Elite Eight" who sit on the NCTA Board of Directors to make their decision. They will be judge and jury regarding the fate of Aydlett residents in regard to the bridge. How can a group of individuals (the NCTA Board) who come and go like ships passing in the night make such crucial decisions? Any project in this state with the NCDOT or the NCTA stamp of approval on it requires taxpaying citizens and voters to get involved and voice opinions early and often to avoid the same fate as Aydlett, which will become collateral damage.

Response: *The public was given extensive opportunity to make their opinions known throughout the project, as described in Appendix A of the DEIS and this FEIS, as well as in detail in the Stakeholder Involvement for Draft Environmental Impact Statement Technical Report included on the CD that accompanied the DEIS, as well as this technical report. The complete public involvement process, including the DEIS review process, is documented in these two technical reports. Public comments, including those of the community of Aydlett, were considered in the selection of the Preferred Alternative. In part because of the concerns of Aydlett residents that were expressed during the DEIS review period as to the negative impacts of Option B on their community, NCTA selected Option A to be a part of the Preferred Alternative.*

4.5.3 Past Permits

171. **Comment:** Several years ago both the Army Corp of Engineers and USEPA denied permits for this bridge on environmental grounds. Have these permits been received? How has the potential environmental damage been corrected?

Response: *Previous studies did not go beyond the preparation of a DEIS. No permits were applied for and thus there were none to be denied. Permit applications for the project will be prepared and submitted for the Preferred Alternative, if it is identified as the Selected Alternative in the Record of Decision. Permits are never applied for prior to the release of a Record of Decision. State and federal permitting agencies were involved in establishing the statement of purpose and need, selection of the detailed study alternatives, and selection of the Preferred Alternative. Discussions of impact avoidance, minimization, and mitigation are on-going with these agencies and the outcome of these discussions will be included, as applicable, as requirements of the permits received.*

Appendix A

Agency Involvement Materials

A. Agency Involvement Materials

TURNPIKE ENVIRONMENTAL AGENCY COORDINATION (TEAC) MEETING AGENDAS, SLIDE SHOW PRESENTATIONS, AND MINUTES[1] **A-3**

March 9, 2010 Meeting **A-3**

August 10, 2010 Meeting **A-16**

September 8, 2010 Meeting **A-22**

November 2, 2010 Meeting **A-35**

January 20, 2011 Meeting **A-48**

TURNPIKE ENVIRONMENTAL AGENCY COORDINATION (TEAC) MEETING HANDOUTS **A-61**

Handout 19 – Draft Environmental Impact Statement Comparison of Key Impacts (March 9, 2010) **A-61**

Handout 20 – Summary of Agency Comments on the Draft Environmental Impact Statement (July 14, 2010) **A-65**

Handout 21 – Summary of Public Participation and Comment (June 28, 2010) **A-74**

Handout 22 – Summary of Positions and Additional Needs Derived from DEIS Comments (June 28, 2010) **A-79**

Handout 23 –Preferred Alternative Identification Information Package (August 10, 2010) **A-81**

Handout 24 –Financial Feasibility Assessment of the Mid-Currituck Bridge Project (August 10, 2010) **A-89**

Handout 25 – Reasons for a Determination that ER2 is Not a Practicable Alternative to a Bridge across Currituck Sound (September 8, 2010) **A-92**

Handout 26 – Mid-Currituck Bridge Stormwater Management (September 8, 2010) **A-95**

Handout 27 – Construction Methodologies for Mid-Currituck Bridge (September 8, 2010) **A-99**

[1] The minutes include notes related to all NCTA projects discussed with the TEAC on any given day and not just the Mid-Currituck Bridge Study.

Handout 28 – Assessment of Maple Swamp Groundwater System (November 2, 2010) **A-103**

Handout 29 – Supplemental Assessment of Mid-Currituck Bridge Impacts to Flood Elevations in Maple Swamp (November 2, 2010) **A-111**

Handout 30 – Response to Written Comments on the October 2010 Preferred Alternative Report (January 20, 2011) **A-113**

OTHER **A-124**

North Carolina Turnpike Authority Interim Response Letter to National Marine Fisheries Service's Essential Fish Habitat Recommendations (July 6, 2010) **A-124**

Post-Public Hearing Meeting with Currituck County – Agenda and Minutes with Attachments (July 16, 2010) **A-126**

Meeting with Local Emergency Management Officials Regarding Selection of Preferred Hurricane Evacuation Treatments – Agenda, Handouts, Presentation Slides, and Minutes (August 19, 2010) **A-159**

Meeting with the North Carolina Department of Environment and Natural Resources (NCDENR), Division of Water Quality – Agenda, Handouts, and Minutes (October 1, 2010) **A-170**

Currituck County Emergency Management Letter (October 7, 2010) **A-177**

North Carolina Turnpike Authority Response Letter to North Carolina Department of Environment and Natural Resources, Division of Coastal Management's Comments Related to Coastal Area Management Act (CAMA) Land Use Plan Provisional Consistency Determinations (January 12, 2011) **A-178**

Meeting with NCDENR-DWQ, NCDENR-DMF, USACE, and NMFS – Handout and Minutes (March 21, 2011) **A-184**

Meeting with USACE, NMFS, NCDENR-DWQ, NCDENR-DCM, NCDENR-DMF, and NCWRC – Handouts and Minutes (April 6, 2011) **A-194**

Mid-Currituck Bridge

Agenda

March 9, 2010
10:00 A.M. to 12:00 P.M.

For remote participants, please join meeting at
https://www2.gotomeeting.com/join/538135363
Conference Call: (919) 233-7091
Please call (919) 571-3000 if you have technical difficulties

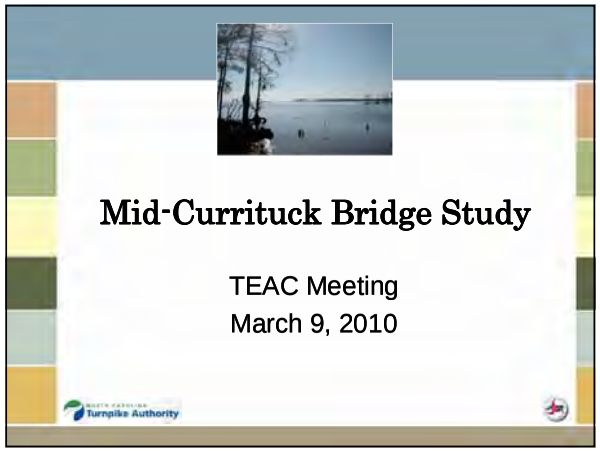
Purpose: Provide an overview of the Draft EIS and discuss construction options in Currituck Sound and construction moratorium applicability in Currituck Sound. Also discuss recent and future public involvement activities and schedule.

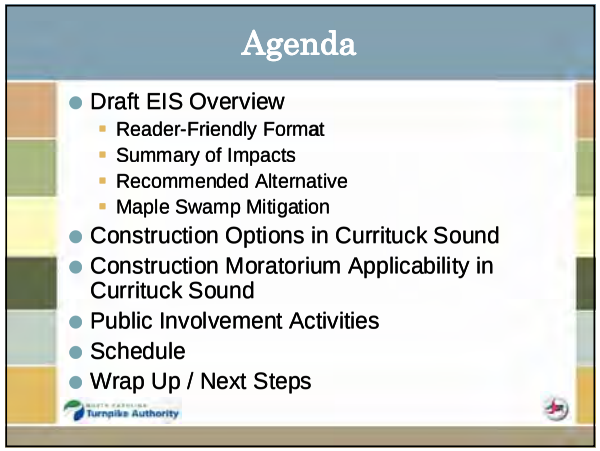
Previous Action Items: There are no previous action items.

New Action Items: Agencies review and provide comments on Draft EIS, construction options in Currituck Sound, and construction moratorium applicability in Currituck Sound during Draft EIS comment period.

- **Draft EIS Overview**
  - **Reader-friendly format**
  - **Summary of impacts**
  - **Recommended Alternative**
- **Construction Options in Currituck Sound**
- **Construction Moratorium Applicability in Currituck Sound**
- **Public Involvement Activities**
- **Schedule**
- **Wrap Up / Next Steps**
  - **TEAC Meeting following close of Draft EIS comment period to discuss public and agency comments**

NORTH CAROLINA Turnpike Authority



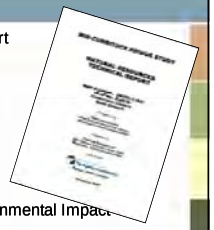


Reader-Friendly Format

- 1/2-inch Thick:
  - Normal topics
  - Usual sections
  - Combined Affected Environment/Environmental Consequences
  - Focus on bottom line and findings important to Preferred Alternative selection
  - Full set of technical appendices
- Format Coordinated and Approved by FHWA headquarters

Turnpike Authority

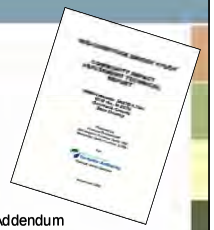
Technical Reports on CD



- Other Physical Features Technical Report
  - Energy
  - Accelerated Sea Level Rise Resulting From Climate Change
  - Visual Quality
  - Hazardous Materials and Underground Storage Tanks
  - Floodplains
- Phase I Terrestrial and Underwater Archaeological Background Study
- Stakeholder Involvement for Draft Environmental Impact Statement Technical Report
- Traffic Noise Technical Report
- 2035 Traffic Alternatives Report
- Public Hearing Maps

Turnpike Authority

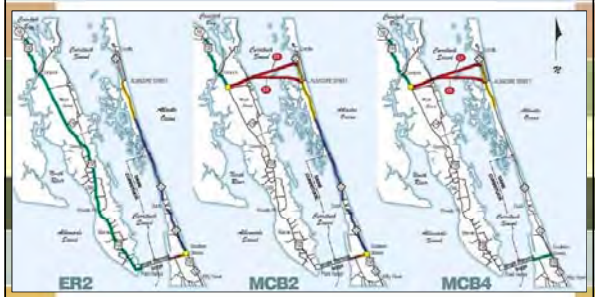
Technical Reports on CD



- Statement of Purpose and Need
- Alternatives Screening Report
- Air Quality Technical Report
- Community Impact Assessment Technical Report
- Essential Fish Habitat Technical Report
- Historical Architecture Resources Reports and Supplemental Materials
  - Historic Architectural Resources Report
  - Historic Architectural Resources Report Addendum
  - Historic Architectural Resources Supplemental Materials
- Indirect and Cumulative Effects Technical Report
- Natural Resources Technical Report

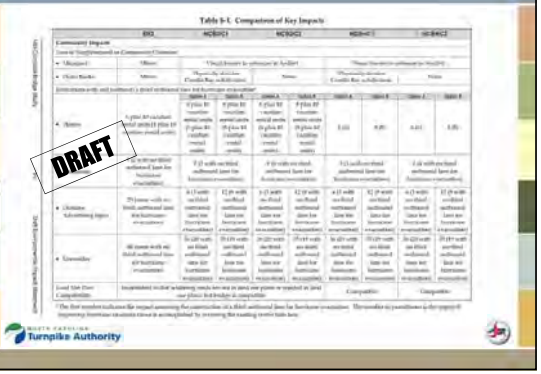
Turnpike Authority

Detailed Study Alternatives



Turnpike Authority

Comparison of Key Impacts
Handout 19



Maple Swamp Mitigation

- Option A
  - Bridge Maple Swamp
  - Investigate on-site wetland mitigation opportunities
  - Protect landlocked parcels
- Option B
  - Defined as including the restoration of the Aydlett Road right-of-way as a wetland
  - Investigate on-site wetland mitigation opportunities
  - Wildlife crossings and exclusionary fencing
  - Protect larger acreage of landlocked parcels (including parcels south of Aydlett Road)

Comparison of Key Impacts

MCB2/C1		MCB2/C2		MCB4
Visual barrier to cohesion in Aydlett				Visu
Physically divides Corolla Bay subdivision.		None		Physically Corolla Bay s
d lane for hurricane evacuation[1]				
Option A	Option B	Option A	Option B	Option A
6 plus 10 vacation rental units (6 plus 10 vacation rental units)	8 plus 10 vacation rental units (8 plus 10 vacation rental units)	6 plus 10 vacation rental units (6 plus 10 vacation rental units)	8 plus 10 vacation rental units (8 plus 10 vacation rental units)	6 (6)
7 (5 with no third		8 (6 with no third		5 (3 with

Recommended Alternative

- **MCB4** Presented as "Recommended Alternative" in the Draft EIS
- No Recommendation On:
  - Bridge Corridor (C1 or C2)
  - Maple Swamp Crossing (Option A or B)
  - Hurricane Strategy (Third Outbound Lane or Center Lane Reversal)

Why MCB4?

- Design and Cost Considerations
  - Fewest changes in access to adjoining properties
  - Only 5 miles of hurricane improvements needed
  - Likely could be fully financed
- Travel Benefits
  - Substantial congestion benefits
  - Road widening associated with MCB2 could be done in the future if desired
- Minimizes Community Impacts and Consistent with Local and State Plans

Turnpike Authority

Construction Methods in Currituck Sound

Turnpike Authority

Why MCB4?

- Natural Resource Impacts
  - Least fill in natural or naturalized uplands
  - Increase in impervious surface similar to ER2 and less than MCB2
- Other Physical Characteristics
  - Fewest homes experience noise increases
  - Reduce impact of sea level rise on Outer Banks travel
- In past public involvement activities, was an overwhelming preference

Turnpike Authority

Goal of the PDA Process

- The objective of the NCTA is to find the best solution that could make the project **REAL and financeable with tolls**

- Feasibility dependent upon taking into account human and natural environmental impacts, degree to which an alternative meets Purpose & Need, public/agencies comments, constructability, and cost issues

Turnpike Authority

Purpose of Discussion

- Provide information on DEIS materials relative to possible implementation to keep TEAC members informed
- Present potential bridge construction methods for agency consideration and discussion
- Share thoughts and ideas on permitting, mitigation, and constraints

- No decisions at this time

Turnpike Authority

Conventional Construction

- Advantages
  - Multiple activities at multiple sites
  - Longer spans possible – **fewer piles**
  - Potential for fastest construction
  - Greatest **construction flexibility**
- Disadvantages
  - Materials delivery to site via water
  - Requires about 6 feet water depth

Turnpike Authority

Construction Methods

- Conventional Bridge Construction
  - Barges on water with construction cranes
  - Multi-activity approach

- Top Down Construction
  - Bridge built from itself
  - Linear construction sequence

- Temporary Trestle Construction
  - Work bridge adjacent to bridge
  - Shared elements with other options

- Multiple Methods

Turnpike Authority

Top Down Construction

- Advantages
  - Work performed from the structure
  - Materials delivery via the new bridge
  - Least environmental impacts
- Disadvantages
  - Shortest spans – added piles in water
  - Linear construction method
  - Greatest potential for delays – highest risk
  - Slowest construction schedule

Turnpike Authority

Temporary Trestle Construction

- Advantages
  - Permits some multiple activity areas
  - Potentially allows for longer spans
  - Faster than top down construction
- Disadvantages
  - Requires added temporary piles in water for trestle(s)
  - Removal of temporary structure
  - Activities tied to trestle and adjacent functions – less flexible than conventional

Turnpike Authority

Currituck Sound Challenges

- Shallow water
- Submerged aquatic vegetation
- Other environmental issues
- Subsurface conditions
- Length of crossing
- Constructability
- Economics / Scheduling

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Multiple Construction Methods

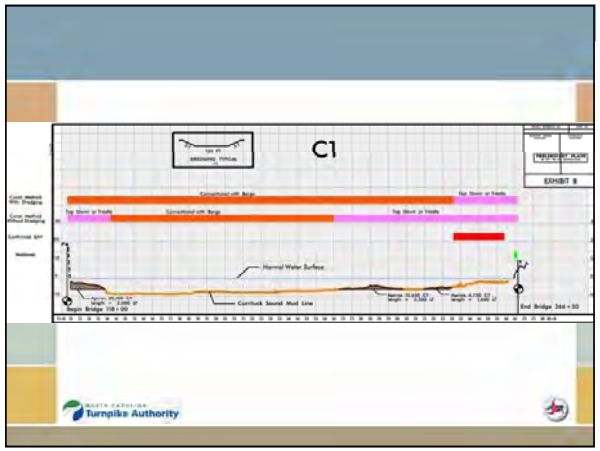
- Allows **advantages of each where appropriate for site conditions**
- Allows more reasonable solution: the one which ensures the feasibility of the project with the minimum environmental impact

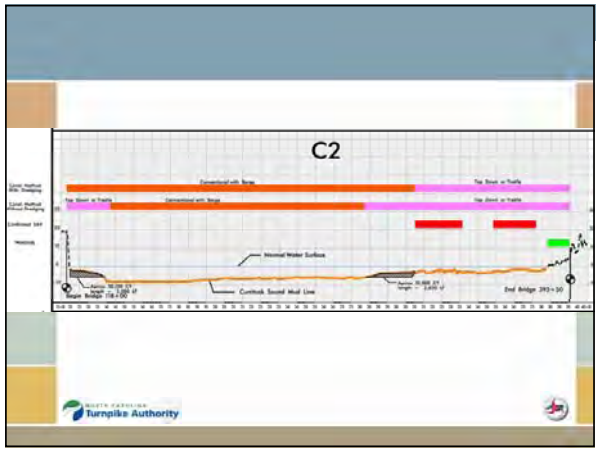
Turnpike Authority

Construction Scenarios

- Existing Conditions (No Dredging)
  - Top down or trestle in known SAV areas and shallow water areas (< 6 feet)
  - Conventional in deeper water (> 6 feet)
- Modified Conditions (Minimal Dredging)
  - Top down or trestle in known SAV areas. **NO SAV area would be dredged**
  - Dredge **ONLY** shallow water areas to 6 foot depth
  - Conventional in dredged areas and deeper water areas

Turnpike Authority

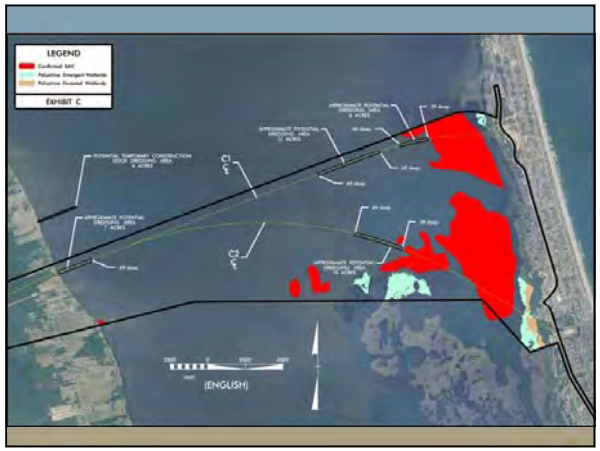




Minimal Dredging

Dredging Data	C1 Corridor	C2 Corridor
Dredging Length	7,100 feet (29% of total length of the bridge)	4,600 feet (17% of total length of the bridge)
Average Depth of Dredging	1.3 feet	2.2 feet
Bottom Area Disturbed	25 acres	17 acres
Volume of dredged material	53,000 cubic yards	61,000 cubic yards

Turnpike Authority



Time Savings

Time	C1 Corridor	C2 Corridor
Construction Time without Dredging	46 months	57 months
Construction Time with Minimal Dredging	34 months	41 months
Construction Time saving with Minimal Dredging	12 months	16 months

Dredging Considerations

- Methods
- Beneficial Use
  - Wetland creation
  - SAV habitat creation or restoration
  - Construction use

Cost Savings

Money	C1 Corridor	C2 Corridor
Cost savings due to the reduction of Schedule	$ 8 Million	$24 Million
Construction Cost Savings	$ 30 million	$30 Million
Total Savings with Dredging	$38 Million	$54 Million

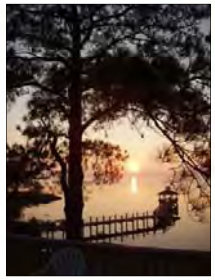
Construction Moratorium Applicability in Currituck Sound

Moratorium Purpose

Purpose: to reduce negative effects on critical fish life history activities, including anadromous fish spawning migrations and nursery functions, and primary nursery area functions

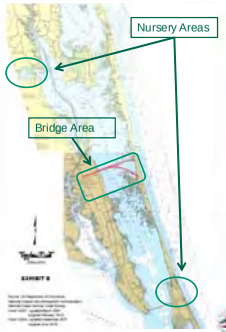
Avoidance and Minimization

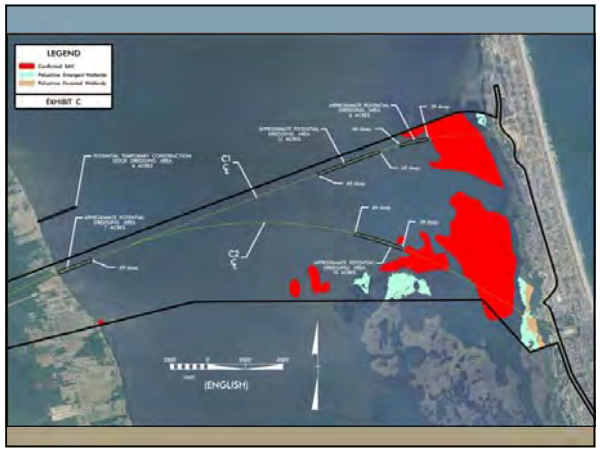
- Minimize impacts associated with in-water work:
  - Dredging limited to areas without SAV beds
  - Dredging conducted from October through February
  - Turbidity curtains used during piling installation in SAV areas



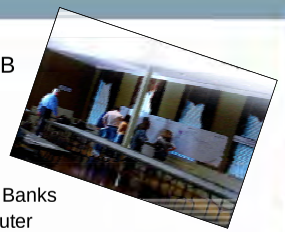
Mid-Currituck Bridge Area

- No designated primary nursery areas in bridge area
- No designated anadramous fish spawning or migration areas
- Limited SAV beds





Public Involvement



- Aydlett Community Meeting on Option B (October 12, 2009)
- Public Hearings
  - Currituck County Mainland
  - Dare County Outer Banks
  - Currituck County Outer Banks
- Elected Officials Meetings

Wrap Up / Next Steps

- DEIS Signature
- Public Hearings on DEIS
- Agencies review and comment on DEIS

Schedule

DEIS:	March 2010
Public Hearings:	May 2010
Preferred Alterative/ LEDPA:	July 2010
FEIS:	September 2010
ROD:	December 2010
Execute Concession Agreement:	February 2011
Open to Traffic:	December 2014

Turnpike Environmental Agency Coordination (TEAC) Meeting

MEETING MINUTES

Date: March 9, 2010
10:00 AM to 12:00 PM
NC Turnpike Authority Office Board Room (Suite 400)

Project: STIP R-2576 Mid-Currituck Bridge Study – BR-STP-000S(494)

Mid-Currituck Bridge Spotlight:

Attendees:

Bill Biddlecome, USACE
Christopher Militscher, USEPA (via phone)
Gary Jordan, USFWS
Cathy Brittingham, NCDENR-DCM
David Wainwright, NCDENR-DWQ
Travis Wilson, NCWRC
Missy Pair, NCDOT-PDEA
Roy Bruce, CDG–Lochner MMM LLP
Ted Devens, NCDOT–PDEA
George Hoops, FHWA
Jennifer Harris, NCTA
John Page, PB
Don Brown, PB
Jose Luque, CDG–ACS Infrastructure
Dewayne Sykes, NCDOT–RDU
Spencer Franklin, HNTB
Tracy Roberts, HNTB
Steve Browde, CDG–Lochner MMM LLP
Richard Palmer, CDG-Weeks Marine, Inc.
Jose M. de Iturriaga, CDG-Dragados USA, Inc.
Bernardo Palicio, CDG-Dragados USA, Inc.
Ron Ferrell, CDG-PBS&J
Jim Hoadley, NCDENR-DCM
Steve Gurganus, NCDOT–PDEA, HEU
BenJetta Johnson, NCDOT-CM (via phone)
Kevin Hart, NCDENR-DMF (via phone)
Sara Winslow, NCDENR-DMF (via phone)
Ron Sechler, NMFS (via phone)
Jens Geratz, CDG-PBS&J

*CDG: Currituck Development Group (CDG) is the PDA (Pre-Development Agreement) partner of the NCTA formed by ACSID, Dragados USA, Inc. and Lochner MMM LLP

Presentation Materials: (All materials posted on the TEAC website)

- Meeting Agenda
- Slides for presentation
- DEIS Comparison of Key Impacts (based on March 5, 2010 preliminary DEIS) (Handout 19)
- Construction Methods in Currituck Sound Handout

Purpose:
The purpose of the meeting was to provide an overview of Draft Environmental Impact Statement (DEIS) (the last TEAC meeting was in June 2009) and explain what the DEIS would look like (reader- friendly format); and to discuss the potential construction methods in Currituck Sound should a Mid-Currituck Bridge be selected as the Preferred Alternative. The purpose of the meeting was also to discuss construction

moratorium applicability in Currituck Sound and to discuss recent and future public involvement activities and schedule.

General Discussion:
The following information was discussed at the meeting:

- **DEIS and Technical Reports Discussion** – PB (John Page) summarized the agenda and then discussed some of the similarities and differences readers would see in the reader-friendly format of this DEIS as compared to other DEISs. The Mid-Currituck Bridge DEIS would be approximately 0.5 inch thick and would be focused on the key findings of the analysis. The details of the analysis would be in the approximately 7 inches of supporting technical reports. The DEIS would include a CD with all of the technical reports and public hearing maps. There would be eight public review locations for the DEIS – three on the mainland and five on the Outer Banks. All material would be posted on the NCTA's project website also.

  PB (John Page) summarized the detailed study alternatives being analyzed in the DEIS and described Handout 19. Mitigation for Design Options A and B was also discussed. MCB4 will be presented in the DEIS as the Recommended Alternative because of its capability of being financed, the minimization of community impacts, the overwhelming preference for it by the public, among other reasons. No recommendation will be made in the DEIS related to bridge corridor C1 versus C2, Option A versus Option B, and the two hurricane evacuation alternatives.

  Q&A:
  1. *USFWS (Gary Jordan) stated that the timber on hundreds of acres on the south side of Aydlett Road in Maple Swamp had been cut down. NCWRC (Travis Wilson) described what had been done and how the land now looks.*

     NCTA (Jennifer Harris) and others noted that this was new since the last time the study team had been to the project site.

  2. *NCDENR-DCM (Cathy Brittingham) asked how many public hearings would take place, when they would occur, and how long the comment period would be.*

     PB (John Page) responded that there would be three (3) public hearings that would occur probably in late April or early May. NCTA (Jennifer Harris) added that the comment period would last a minimum of 45 days from the publication of DEIS availability in the Federal Register. *Update post meeting: The public hearing dates will be May 18, 19 and 20. The DEIS comment period will extend through June 7.*

  3. *USEPA (Chris Militscher) requested hard copies of the technical reports in addition to the CD that will be provided with the DEIS.*

     NCTA (Jennifer Harris) responded that coordination with EPA would be done after this meeting to verify what was needed by EPA. *Update post meeting: NCTA will provide five printed copies of the DEIS and technical reports to EPA headquarters in Washington DC, one printed copy of the DEIS and technical reports to the EPA Region IV office in Atlanta and one printed copy of the DEIS with the technical reports on a CD to the EPA office in Raleigh.*

- **Construction Methods in Currituck Sound –** CDG-Lochner (Roy Bruce) presented the idea that the objective of the NCTA is to find the best solution that could make the project real and financeable with tolls. He presented the construction methods, based on conditions as they are currently understood, that could be utilized in construction of one of the two bridge corridors (C1 and C2). It was stressed that there are no pre-conceived assumptions that a bridge would be built. The goal of presenting this material early in the decision making process is not to get a decision, but to begin a dialogue with the participating and cooperating agencies (agencies).

  Three construction methods were presented – conventional, top down, and temporary trestle. If a bridge is part of the Preferred Alternative, some combination of these three methods of construction

would likely need to be made. Advantages and disadvantages of each type were explained. Some of the challenges that are present in Currituck Sound, such as erratic and shallow water depths, were discussed. Time savings and cost savings with the different construction methods were presented.

CDG-PBS&J (Ron Ferrell) presented information about the potential for a construction moratorium in Currituck Sound. The purpose of a construction moratorium is to decrease the potential negative effects of construction on aquatic resources. Avoidance and minimization options were also discussed. NCTA (Jennifer Harris) noted that the team had researched what had been done on other recent coastal bridge construction projects as well. CDG-PBS&J (Ron Ferrell) noted that construction of the Virginia Dare Bridge did not have a moratorium for in-water work. CDG-Lochner (Roy Bruce) added that the use of jetting would probably not be necessary with construction of a bridge in Currituck Sound. NCTA (Jennifer Harris) also noted that this is early in the process for these details to be discussed, but it is necessary on this project to make sure that any alternative that may be selected is financially feasible and can be permitted by the agencies.

Q&A:

1. *USACE (Bill Biddlecome) asked what the longest span lengths would likely be.*

   Span length is a work in progress that will be refined as more information becomes available. Presently, it is estimated that there would be approximately 100 feet spans with conventional construction and 50 feet spans with top down or trestle construction. This is based on current knowledge and is not final.

2. *USACE (Bill Biddlecome) asked about the timeframe of construction.*

   It was noted that with this project being partly financed privately, the banks would be anxious to start repayment on their investment quickly, so there is motivation to complete construction as quick as possible. There was discussion of what the general timeframe might be. NCTA (Jennifer Harris) noted that once all the pieces of the analysis are completed, NCTA will be able to better answer this question.

3. *USEPA (Chris Militscher) asked USACE (Bill Biddlecome) if they thought dredging was a practical alternative. If the project cannot be funded without dredging, the agencies would need to know this.*

   USACE *(Bill Biddlecome)* stated that it was unknown at this time. NCTA (Jennifer Harris) added that the agencies are meeting today in part so the information could be provided, and a discussion can ensue.

4. *USEPA (Chris Militscher) asked how a LEDPA could be chosen if the costs are not known.*

   FHWA (George Hoops) added that cost information would be available when the selection of the Preferred Alternative is made. NCTA (Jennifer Harris) stated that the information on construction options and their timing is being discussed for this project at an early stage to generate discussion that is needed when considering the financing of this project.

5. *USEPA (Chris Militscher) asked how there could be a recommended alternative.*

   NCTA (Jennifer Harris) stated that a bridge corridor has not been selected. CDG-Lochner (Roy Bruce) added that these construction methods apply to all bridge alternatives.

6. *NCWRC (Travis Wilson) asked if the bridge could be constructed from both sides.*

   CDG-Lochner (Roy Bruce) stated that there were more constraints on the east side of Currituck Sound, but that it was physically possible to do. Based on current information, it also is possible to start from the west side of the SAV area near the Outer Banks and build east from there. There are opportunities to construct from both sides, but the issue would need to be further examined. How construction would occur if a bridge was selected has not yet been decided.

7. *NCWRC (Travis Wilson) asked if six feet would be what was needed for dredging.*

   Yes, to a water depth of six feet. The discussion of depth fluctuation has just begun. NCTA added that this type of information is what would be needed from the agencies.

8. *NCDENR-DWQ (David Wainwright) asked how wide the dredged area would have to be.*

   The dredged area would need to be approximately 150 feet wide. The bridge would be approximately 50 feet wide, which would provide room for barge maneuverability around the bridge during construction.

9. *NCDENR-DWQ (David Wainwright) asked about the presence of SAV within the proposed dredging area.*

   NCTA (Jennifer Harris) and CDG-Lochner (Roy Bruce) stated that another SAV study would be done before construction. NCDENR-DMF (Sara Winslow) noted that there is more SAV presence now than there was when the last study was conducted by the USACE in 2007.

10. *NCDENR-DMF (Sara Winslow) raised concern over the migration corridor for fish spawning. The comment was in response to the statement in the presentation that there were no anadromous fish spawning and migration areas within the two bridge corridors. NCDENR-DMF (Sara Winslow) noted that anadromous fish did migrate through this area to reach Tull's Creek to the north. The comment concerning the Big Narrows was in response to NCDENR-DMF's (Sara Winslow's) question on how construction materials would be delivered to the site.*

    CDG-Lochner (Roy Bruce) stated that Big Narrows area of Currituck Sound was far too shallow to be able to use for construction purposes. Construction materials would be delivered by road because of the shallow water in the Big Narrows. Discussion ensued about the way SAV areas are determined. It was noted that SAV would be identified at the time of construction.

11. *NCDENR-DCM (Cathy Brittingham) stated that there is an NCSU research project on SAV in Currituck Sound being funded by NCDOT that is underway in this area at the present time.*

    NCTA (Jennifer Harris) and CDG-Lochner (Roy Bruce) stated that the team would look into this as it was not known by most of the agencies. *Update post meeting: NCDENR-DCM (Cathy Brittingham) provided additional details on the SAV study to the agencies via email on March 9. The NCDOT-funded study is being conducted by NCSU regarding SAV's in Currituck Sound. The title of the study is "Satellite Remote Sensing of Submerged Aquatic Vegetation Distribution and Status in Currituck Sound." The Principal Investigator is Stacy Nelson, Ph.D., Associate Professor at the NCSU Center for Earth Observation Department of Forestry and Environmental Resources. The Chairperson of the Steering and Implementation Committee is Bruce Ellis of NCDOT. There may be field sampling in the Currituck area planned for summer 2010.*

12. *NCWRC (Travis Wilson) noted that with joint waters in Currituck Sound, the NCWRC needed to be included on correspondence. There have been occasions where NCWRC has been left off the contact list.*

    Noted.

13. *NCDENR-DCM (Cathy Brittingham) asked what would happen to the dredged areas after the project.*

    NCTA (Jennifer Harris) noted that page 9 of the "Construction Methods in Currituck Sound" handout described five options. NCTA is looking for feedback from the agencies on what they would consider the best option. CDG-Lochner (Roy Bruce) added that NCTA is not presenting a plan at this time, but instead is requesting feedback from the agencies.

14. *NCDENR-DCM (Cathy Brittingham) noted that to be able to determine if the project would be able to receive a permit, the agencies would need to know if the dredged areas would be restored.*

    CDG-Lochner (Roy Bruce) noted that any option being presented that could not receive a permit would not be a feasible option. NCTA (Jennifer Harris) would need to know that so they could carry forward only feasible options.

15. *NCDENR-DCM (Cathy Brittingham) noted that there were additional issues that would need to be investigated by NCDENR-DCM. More questions may be presented by NCDENR-DCM in the future.*

    NCTA (Jennifer Harris) noted that these issues are important to have on the table because some of these could make or break the project. It was noted that cost reductions associated with construction would not be a benefit to the PDA partner (CDG). The cost savings could make the project feasible or not. NCDENR-DCM (Cathy Brittingham) added that the environmental impact of dredging has to be balanced against public benefit.

16. *NCDENR-DCM (Cathy Brittingham) asked about stormwater management.*

    PB (John Page) explained the stormwater management options that are presented in the DEIS.

- **Public Involvement Discussion** – NCTA (Jennifer Harris) discussed the material on public involvement that was presented on slide 35 in the presentation.

  Q&A:
  1. *USFWS (Gary Jordan) and NCWRC (Travis Wilson) discussed the timbering of Maple Swamp. The question was asked whether the timbering of Maple Swamp would change the DEIS at all.*

     PB (John Page) stated that the opportunity to preserve Maple Swamp still remains in association with the purchase of land locked parcels, despite that it has recently been timbered. It had been timbered before and it could happen again. Preserving it would prevent any future timbering and allow timbered areas to recover.

     USFWS (Gary Jordan) and NCWRC (Travis Wilson) noted that the Maple Swamp hydrology had been altered by timbering. There is now strong flow coming through the culverts on Aydlett Road.

- **Schedule** – NCTA (Jennifer Harris) presented the schedule for the DEIS, LEDPA, FEIS, ROD, Concession Agreement, and when the project would be open to traffic as shown on slide 35 of the presentation.

Q&A:
1. *NCDENR-DCM (Cathy Brittingham) asked when the Preferred Alternative Report would fit into this schedule.*

   NCTA (Jennifer Harris) noted that it would be after the release of the DEIS and end of the comment period.

Next Steps:
- NCTA (Jennifer Harris) added that May 2010 would be too early for the TEAC to meet, so the next TEAC meeting would likely be held in June.

Mid-Currituck Bridge

Agenda

August 10, 2010
1:00 P.M. to 3:00 P.M.

For remote participants – please join meeting at
https://www2.gotomeeting.com/join/553258738
Conference Call: 919-233-7091
Please call (919) 571-3000 if you have technical difficulties

Purpose: Discuss the Preferred Alternative Identification Information Package and discuss "practicable" as it relates to project funding and selection of the LEDPA/Preferred Alternative.

Previous Action Items: Agencies review and provide comments on Draft EIS, construction options in Currituck Sound, and construction moratorium applicability in Currituck Sound during Draft EIS comment period.

New Action Items: Agencies review and provide comments on the Preferred Alternative Identification Information Package; agencies agree on which detailed study alternative(s) are "practicable" as it relates to selection of the LEDPA/Preferred Alternative.

- **Brief Description of Handouts 20 to 24**
- **Selection of the LEDPA/Preferred Alternative**
  - LEDPA-Related Comments and Responses (Handout 23)
  - Financial Feasibility (Handout 24)
  - Discussion:
    - Practicability of ER2 and MCB2
    - MCB4/C1 as LEDPA/Preferred Alternative
- **Selection of Practicable Design and Construction Avoidance, Minimization, and Mitigation Strategies (Handout 23)**
  - Comments and responses on crossing Maple Swamp on bridge or fill
  - Comments and responses on construction methods
  - Comments and responses on mitigation of stormwater runoff from Mid-Currituck Bridge
- **Wrap Up / Next Steps**
  - Continue LEDPA Discussions at 9/8 TEAC Meeting

NORTH CAROLINA
Turnpike Authority

Turnpike Environmental Agency Coordination (TEAC) Meeting

MEETING MINUTES

Date: August 10, 2010
10:00 a.m. to 11:30 a.m.
NCTA Board Room

Project: STIP R-2721, R-2828, and R-2929 – Triangle Expressway Southeast Extension

Triangle Expressway Extension Spotlight:

Attendees:

Rob Ayers, FHWA	Jason Moore, NCDOT-Roadway Design Unit
Christopher Militscher, USEPA	BenJetta Johnson, NCDOT-TMSD
Eric Alsmeyer, USACE	Chris Lukasina, CAMPO
Scott McLendon, USACE	Jennifer Harris, NCTA
Gary Jordan, USFWS	Christy Shumate, HNTB
Brian Wrenn, NCDENR-DWQ	Spencer Franklin, HNTB
Travis Wilson, NCWRC	Gail Tyner, ESI
Amy Simes, NCDENR (via telephone)	Joanna Rocco, URS
Renee Gledhill-Earley, NCDCR-HPO (via telephone)	Roy Bruce, Lochner
Missy Pair, NCDOT-PDEA	Brian Eason, Lochner
Herman Huang, NCDOT-PDEA, HEU	Kristin Maseman, Lochner
Doug Taylor, NCDOT-Roadway Design Unit	Karin Ertl, Lochner
Sam St. Clair, NCDOT-Roadway Design Unit	Steve Browde, Lochner
Tony Houser, NCDOT-Roadway Design Unit	Wendee Smith, Mulkey

Presentation Materials (Posted on TEAC website):

- Agenda
- Final Meeting Minutes – 2/16/10 TEAC Meeting
- Revised Section 6002 Draft Project Coordination Plan
- Draft Purpose and Need Statement
- Handout 1 – Alternatives Screening Methodology Summary
- Handout 2 – Qualitative First Tier Screening of Alternative Concepts
- Handout 3 – Quantitative Second Tier Screening of Alternative Concepts

Purpose:
Discuss purpose and need statement and alternatives screening process.

General Discussion:
The following information was discussed at the meeting:

- **Project Coordination Plan:** NCTA stated that a revised version of the Draft Project Coordination Plan has been posted to Constructware. The revisions were based on similar edits that were

made to the Project Coordination Plan for the Cape Fear Skyway project. NCTA distributed invitation letters to representatives of State agencies, asking for the agencies to become participating agencies under the Project Coordination Plan. FHWA will distribute a similar letter to representatives of federal agencies. Agencies are requested to submit to NCTA any final comments on the Project Coordination Plan before the next TEAC meeting on September 8, 2010.

- **Purpose and Need:** Lochner summarized the three key elements of the project need: the need for improved mobility in the project, underscored in the Capital Area Metropolitan Planning Organization (CAMPO) Long Range Transportation Plan (LRTP); the limited transportation options for efficient local and through travel in the region due to increasing congestion on existing freeways and a lack of alternative routes and travel modes; and existing and projected poor levels of service (LOS) on major roadways in the project area. Lochner summarized the project purpose as improving transportation mobility to enhance connectivity in the area and to provide additional high-speed, efficient regional transportation infrastructure for local and regional traffic. Other desirable outcomes include system linkage and support for federal sustainability and livability goals.

  NCDENR-DWQ asked how a reduction in congested vehicle miles traveled (one of the measures of effectiveness listed in the Draft Purpose and Need Report for meeting project purpose) would differ from improvement in LOS. HNTB explained that measuring changes in congested vehicle miles traveled provides information on congestion levels throughout the local transportation network. LOS only provides information on congestion levels for a specific link in that network.

  NCDENR-DWQ asked whether the study area for traffic analysis is different from the study area for alternatives development. NCTA explained that the limits of the study area for traffic analysis are broader than those for alternatives development because the former must consider more of the regional transportation network outside the immediate project area. NCDENR-DWQ stated that this discrepancy between the two study areas is confusing in the Draft Purpose and Need Report and suggested that this issue be clarified in the report.

  FHWA suggested that more information be provided about potential thresholds for meeting the project purpose under each of the measures of effectiveness listed in the Draft Purpose and Need Report. NCTA explained that it could be difficult to set thresholds that do not arbitrarily eliminate otherwise reasonable alternatives. CAMPO indicated that their LRTP includes measures of effectiveness but does not identify minimum requirements for meeting them.

  USEPA asked why information about US 401 is not included in the traffic figures in the Draft Purpose and Need Statement. HNTB explained that traffic data for existing conditions and no-build scenarios are available for US 401. HNTB will include this information in the figures.

  NCDENR-DWQ questioned the appropriateness of including the NC Strategic Highway Corridor vision as part of the need for the project. NCTA explained that this was included as supporting information to explain that current and projected LOS do not support that vision. NCTA will more closely examine this issue and consider revising the report text to clarify.

  FHWA asked how public involvement will be incorporated into purpose and need development. Lochner explained that public workshops to present this information, along with information about alternatives development will be held in late September. Project purpose and need will be finalized after considering all public and agency comments received. NCTA explained that agency comments received will also be considered in finalizing the project purpose and need. The Draft Purpose and Need Statement will be posted to the project website.

- **Alternatives Screening:** NCTA summarized the methodology used for screening alternative concepts and preliminary alternative corridors and then provided an overview of the results of screening alternative concepts (Qualitative First Tier Screening). NCTA stressed that improve

existing and hybrid new location/improve existing concepts may prove to be worthy of more consideration for this project than for past NCTA projects.

NCTA explained that for the first screening, alternative concepts were qualitatively compared to the no-build alternative. USEPA asked whether combinations of concepts could be considered as such combinations may be better able to meet elements of project purpose and need than each concept alone. USEPA also stated that "maybe" could be a more accurate answer than "yes" or "no" in qualitatively assessing whether each alternative concept meets each element of purpose and need.

NCDOT-PDEA asked if CAMPO has done any modeling to see how much transit ridership is needed to achieve quantitative improvements in, for example, area commute times. CAMPO indicated that in its traffic model the Southeast Extension is assumed to be a multimodal facility, with mass transit using the roadway along with cars and trucks. CAMPO expects that the Southeast Extension will be developed so that it is consistent with the LRTP.

FHWA asked why the measures of effectiveness for meeting the project purpose were not used to screen alternative concepts. NCTA responded that it would be difficult to quantify the ability of each alternative concept to meet the measures of effectiveness for the project purpose. Lochner added that the first tier screening of alternative concepts is meant to determine whether each concept would be able to fulfill the main points of the project and purpose and need; those that meet those points will then be subject to the quantifiable measures of effectiveness. Several agencies suggested that NCTA consider qualitatively screening the alternative concepts according to the measures of effectiveness. NCDENR-DWQ and NCWRC also suggested the NCTA consider eliminating the following two elements of the first tier screening: consistency with the NC Strategic Highway Corridor program and ability to improve system linkage. Several agencies also suggested that NCTA more clearly explain the first tier screening process.

FHWA asked whether CAMPO has any documentation of how mode choices for specific areas are made for the LRTP. CAMPO stated that regardless of mode, there is no east-west corridor in southern and eastern Wake County that can handle projected traffic volumes. CAMPO views the 540 Outer Loop as the backbone of the transportation network in this area.

Lochner presented preliminary alternative corridors currently under consideration. These include several new location alternatives, as well as improving existing facilities alternatives and hybrid new location/improve existing facilities alternatives. Lochner described preliminary impact estimates for these alternatives. NCTA recommended several alternatives for elimination based on magnitude of impacts on relocations and jurisdictional resources. USFWS asked that NCTA not eliminate Alternative O from further consideration at this point because, while it would require a large number of relocations and would directly impact the Swift Creek Watershed Critical Area, it is the only new location alternative that would avoid dwarf wedgemussel habitat. The agencies agreed to eliminate Alternatives B, D, F, H, K, and M from further consideration. These alternatives each use Segment 38, rather than Segment 9, at the eastern project terminus. In all cases, alternatives using Segment 38 would have greater impacts to jurisdictional resources and would require more relocations that similar alternatives using Segment 9. The agencies also agreed to eliminate Improve Existing Alternative #2 and Hybrid Alternative #2 (each includes upgrading and widening NC 55 and NC 42) due to the large number of relocations each would require. NCTA and Lochner will complete the third tier qualitative screening on the remaining alternatives.

Previous Action Items:

- Agencies to review scoping handout and constraints mapping and provide to NCTA information about additional environmental issues and constraints.
  [Scoping responses were received from USEPA, USFWS, NCDCR-HPO, NCDENR-DWQ, NCWRC, NCDENR-NHP, NCDENR-DEH, NC Floodplain Mapping Program, and NCDACS (NC Department of Agriculture and Consumer Services), as well as CAMPO, Cary, and Holly Springs.]

- NCTA/FHWA to review process for agency coordination.
  [After additional discussion, the NCTA and FHWA have determined that the Section 6002 Project Coordination Plan process will be followed for this project.]
- Lochner will add STIP project R-2609 (US 401) to the list of other projects in the study area.
  [Completed]
- Lochner will contact NCDOT Office of Civil Rights to coordinate on LEP and EJ considerations and analysis for the project.
  [Completed]
- NCTA/Lochner will coordinate with County Soil and Water Conservation Districts.
  [Completed]
- NCTA will place completed traffic forecast and analysis reports to Constructware.
  [Posted under 2010-02-16 folder.]
- Lochner will collect information on study area wastewater treatment plants.
  [This information has been added to study area environmental constraints mapping.]

New Action Items:

- FHWA to distribute letters inviting federal agencies to become cooperating/participating agencies under the Project Coordination Plan.
  [Distributed on August 17, 2010.]
- Agencies to provide final comments to NCTA on Project Coordination Plan by September 8, 2010.
- NCTA/Lochner to clarify distinction between traffic study area and project study area for alternatives development in Purpose and Need Report.
- HNTB to review existing and projected traffic for US 401 and add this information to traffic figures in the Purpose and Need Report.
- Agencies to provide comments on Draft Purpose and Need Statement by September 8, 2010.
- NCTA/Lochner to consider revising first tier qualitative screening of alternative concepts to clarify the link between this screening and the measures of effectiveness for project purpose.
- NCTA/Lochner to complete third tier qualitative screening of alternatives and present results at September TEAC meeting.
- Agencies to provide comments on alternatives screening methodology and draft alternative concepts by September 8, 2010.

Resolutions:

- None

Next Steps:

- TEAC meeting – September 8, 2010.
- Public workshops scheduled for September 21, 22, and 23, 2010.
- Revise Purpose and Need Statement following review of agency and public comments.
- Complete third tier quantitative screening for preliminary alternative corridors.

MEETING MINUTES

Date: August 10, 2010
1:00 PM to 3:00 PM
NC Turnpike Authority Office Board Room (Suite 400)

Project: STIP R-2576 Mid-Currituck Bridge Study - BRS-OOOS(35)

Mid-Currituck Bridge Spotlight:

Attendees:

Bill Biddlecome, USACE
Scott McLendon, USACE
Chris Militscher, USEPA
Gary Jordan, USFWS
Ron Sechler, NMFS (by phone)
Amy Simes, NCDENR (by phone)
Cathy Brittingham, NCDENR-DCM
Stephen Lane, NCDENR-DCM (by phone)
Kevin Hart, NCDENR-DMF (by phone)
Brian Wrenn, NCDENR-DWQ
David Wainwright, NCDENR-DWQ
Travis Wilson, NCWRC
Renee Gledhill-Earley, NCDCR-HPO (by phone)
Steve Lambert, Albemarle Commission (by phone)
Steve DeWitt, NCTA
Reid Simons, NCTA (by phone)
Jennifer Harris, NCTA
Lonnie Brooks, NCDOT-SDU
Missy Pair, NCDOT-PDEA
Brian Yamamoto, NCDOT-PDEA
Ted Devens, NCDOT-PDEA
Anne Gamber, NCDOT-Hydraulics Unit
BenJetta Johnson, NCDOT-TMS
Doug Taylor, NCDOT-Roadway Design
Sam St. Clair, NCDOT-Roadway Design
Herman Huang, NCDOT-HEU
Scott Slusser, NCDOJ
David Miller, PFM
Jose Luque, CDG-ACSID
Steve Browde, CDG-Lochner
Roy Bruce, CDG-Lochner
Kristin Maseman, CDG-Lochner
Spencer Franklin, HNTB
Christy Shumate, HNTB
Jerry McCrain, PBS&J
Roy Ferrell, PBS&J
John Page, PB
Bobby Norburn, PB

Presentation Materials: (All materials posted on the TEAC website)

- Meeting Agenda
- Handout 20 - Summary of Agency Comments on the Draft Environmental Impact Statement
- Handout 21 - Summary of Public Participation and Comment
- Handout 22 - Summary of Positions and Additional Needs Derived from DEIS Comments
- Handout 23 - Preferred Alternative Identification Information Package
- Handout 24 - Financial Feasibility Assessment of the Mid-Currituck Bridge Project
- Financial Feasibility Assessment Presentation PowerPoint Slides
- Final Meeting Minutes for March 9, 2010, TEAC Meeting

Purpose:
The purpose of the meeting was to discuss the Preferred Alternative Identification Information Package and discuss "practicable" as it relates to project funding and selection of the LEDPA/Preferred Alternative. NCTA (Jennifer Harris) stated that NCTA hoped that the agencies could agree with a LEDPA/Preferred Alternative by the conclusion of the meeting.

General Discussion:
The following information was discussed at the meeting:

- **Handout 23** – John Page (PB) gave a brief description of the other handouts and their purpose, and then started going through Handout 23 in detail. He indicated that the Impacts Comparison Matrix in Handout 23 is directly from the DEIS, with only minor edits as discussed in the handout.

The matrix will be updated for the FEIS, as needed, as public and agency comments are addressed. John asked if there were any comments on the matrix. NCTA also asked if further review of Handouts 20 to 22 was needed. There were no further comments at this point.

John discussed the "Responses to Substantive Comments on the DEIS that Relate to the Selection of the Preferred Alternative" section of Handout 23 (starting on page 9). He pointed out that there were two decisions that need to be made, as shown at the top of page 9: 1) Selection of the Least Environmentally Damaging Practicable Alternative; and 2) Selection of practicable design and construction avoidance, minimization, and mitigation strategies for the LEDPA. He said that the decision on the LEDPA would be between the alternatives listed at the bottom of page 9 (i.e., ER2, MCB2, and MCB4), but also noted that the No-Build Alternative should also have been listed. He said that, as indicated in the DEIS, NCTA's recommendation for the Preferred Alternative is MCB4, but NCTA has not made a recommendation on the other components of the project (i.e., bridge corridor, Maple Swamp corridor, or hurricane evacuation option).

John said that, as indicated in Handout 23, the substantive public and agency comments related to the practicability of ER2, MCB2, and MCB4 relate to availability of funding and alternative preferences.

- **Handout 24** – David Miller with PFM discussed the financial feasibility of the proposed project (Handout 24), using a PowerPoint presentation (available on the TEAC website). With respect to the potential sources of funding for the proposed project (slides 5 to 8), David said that TIFIA funds are not likely available for the Mid-Currituck Bridge (TIFIA funds were available for the Triangle Expressway). Private equity is being considered for this project. He added that the source of the private equity is at a "risk" position (i.e., they receive profit only after all other costs have been covered). ER2 is not included in this analysis because there is no funding for improvements associated with ER2 in the current STIP and it cannot be paid for with toll revenues.

  USACE asked about the availability of future STIP funds for improvements associated with ER2. NCDENR-DCM asked if there was the possibility of special Legislative Appropriations for improvements such as with ER2 since the Legislature often makes these types of appropriations. NCTA noted that it is doubtful NCDOT would program money for these improvements in the future because there is no local political or public will for improvements associated with ER2 to be implemented with or without a bridge.

  USACE asked about the possible shortfall in funding indicated on slide 10. NCTA responded that the different components that could be selected for each alternative lead to the range in costs as shown. With MCB4, if the most expensive combination of components are chosen, we could end up with a project that is not fundable. As shown on the slide, approximately $600 to $700 million is the range of funding available to finance the project. However, interest rates are an unknown variable that could impact the funding of the project if they were to rise substantially in the near future.

  NCTA said that hopefully David's presentation helps to address past agency questions on project funding. Steve asked if NCTA had adequately explained the funding of the proposed project. USACE asked about the use of toll revenues chart on slide 9. David explained in more detail the meaning of the blue, green, and red graphs shown on the chart. In response to a question from NCDENR-DCM, it was explained that the large red "spike" in operations and maintenance costs in about 2050 was because the bridge is expected to need a major deck rehabilitation around that time. The shorter red increments represent routine maintenance on the bridge, whereas the higher red increments represent "major" rehabilitation projects.

  USACE asked about the increase in the blue in relationship to the red by the later years in the chart. It is the result of the expected increase in the toll rate, as well as the expected increase in ADT using the bridge. It was asked why this difference does not "level out" around 2035 when the Outer Banks is expected to be built-out. It is because of the continued toll increase that is

built into the forecasting model. USACE asked about the current estimated for the toll rate. NCTA responded that the current estimated toll rate varies by time of day and time of year, and that these assumptions are all included in the model.

NCDENR-DCM asked where the state appropriation for the project of $28 million comes from. NCTA discussed the various funding sources (i.e., the mobility, gap, and general funds).

NCDENR-DCM asked when bonds get issued for the project. David responded that bonds are issued once the project is known to be feasible. NCTA added that risk issues, such as obtaining permits, must be resolved before bonds are issued.

- **Handout 23 (continued)** – PB discussed the alternative preferences section of the handout starting on page 10, including NCTA's recommendation for MCB4 as part of the LEDPA (page 11). USACE asked what the summary of public comments in Handout 21 revealed with respect to this decision. PB went through the statistics in Handout 21 related to public preferences for the detailed study alternatives. He noted that MCB4 had the highest stated public preference of the detailed study alternatives. He also said that the summary of public preferences shown in Handout 21 is based on the questions asked on the handout that was distributed at the public hearings.

  Bridge Corridor – C1 vs. C2: PB reviewed the section starting on page 11 related to the decision between bridge corridors C1 and C2, noting that in response to public concern expressed at the hearings related to the business displacements identified in the DEIS at TimBuck II with C2, the C2 corridor had been re-designed to avoid these businesses. Therefore, these business displacements are no longer a factor in the decision between the two bridge corridors. Based on the factors discussed in the handout related to the two bridge corridors, NCTA recommends that C1 be chosen as part of the LEDPA (see bottom of page 11). This recommendation means that MCB4/C1 is NCTA's recommendation for the LEDPA.

  Hurricane Evacuation Options: PB discussed the hurricane evacuation strategy section of Handout 23 starting on page 12. A meeting was scheduled for August 19, 2010, with Dare and Currituck County emergency management officials to get input on the strategies discussed in the DEIS because the local officials did not provide any comments during the public comment period. John said that his impression from previous meetings with these officials was that they preferred the operational solution, as opposed to building new lanes for hurricane evacuation. In addition, there were comments from the public expressing concern about the cost of building new lanes for hurricane evacuation. Based on these factors, NCTA is leaning towards recommending an operational solution, but will withhold giving an official recommendation at least until after the meeting with local officials. NCTA will supply information on the results of the meeting with local officials to the agencies.

  Design Considerations – Option A vs. Option B: PB reviewed the selection of practicable design and construction avoidance, minimization, and mitigation strategies section at the bottom of page 12 of the handout and the crossing Maple Swamp on bridge or fill section on page 13. USFWS asked about public preference related to access with Options A and B. PB responded that the public was very opposed to the access provided to Aydlett with Option B. NCTA said that the bottom line is that the public does not want any additional access to be provided to Aydlett with the proposed project – they want to stay as isolated as possible. The public wants to keep their current access via Aydlett Road, as well as to save money by building the project across the swamp on fill. Public perception is that because Aydlett Road was repaved this summer, it would be wasteful to remove it. PB noted that given the limited funding sources discussed earlier that are available to build the project, and that approximately $80 million would be saved by building the project on fill across the swamp, we have to carefully weigh the design components of Option A and/or Option B that will be included. We also have to weigh public concerns versus agency concerns, which are opposite with respect to the design components of Options A and B. PB asked if there were possibly other better options to mitigate impacts to Maple Swamp than building a bridge across the swamp. For example, would preserving other areas of the swamp be a better solution? He also mentioned that the possibility of reducing the length of NC 12 that

would be improved with MCB4, while still adequately serving forecast traffic demand, was being considered as a potential way to decrease the cost of the project. NCTA will provide additional information about the impacts of these two options, as well as investigate other possible options.

Preferred Alternative Discussion: NCTA noted that before continuing with discussion of specific construction techniques, it would be beneficial to consider eliminating some of the alternatives from consideration. NCTA would like to be able to document agency agreement on the Preferred Alternative, but the agencies will not be asked to sign a formal agreement. Agencies did not feel comfortable selecting a Preferred Alternative or LEDPA without additional information on construction techniques and impacts of the bridge alternatives, particularly as they compare to ER2. NCDENR-DCM and USACE noted that without information about potential impacts from construction, including dredging, they can not be sure that a bridge alternative is the LEDPA or is permittable.

All agencies agreed to eliminate MCB2 from further consideration. MCB2 has the most impacts, does not have any public support, and can not be funded at this time. NCDENR-DCM and NCWRC also indicated a preference for the C1 bridge corridor. All agencies present and on the phone agreed with this recommendation, and C2 was eliminated from further consideration. Agencies requested that ER2 be retained for additional comparison with MCB4. Agencies requested additional information on construction techniques, including filling versus bridging in Maple Swamp, dredging in the Sound, and stormwater management; avoidance and minimization; and funding for MCB4. Agencies agreed that no additional information is needed for ER2 at this time. NCTA requested that if agencies require additional information on ER2, to let NCTA know as soon as possible. NCTA will plan to present detailed impacts on MCB4/C1 at the September 2010 TEAC meeting.

NCDENR-DCM pointed out that page 5 of the impacts matrix has a possible mistake. It appears that some of the impact acreages are either switched or shifted to the right by one column. NCDENR-DCM also said that she wants to further discuss CAMA AEC impacts at some time.

USEPA asked about stormwater management issues with a bridge alternative, noting that trying to resolve this issue has caused delays for other recent coastal projects. USEPA indicated that they would like more than just a stormwater management plan because long-term stormwater impact to the sound is a major USEPA concern. USEPA believes that the cumulative stormwater impact to the sound over an extended period is a significant issue, as the sound has already experienced degradation in water quality from the cumulative impact of pollutants in stormwater runoff over time. NCTA said that Matt Lauffer, NCDOT Stormwater Program, would be at the September TEAC meeting to discuss the results of the NCDOT-sponsored stormwater study, which show that it does not appear that collecting stormwater runoff over the entire length of the bridge is practicable (i.e., the benefit for the cost is not good according to the study).

USACE asked for clarification as to the outcome of today's meeting. NCTA summarized that the team had agreed to eliminate MCB2 and C2 as components of the LEDPA/Preferred Alternative, and to retain MCB4/C1 and ER2 because the agencies want more information on components of MCB4 so that we can better compare the impacts of these alternatives.

USACE cautioned about discussing mitigation (in terms of preservation of Maple Swamp) as part of the LEDPA selection. NCTA recognizes that it is not proper to discuss the cost and benefits of the money spent to build the bridge versus mitigation. Avoidance, followed by minimization, and finally mitigation is the proper sequence for these discussions.

Previous Action Items:

- None.

New Action Items:

- NCTA will provide additional information on MCB4/C1 construction options and impacts and discuss at the September 2010 TEAC meeting.

- NCTA will supply information on the results of the meeting with local governments regarding hurricane evacuation options to the agencies.
- Agencies provide comments on Handout 23, and other handouts, in accordance with the Project Coordination Plan.
- Agencies will let NCTA know if they require additional information on ER2 as soon as possible.

Resolutions:

- MCB2 was eliminated from further consideration as part of the LEDPA/Preferred Alternative.
- The C2 bridge corridor was eliminated from further consideration as part of the LEDPA/Preferred Alternative.

Next Steps:

- TEAC meeting – September 8, 2010

MEETING MINUTES

Date: August 10, 2010
3:30 PM to 5:00 PM
NCTA Board Room

Project: STIP R-3329/R-2559 Monroe Connector/Bypass – STP-NHF-74(90)

Monroe Connector/Bypass Spotlight:

Attendees:

Chris Militscher, USEPA
Scott McLendon, USACE
Marella Buncick, USFWS (via phone)
Brian Wrenn, NCDENR-DWQ
Marla Chambers, NCWRC (via phone)
Polly Lespinasse, NCDENR-DWQ
Jennifer Harris, NCTA
Missy Pair, NCDOT PDEA
Colin Mellor, NCDOT NEU (via phone)
Herman Huang, NCDOT HEU
Anne Gamber, NCDOT-Hydraulics Unit
Doug Taylor, NCDOT-Roadway Design Unit
Christy Shumate, HNTB
James Byrd, HNTB
Kiersten Giugno, PBS&J
Ron Ferrell, PBS&J
Jerry McCrain, PBS&J
Steve Browde, Lochner

Presentation Materials (posted to TEAC website):

- Agenda
- Handout including Biological Assessment Update, Permitting History and Strategy, and Mitigation

Purpose:
Discuss permitting and mitigation.

General Discussion:
The following information was discussed at the meeting:

- **Biological Assessment Update:** The following biological conclusions were outlined in the Biological Assessment submitted to USFWS in March 2010:

  - Carolina heelsplitter and its designated Critical Habitat – May Affect, Not Likely to Adversely Affect
  - Schweinitz's sunflower – May Affect, Not Likely to Adversely Affect
  - Michaux's sumac – No Effect
  - Smooth coneflower – No Effect

  It was noted that the USFWS requested additional information regarding the 2035 No-Build and Build growth assumptions in the Quantitative ICE (Baker Engineering, April 2010). Supplemental information was prepared and summarized in memos dated June 28 and July 26, 2010 which are both available on the TEAC Constructware website. Based upon a review of the supplemental information, USFWS issued a letter of concurrence with the biological conclusions dated July 29, 2010.

- **Permitting History and Strategy:** A 401 water quality certification issued by NCDENR-DWQ for the Monroe Bypass (R-2559C and R-2559B) on October 2, 2002 expired in November 2008. NCTA prepared functional level design plans for DSAs evaluated in the Draft EIS, March 2009. The designs for the Preferred Alternative were refined based on agency and public comments on the Draft EIS and presented in the Final EIS in May 2010. Because the project will use a design-build procurement, the level of designs were not further advanced for the Preferred Alternative.

  The schedule for obtaining a permit is critical. It is essential that NCTA obtain a permit this fall in order to assure financing entities that we are seeking financial close on a project that has cleared most or all approvals to construct the project in a timely manner.

NCTA intends to submit a permit application package toward the end of August 2010 to NCDENR-DWQ and USACE, depending upon issuance of the ROD. The permit application will include final design and hydraulic plans and impacts based on the previous Monroe Bypass project's final approved design plans for R-2559C (Austin Chaney Road to US 74 at the eastern end of the project) and functional designs for the remainder of the project. NCTA anticipates two permit modifications by the design-build team (one for R-3329 and one for R-2559).

- **Mitigation:** NCTA received and distributed an acceptance letter from NCEEP, dated June 24, 2010. Impacts were included for both perennial and intermittent streams and were based on functional design of the Preferred Alternative (in the Final EIS) plus a 40-foot buffer. Impacts will decrease as design progresses and additional refinements such as reduced median widths are incorporated.

  NCEEP has sufficient mitigation sites that are completed and have been monitored for two years which meet the project's mitigation requirements. USEPA and NCWRC noted that mitigation within the impacted watershed is preferred. Colin Mellor, NCDOT HEU, commented that four onsite opportunities were found and each represent approximately 1,000 linear feet and potentially longer. He noted that these sites may be good opportunities for enhancement. Property owners have not been contacted to determine whether or not they have any interest in selling their land.

  NCTA will pursue these sites further to determine if they are viable. The latest status of this effort will be included in the permit application.

Q&A:

Q. When will you be addressing comments made on the Final EIS?

A. Responses to comments made on the Final EIS will be included in the ROD, which is currently under internal review by FHWA.

Previous Action Items:

- None.

New Action Items:

- Agencies provide input on permitting and mitigation.
- NCTA proceed with investigating four onsite stream enhancement opportunities further.

Resolutions:

- None.

Next Steps:

- TEAC meeting – September 8, 2010 to include discussions with the three shortlisted design-build teams
- NCTA submit permit application.

Mid-Currituck Bridge

Agenda

September 8, 2010

12:30 P.M. to 1:45 P.M.

For remote participants – please join meeting at
https://www2.gotomeeting.com/join/140646331
Conference Call: (919) 233-7091
Please call (919) 571-3000 if you have technical difficulties

Purpose: Discuss agency comments on materials distributed at the August 10 meeting, as well as bridge stormwater management, bridge construction, and the practicability of ER2.

Previous Action Items: Agencies review and provide comments on Handout 23 (Preferred Alternative Identification Information Package) and Handout 24 (Financial Feasibility)

New Action Items: Agencies review and provide comments on bridge stormwater management, bridge construction, and the practicability of ER2.

- **Discussion of Agency Comments on August 10 Materials**
- **Mid-Currituck Bridge Stormwater Management (Handout 26)**
  - NCDOT's "Stormwater Runoff from Bridges" Report
  - Mid-Currituck Bridge Stormwater Management Strategy
- **Construction Methodologies for Mid-Currituck Bridge (Handout 27)**
  - Options and their characteristics
  - Conclusions
- **Reasons for a Determination that ER2 is Not a Practicable Alternative to a Bridge across Currituck Sound (Handout 25)**
  - Criteria for Practicability and Applicability
  - Reasons Why ER2 is Not Logistically Possible
- **Wrap Up / Next Steps**
  - LEDPA discussions at 10/12 TEAC Meeting to be focused on Maple Swamp surface water and ground water hydrology, agency comments related to stormwater management and construction methodologies, and the LEDPA decision.

NORTH CAROLINA Turnpike Authority

Mid-Currituck Bridge TEAC Meeting

September 8, 2010

Agenda

- Discussion of Comments on August 10 Meeting Materials
- Mid-Currituck Bridge Stormwater Management
  - Stormwater on bridges report
  - Currituck Sound Bridge Stormwater Management Strategy
- Mid-Currituck Construction Methods
  - Options
  - Conclusions
- ER2 Practicability Considerations
- Wrap Up/Next Steps

Ingredients for a LEDPA Decision

- August Meeting
  - Available funding
  - C1 bridge corridor and dropping MCB2 decisions
- September Meeting
  - Operational hurricane evacuation decision
  - Bridge stormwater management strategy
  - Bridge construction options
  - NCTA's thoughts on ER2 practicability
- October Meeting
  - NC12 widening change to reduce community impact and cost
  - Groundwater/surface water hydrology impacts in Maple Swamp
  - Maple Swamp crossing options
  - Pedestrian/bicycle provisions
  - Bring it all together into a cost-effective MCB4 LEDPA

August 10 Meeting/Handout Comments

Are there any written comments you would like to highlight for the group?

Stormwater on Bridges

- **Stormwater Runoff from Bridges Final Report to Joint Legislation Transportation Oversight Committee**

  In Fulfillment of Session Law 2008-107

  Matt Lauffer (NCDOT Hydraulics Unit)

Mid-Currituck Bridge Study

Deck Cleaning

- **Remove pollutants from bridge by:**
  - Frequent cleaning
  - Using state of the art equipment
- **Resulting in low pollutant discharge levels into Currituck Sound**

Mid-Currituck Bridge Study

Stormwater Management Strategy

- **Frequent bridge deck cleaning**
- **Capture and treat runoff over wetlands at east end of bridge**

Mid-Currituck Bridge Study

Equipment

- **Mechanical sweeping and vacuuming to pick up large and small polluted particles**

http://www.youtube.com/watch?v=Qvc66k6lSnU

Mid-Currituck Bridge Study

Frequent Cleaning & Result

- **Greater than 90% of on-street pollutants can be removed with modern technologies and frequent use**
- **Mid-Currituck Bridge**
  - Initially: weekly following the peak summer weekend traffic period
  - Monitor result
  - Adjust frequency to achieve reasonable performance
  - Disposal of debris in approved landfill
  - Include cleaning requirement in concession agreement

Mid-Currituck Bridge Study

Strategy Cost

- **Initial $1 million for cleaning equipment, piping, and BMPs**
- **New cleaning equipment every 10 years**
- **Annual operating costs for:**
  - Operator salary, fuel, and equipment upkeep/ repairs
  - Routine maintenance on the piping system

Mid-Currituck Bridge Study

Capture and Treat Over Coastal Wetlands

- **Wetlands along the eastern shoreline are bridged**
- **With C1, add 590 feet of piping and BMP treatment on east end of bridge**

Mid-Currituck Bridge Study

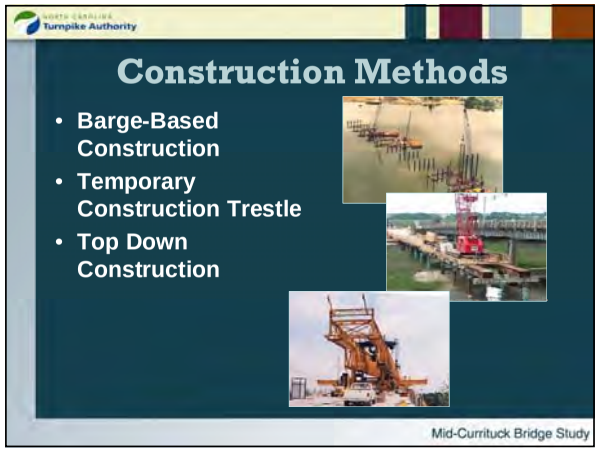
Reason for Proposed Strategy

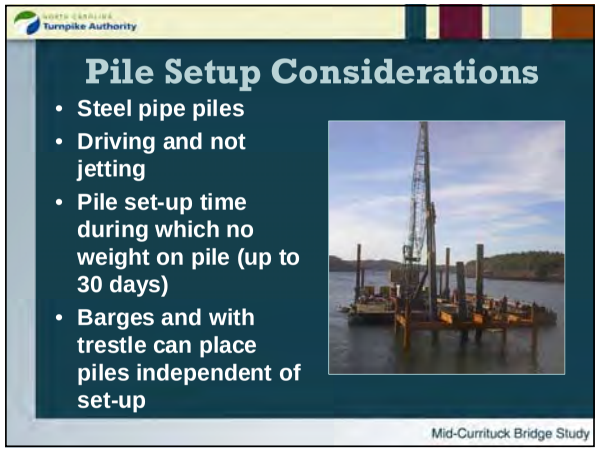
- **Consistent with findings of stormwater on bridges report**
- **It meets the need**

  Bridge pollutants are removed from the deck before they are suspended by rain, minimizing the problem of polluted bridge runoff
- **Most cost-effective**

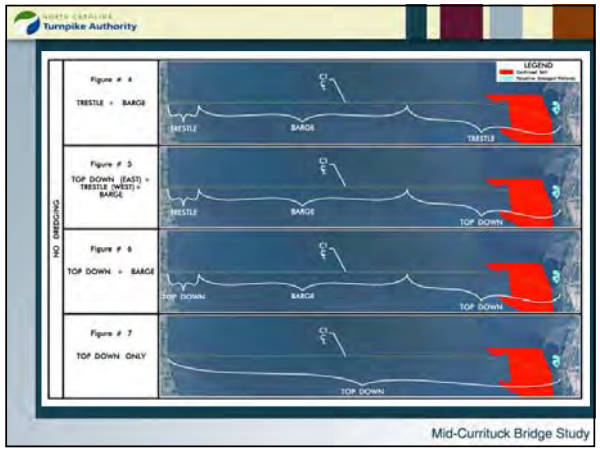
  Options of capturing polluted runoff and treating on-shore or on the bridge are impractical

Mid-Currituck Bridge Study

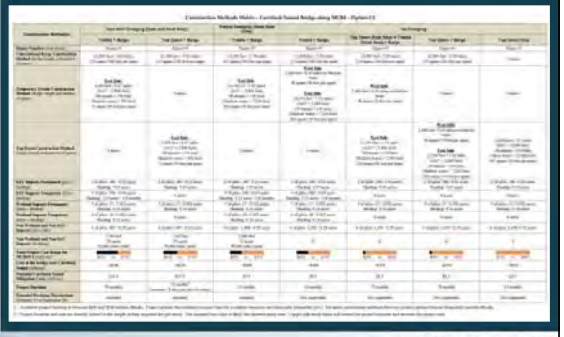

Turnpike Authority
Construction Methods
• Barge-Based Construction
• Temporary Construction Trestle
• Top Down Construction
Mid-Currituck Bridge Study


Turnpike Authority
Pile Setup Considerations
• Steel pipe piles
• Driving and not jetting
• Pile set-up time during which no weight on pile (up to 30 days)
• Barges and with trestle can place piles independent of set-up
Mid-Currituck Bridge Study

Turnpike Authority
LEGEND
EAST & WEST SIDE
NON-LAY DREDGING
PARTIAL DREDGING
Figure # 1
TRESTLE + BARGE
BARGE
TRESTLE
Figure # 2
TOP DOWN + BARGE
BARGE
TOP DOWN
Figure # 3
TRESTLE + BARGE
BARGE
TRESTLE
Mid-Currituck Bridge Study


Turnpike Authority
LEGEND
NO DREDGING
Figure # 4
TRESTLE + BARGE
TRESTLE
BARGE
TRESTLE
Figure # 5
TOP DOWN (EAST) + TRESTLE (WEST) + BARGE
TRESTLE
BARGE
TOP DOWN
Figure # 6
TOP DOWN + BARGE
TOP DOWN
BARGE
TOP DOWN
Figure # 7
TOP DOWN ONLY
TOP DOWN
Mid-Currituck Bridge Study

Construction Alternatives



Mid-Currituck Bridge Study

Conclusions

- In SAV and wetland areas, temporary trestle construction would be faster and less costly than top down construction
- If dredging not acceptable approach, then use trestle (shallow water) and barge based (deep water) construction methods with longer duration and higher cost

Mid-Currituck Bridge Study

Conclusions

- Barge-based construction would reduce overall duration and construction costs
- Jetting not needed
- Dredging in non-SAV shallow water areas would increase the use of barges and their duration and cost benefits
- Dredging would likely be subject to a time of year moratorium (February 15 to September 30)

Mid-Currituck Bridge Study

ER2 Practicability Considerations

- Aquatic site affected: YES
- Basic purpose water-dependent: NO
- ER2 available and capable of being implemented in terms of:
  - Cost: YES
  - Technology: YES
  - Logistics: NO

Mid-Currituck Bridge Study

ER2 Not Logistically Available and Capable of Implementation

1. It cannot be financed and no traditional funding is available
2. Widening NC 12 contradicts local and state plans
3. Local community opposition to widening NC 12 is strong
4. Meeting the purpose and need of the project, as defined in the DEIS, is problematic

Mid-Currituck Bridge Study

1. No Funding

- Cannot be financed
  - Local roads cannot be tolled logistically or according to state law
  - State appropriations can only be used for debt service for a Mid-Currituck Bridge
  - Only the NC 12/US 158 interchange component of ER2 is in the STIP
- Traditional funding not available
  - No funds allocated in STIP
  - Overall funding is limited

Mid-Currituck Bridge Study

2. Widening NC 12 Contradicts Local Plans

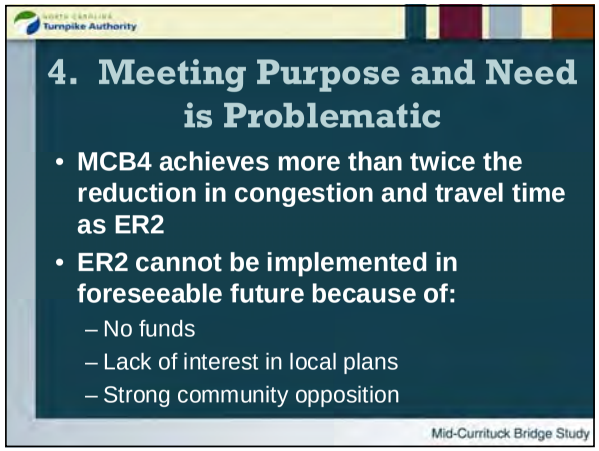
- Southern Shores land use plan
- Duck land use plan
- Currituck County land use and thoroughfare plans
- Dare County thoroughfare plan

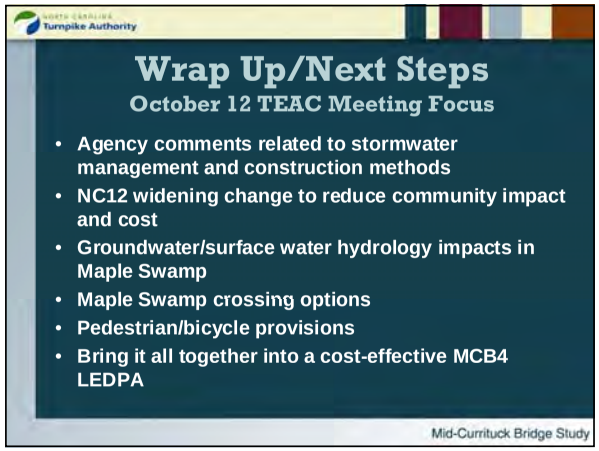
Mid-Currituck Bridge Study

3. Community Opposition to Widening NC 12

- During DEIS comment period
- Resolutions and/or letters from:
  - Duck
  - Nags Head
  - Southern Shores
  - Albemarle Commission
  - Currituck County

Mid-Currituck Bridge Study





NORTH CAROLINA Turnpike Authority

Turnpike Environmental Agency Coordination (TEAC) Meeting

MEETING MINUTES

Date: September 8, 2010
8:30 a.m. To 9:00 a.m.
NCTA Board Room

Project: STIP R-2721, R-2828, and R-2929 – Triangle Expressway Extension (Raleigh Outer Loop)

Triangle Expressway Extension Spotlight:

Attendees:

George Hoops, FHWA
Eric Alsmeyer, USACE
Gary Jordan, USFWS
Travis Wilson, NCWRC
Deloris Hall, NCDCR (via telephone)
Doug Taylor, NCDOT-Roadway Design Unit
Jennifer Harris, NCTA
Christy Shumate, HNTB
John Burris, HNTB
Joanna Rocco, URS
David Griffin, URS
Roy Bruce, Lochner
Brian Eason, Lochner
Kristin Maseman, Lochner
Wendee Smith, Mulkey

Presentation Materials (Posted on TEAC website):

- Agenda
- Draft Meeting Minutes – 8/10/10 TEAC Meeting
- Handout 4 – Alternatives Screening, Quantitative Third Tier Screening of Alternative Concepts
- Newsletter #2

Purpose:
Continue discussion on purpose and need statement and alternatives screening.

General Discussion:
The following information was discussed at the meeting:

- **Purpose and Need and Alternatives Screening Methodology:** NCTA has received comments on the draft Purpose and Need Report from NCDENR-DWQ. Comments on both purpose and need and the alternatives screening methodology will be accepted until after the September public workshops. A revised Purpose and Need Report and a draft Alternatives Report will then be completed and made available to agencies, local governments and the public for comments. Other agencies indicated they do not plan to submit written comments and will defer to NCDENR-DWQ's comments.

- **Alternatives Screening:** Lochner summarized the results of the quantitative third tier screening of alternatives carried forward from the second tier screening, which included nine new location alternatives, two improve existing facilities alternatives, and two hybrid new location/improve

existing facilities alternatives. This round of screening included more evaluation criteria and a more detailed examination of impacts than the second round of screening.

USFWS and NCWRC stated that National Heritage Program (NHP) occurrences should not be used in the impacts summary table in Handout 4 because the NHP GIS database is too general to provide useful comparative information. Instead, they suggested that federal and state listed species occurrences would provide more useful comparative information.

The agencies agreed to eliminate Improve Existing Alternative #3 and Hybrid Alternative #3 (each includes upgrading and widening Ten-Ten Road) because each of these would require much larger numbers of relocations than all other alternatives without providing clear advantages. In addition, because Improve Existing Alternative #1 and Hybrid Alternative #1 remain under consideration, viable alternatives are not limited to new location options at this point.

NCTA will discuss with NCDOT Roadway Design staff the nine new location alternatives, Improve Existing Alternative #1, and Hybrid Alternative #1 to identify geometric constraints and other design considerations influencing the further development of these alternatives. After presenting these alternatives to the public at the September workshops, NCTA expects to select Detailed Study Alternatives (DSAs) by November of this year.

- **Section 6002 Cooperating Agency Invitation:** USACE has received the FHWA letter inviting it to be a cooperating agency under the Project Coordination Plan and will sign and return it to FHWA soon.

Previous Action Items:

- FHWA to distribute letters inviting federal agencies to become cooperating/participating agencies under the Project Coordination Plan.
  [Letters were distributed on August 17, 2010.]
- Agencies to provide final comments to NCTA on Project Coordination Plan.
  [No additional comments were received.]
- NCTA/Lochner to clarify distinction between traffic study area and project study area for alternatives development in Purpose and Need Report.
  [Clarification will be included in revised Purpose and Need Report, available by mid-October, after the public workshops.}
- HNTB to review existing and projected traffic for US 401 and consider adding this information to traffic figures in the Purpose and Need Report.
  [This information was not included on the initial traffic figures because only segments that experienced more than 10 percent change in traffic between the No-Build and Build scenarios were modeled; however, this traffic information for US 401 will be added for information.]
- Agencies to provide comments on Draft Purpose and Need Report.
  [Written comments were received from NCDENR-DWQ. Other agencies indicated that they will not provide additional written comments.]
- NCTA/Lochner to consider revising first tier qualitative screening of alternative concepts to clarify the link between this screening and the measures of effectiveness for project purpose.
  [Clarification will be included in draft Alternatives Report, available by mid-October, after the public workshops.]
- NCTA/Lochner to complete third tier qualitative screening of alternatives and present results at September TEAC meeting.
  [Handout 4 presented at the September TEAC meeting includes the results of the third tier qualitative screening.]
- Agencies to provide comments on alternatives screening methodology and draft alternative concepts.
  [A draft Alternatives Report will be prepared following public workshops in late September and made available for agency and public review and comment.]

New Action Items:

- Lochner to revise alternatives impact table to replace Natural Heritage Program Occurrences as an evaluation criterion with separate breakouts of federal and state protected species.

Resolutions:

- None

Next Steps:

- Public workshops on September 21, 22, and 23, 2010.
- Revise Purpose and Need Report according to agency and public comments.
- Prepare draft Alternatives Report and circulate for agency and public review and comment.

MEETING MINUTES

Date: September 8, 2010
9:45 A.M. To 11:15 A.M.
NCTA Board Room

Project: STIP U-4738 – Cape Fear Skyway

Cape Fear Skyway Spotlight:

Attendees:

George Hoops, FHWA	Mike Kozlosky, WMPO
Scott McLendon, USACE	Stephanie Ayers, NCSPA
Brad Shaver, USACE	Doug Taylor, NCDOT
Fritz Rohde, NMFS (via telephone)	Jennifer Harris, NCTA
Gary Jordan, USFWS	Christy Shumate, HNTB
David Wainwright, NCDENR-DWQ	John Burris, HNTB
Brian Wrenn, NCDENR-DWQ	David Griffin, URS
Travis Wilson, NCWRC	Peter Trencansky, URS
Steve Sollod, NCDCM	Joanna Rocco, URS

Presentation Materials (Posted on TEAC website):

- Agenda
- Project PowerPoint Presentation
- Draft Purpose and Need Statement
- Draft Alternatives Screening Summaries
- Agency comments and responses to Purpose and Need Statement and Alternatives Screening Summaries

Purpose:
The purpose of the meeting was to discuss comments received from the agencies on the draft Purpose and Need Statement and the first and second tier alternative screening summaries, and to solicit comments and/or Issues of Concern from Participating Agencies in this regard.

General Discussion:
The following information was discussed at the meeting.

- URS reviewed the comments received thus far on the draft Purpose and Need Statement. Printed copies of the responses to these comments by NCTA were provided to meeting attendees. Highlights of the discussion are as follows:
    - NCWRC inquired about the truck traffic and if it is now underestimated since the North Carolina International Terminal (NCIT) in Southport, NC is not being built. Stephanie Ayers explained that traffic will probably only increase now that there are no plans for the NCIT. The Port of Wilmington will continue to expand at its existing location, and preliminary studies are currently taking place by the NCSPA regarding traffic projections.
    - NCDENR-DCM inquired about his previous comment regarding the Cape Fear Memorial Bridge and how its replacement could affect traffic movements in the area. URS explained that there will be a number of alternatives for the project, including upgrade existing alternatives that either replace the existing Cape Fear Memorial Bridge, or supplement the existing bridge by providing a new location bridge within close proximity to the existing bridge. If the selected alternative does not involve the replacement of the existing Cape Fear Memorial Bridge (for example the No Build or new location alternative), the NCDOT would need to determine if a replacement bridge would be necessary at some point in the future.

- A discussion was held regarding whether or not consistency with the Strategic Highway Corridor Initiative (and other transportation plans) should be included as part of the purpose statement of the project. It was agreed that this should be a secondary benefit of the project, and will be revised in the Purpose and Need Statement. Mike Kozlosky stressed that the Wilmington Urban Area Metropolitan Planning Organization's (WMPO) Long Range Transportation Plan (LRTP) is supported by the community, and any alternative chosen for detailed study should be consistent with this plan. URS noted that if the parameter to meet the goals of the SHC, Intrastate System and LRTP are moved to secondary needs it will be important to develop performance measures that capture the intent of these plans, because improving traffic flow and providing for better freight movements would need to be explained further such that the alternatives meet the local vision and goals for this corridor.
- It was agreed that the Purpose and Need Statement was ready to be presented to the public.

- URS reviewed the comments received thus far on the draft alternatives screening. Printed copies of the responses to these comments by NCTA were provided to meeting attendees. Highlights of the discussion are as follows:
    - NCSPA inquired whether improvements on the eastern side of the project would be included in designs. David Griffin explained that studies would include an evaluation of the transportation network on the eastern side of the project and associated impacts. If appropriate, identified improvements will be incorporated into functional designs for the Detailed Study Alternatives.
    - USACE suggested that LIDAR data be used as a means to identify wetlands within the corridors studied in the alternatives screening. URS will look into using this information to provide more accurate results regarding wetland impacts during alternative screening.

Previous Action Items:

- Agencies to send comments on the Draft Purpose and Need Statement and alternative screening methodology and concepts by 05/04/10.
  [Comments received from USEPA, USACE, NCSPA, NCDENR-DCM, and NCDENR-DWQ]

New Action Items:

- Agency members to send remaining comments on alternative screening methodology and concepts to NCTA.

Resolutions:

- Agreement was reached on the Purpose and Need Statement for the project.

Next Steps:

- Revise Purpose and Need Report according to agency comments.
- Continue alternatives screening process.

MEETING MINUTES

Date: September 8, 2010
12:30 PM to 1:50 PM
NCTA Board Room

Project: STIP R-2576 Mid-Currituck Bridge Study

Mid-Currituck Bridge Spotlight:

Attendees:

Bill Biddlecome, USACE
Scott McLendon, USACE
Brad Shaver, USACE
Gary Jordan, USFWS
Ron Sechler, NMFS (by phone)
George Hoops, FHWA
Cathy Brittingham, NCDENR-DCM
Kevin Hart, NCDENR-DMF (by phone)
Brian Wrenn, NCDENR-DWQ
David Wainwright, NCDENR-DWQ
Travis Wilson, NCWRC
Jennifer Harris, NCTA
Lonnie Brooks, NCDOT-Structure Design
Anne Gamber, NCDOT-Hydraulics Unit
Doug Taylor, NCDOT-Roadway Design
Scott Slusser, NCDOJ
Elizabeth Lusk, NCDOT-NEU
Bruce Ellis, NCDOT-NEU
Kathy Herring, NCDOT-NEU
Logan Williams, NCDOT-NEU
Matt Lauffer, NCDOT-Hydraulics Unit
Jose Luque, CDG-ACSID
Bernardo Palicio, CDG-Dragados USA
Jose M De Iturriaga, CDG-Dragados USA
Roy Bruce, CDG-Lochner
Brian Eason, CDG-Lochner
Ron Ferrell, CDG-PBS&J
John Page, PB
Don Brown, PB
Tracy Roberts, HNTB
Max Price, CDG-Wetherill Engineering
Neal Williams, CDG-Weeks Marine
Mark Redderodd, CDG-Weeks Marine

Persons Who Were Provided Materials but Were Unable to Attend:

Christopher Militscher, USEPA
Sara Winslow, NCDENR-DMF

Presentation Materials: (All materials posted on the TEAC website)

- Meeting Agenda
- Reasons for a Determination that ER2 is Not a Practicable Alternative to a Bridge Across Currituck Sound (Handout 25)
- Mid-Currituck Bridge Stormwater Management (Handout 26)
- Construction Methodologies for Mid-Currituck Bridge (Handout 27)
- PowerPoint slides
- Elgin Sweeper Guide

Purpose:
Discuss agency comments on materials distributed at the August 10 meeting, as well as bridge stormwater management, bridge construction, and the practicability of ER2.

General Discussion:
The following information was discussed at the meeting:

- **Big Picture** – PB (John Page) gave a brief description of the steps NCTA is following to provide information needed for selection of a Preferred Alternative. He indicated that in August, funding was discussed, the focus on bridge corridors was narrowed to C1 only, and it was decided MCB2 could not be the Preferred Alternative or Least Environmentally Damaging Practicable Alternative (LEDPA) because its impacts are greater than MCB4, it lacks public support and it could not be funded at this time.

  NCTA met with the emergency management officials on August 19th. At this meeting, it was

decided to identify reversing a center turn lane as the preferred hurricane clearance strategy, which is consistent with the comments received during the DEIS comment period on hurricane evacuation from the public and USEPA. Today's meeting addressed stormwater management and construction techniques for a Mid-Currituck Bridge. Next month's meeting will address issues related to Maple Swamp. With regard to avoiding and minimizing NC 12 impacts, NCTA is pursuing an alternative design, which would reduce the amount of four lanes by two-thirds, which has been agreed to by NCDOT Congestion Management, NCDOT Division 1, NCDOT Roadway Design, and emergency management representatives. The change would reduce community impacts and project cost. Groundwater and surface water studies for Maple Swamp are underway. Maple Swamp crossing options will be considered and discussed at the October TEAC meeting. By the October meeting, all the information needed to make a preferred alternative decision should be available.

- **August Meeting Comments** – PB (John Page) noted no written comments on the August 10th meeting have been received. The floor was opened to anyone who had comments they wanted to make regarding that meeting. NCDENR-DCM (Cathy Brittingham) commented on Handout 22, page 3, asking about the status of Currituck County's request for a water pipe under the bridge. NCTA (Jennifer Harris) responded that the county had inquired about the possibility of putting a water pipe on the bridge, but this issue has not progressed beyond the initial inquiry. NCTA cannot fund this and have not agreed to place a water pipe on the bridge. PB (John Page) added that the cost of the bridge would increase just for the added support structure necessary for the water pipe. He also noted that the county indicated that a pipe on the bridge would give them more flexibility in water distribution to respond to drought situations or other emergencies. Water supplies are adequate on the Outer Banks. NCTA (Jennifer Harris) said that the TEAC members would be kept apprised if anything changes with this. NCDENR-DCM (Cathy Brittingham) asked if this would be discussed in the FEIS. NCTA (Jennifer Harris) stated that Currituck County only indicated that it would be useful to have the water pipe on the bridge, but they have not asked again nor given any more information than their initial inquiry.

  Other comments were solicited but none were provided. NCDENR-DCM (Cathy Brittingham) said that they had some technical comments on Handout 23 but that she would discuss outside of the meeting.

- **Stormwater on Bridges** – NCDOT (Matt Lauffer) described the *Stormwater Runoff from Bridges* report completed by NCDOT, US Geologic Survey, NC Division of Water Quality, NC State University and others on stormwater runoff considerations on bridges throughout North Carolina. NCDOT (Matt Lauffer) requested the agencies provide to him any preferred focus areas for the study team's planned presentation at the September 23 Interagency meeting. The report is available on the NCDOT website (http://ncdot.org/doh/preconstruct/highway/hydro /BMP/default.html). NCDOT (Matt Lauffer) indicated that he could send a copy of the report via e-mail if anyone needed it. Contact him at mslauffer@ncdot.gov.

- **Handout 26** – CDG-Lochner (Roy Bruce) presented a strategy for Mid-Currituck Bridge stormwater management. Research into best practices resulted in finding that frequent bridge deck cleaning with state-of-the-art technology removes most of the pollutants. In the past 10-15 years, vacuum sweepers have improved and do a much better job than they once did. A video was shown of one particular manufacturer of a vacuum sweeper (though no manufacturing company is preferred). The manufacturer says that 90 to 97 percent of pollutants are picked up. The vacuum sweeper meets both PM10 and PM2.5 standards. Based upon the research done, CDG-Lochner (Roy Bruce) believes this vacuum sweeper could be an effective tool, with frequent sweeping (weekly during the 13-week peak season), for the Mid-Currituck Bridge. CDG-Lochner (Roy Bruce) added that where the bridge crosses wetlands on the Outer Banks shoreline, the runoff would be captured and treated. Scuppers allowing direct discharge would be used along the remainder of the bridge. The Virginia Dare Bridge over the Croatan Sound uses the same approach.

The capital cost of this two-fold strategy would be approximately $1 million. The equipment would be replaced every 10 years. The operating cost of this vacuum sweeper is substantially lower than other options. In addition to being cost-effective, the vacuum sweeper meets the needs and is consistent with the stormwater on bridges report (described earlier by NCDOT [Matt Lauffer]).

NCDENR-DWQ (David Wainwright) asked if the vacuum sweepers lose efficiency over time. The manufacturer claims that as long as the equipment is maintained, they do not lose efficiency. NCTA through a contract with CDG would ensure the equipment is properly maintained and that sweeping occurs on schedule. NCDENR-DWQ (David Wainwright) asked if any debris would be pushed into the scuppers by the vacuum sweeper. CDG-Lochner (Roy Bruce) stated that the manufacturer claims that they do not; the brushes when properly aligned would sweep the debris under the vehicle which would then vacuum up the debris and filter the air so that pollutants are not released into the air. NCDENR-DWQ (David Wainwright) asked if there was any research that was not from the manufacturer. CDG-Lochner (Roy Bruce) indicated he had studies from Seattle, MnDOT, and others. All of the research, however, has been done on city streets where, unlike a bridge, much of the runoff comes from adjoining land use rather than vehicles. NCDENR-DWQ (David Wainwright) raised the concern that whatever is not picked up by the vacuum sweeper goes into the sound. There are other things that affect turbidity and other sensitive natural systems. CDG-Lochner (Roy Bruce) said that research on the water quality effects would be needed. NCTA would be amenable to research opportunities with universities and the agencies. NCDENR-DMF (Kevin Hart) asked about the nature of the three percent of pollutants that would not be picked up by the vacuum sweeper. CDG-Lochner (Roy Bruce) responded that he wasn't sure what those pollutants were but that the frequency of sweeping could be adjusted more or less depending on its effectiveness to maximize what is picked up. He added that the vacuum sweeper would be stored on site at an NCTA facility, so it would be available 24 hours per day to be used by trained professionals so that it could be used at times such as traffic crashes, in advance of storms, etc.

NCDENR-DWQ (David Wainwright) stated that stormwater rules are more stringent now than they were when the other coastal bridges were built. The Currituck Sound is a very sensitive area and is very susceptible to turbidity. The first 1.5 inches of rain water on new built upon area must be retained and treated. NCDENR-DWQ (Brian Wrenn) added that he was familiar with the NCDOT study and that there still would be pollutants left after sweeping that need to be treated. Reading the letter of the law, all of the pollutants should be treated, not just the sensitive wetland areas on the east end of the bridge. He added that the sweeping is a great tool, but there would still be pollutants that would need to be treated.

NCDENR-DWQ (David Wainwright) also stated that water would need to be piped off the bridge on the east and west ends except over open water. There was discussion regarding what was meant by "open water." NCDENR-DWQ (Brian Wrenn) noted that maps would need to be studied to determine where the SAVs are located. NCDENR-DWQ (David Wainwright) stated that bridge piping would need to be extended beyond the coastal marsh and include the SAVs. NCDENR-DWQ (Brian Wrenn) said that while he was in agreement with the concept of partial capture and treatment, the details of what additional piping might be needed still need to be worked out. NCDENR-DWQ will provide comments.

USACE (Scott McClendon) asked if it was required for the pollutants to be collected and treated. NCDENR-DWQ (David Wainwright and Brian Wrenn) answered that it was. NCTA responded that they would be capturing and treating the runoff on the east end of the bridge. NCDENR-DWQ (David Wainwright) asked for clarification on the environmental requirements mentioned on page 6, fourth paragraph of Handout 26. CDG-Lochner (Roy Bruce) explained that with sweeping, it would not be necessary to treat those pollutants since they would be captured prior to being suspended in rainwater and released into the sound. NMFS (Ron Sechler) added that the NCDENR-DWQ comments reflect their concerns as well.

- **Handout 27** – CDG-Lochner (Roy Bruce) presented the construction techniques discussed in Handout 27. The three types of potential construction techniques are barge based, temporary construction trestle, and top down construction. Barge based can only be done in water depths 6 feet or greater. Where there is less than 6 feet of water depth, either temporary construction trestle or top down construction would need to be utilized, or the area would need to be dredged to 6 feet. Pile setup considerations were discussed, and each of the seven options/combinations of construction techniques were presented. Pile setup time heavily influences construction time if top-down construction is used. As each set of piles is placed one must wait 2 to 30 days before the weight of caps and superstructure can be added. With barge and trestle construction, multiple sets of piles can be placed before the cap and superstructure is added. With top down, the foundations must be built in sequence so construction essentially stops during the set-up time, lengthening the construction period.

  NMFS (Ron Sechler) asked where the disposal sites would be for dredging spoil. CDG-Lochner (Roy Bruce) stated that there were five options currently being examined for potential disposal sites, but nothing has been decided. Some of the options include using the dredged material to raise the elevation of the Currituck Sound bottom near SAVs to encourage more SAV growth, refilling the dredged areas, using spoil as top dressing, or placing it in an old borrow site on US 158. However, more study would need to be done to determine what would be the best option.

  NCDENR-DCM (Cathy Brittingham) stated she had many questions, but because the meeting was nearing its end, she would submit these at a later date so that we could move to the discussion of the practicability of ER2. She did ask if the SAV locations mapped were from the 2007 USACE survey. CDG-Lochner (Roy Bruce) stated that they were. NCDENR-DCM (Cathy Brittingham) wanted the more recent 2010 NCDOT SAV survey to be used; CDG-Lochner (Roy Bruce) noted that the data from the 2010 survey would be folded in once available.

  NCDOT NEU (Bruce Ellis) indicated that the SAV field work has been completed. He noted that the SAV study was not being done specifically for the Mid-Currituck Bridge project and its corridor.

  NCDOT (Lonnie Brooks) asked if there were any pile alternatives were considered besides steel piles. CDG-Lochner (Roy Bruce) answered that concrete was examined, but NCTA was leaning toward using the steel piles; no final decision on pile type will be made until completion of ongoing geotechnical studies. NCDENR-DWQ (David Wainwright) asked what the cost difference was between the two. CDG-Weeks Marine (Neal Williams) answered that steel is cheaper and the equipment to install it is smaller. CDG-Lochner (Roy Bruce) added that it was easier to transfer steel to the site.

- **Handout 25** – PB (John Page) presented information on why NCTA believes ER2 is not a practicable alternative. In NCTA's opinion ER2 is logistically unavailable and incapable of being implemented for four reasons (see details in PowerPoint slide). More detail is presented in the handout. PB (John Page) asked the TEAC members to provide comments within the next 30 days.

- **Wrap up/Next Steps** – NCTA (Tracy Roberts) presented the next steps in the process. USACE (Scott McClendon) stated that USACE was struggling with the issue of funding and the state legislature defining project locations. PB (John Page) noted that the project has a long history of being planned as a toll project. It was listed as being funded by other sources in the State Transportation Improvement Program in effect with the 1998 Draft Environmental Impact Statement was released. The General Assembly authorized NCDOT to charge tolls on the bridge in that same period. There are system wide effects that need to be taken into account. NCDENR-DCM (Cathy Brittingham) noted that early in the current study, NCDOT was taking a systemwide approach to project planning. PB (John Page) stated that this is what was done in developing and assessing alternatives in the DEIS. The only road improvement for the project area in the State Transportation Improvement Program is a NC 12/US 158 interchange. It is funded for planning only.

NCTA (Tracy Roberts) thanked the attendees for their participation and adjourned the meeting at 1:50 PM.

MEETING MINUTES

Date: September 8, 2010
2:00 PM to 5:00 PM
NCTA Board Room

Project: STIP R-3329/R-2559 Monroe Connector/Bypass – STP-NHF-74(90)

Monroe Connector/Bypass Spotlight:

Short-listed design-build teams were each allowed 45 minutes to present information, ask questions, and get feedback from agency representatives. To protect the confidentiality of the design-build process, minutes will not be provided for these sessions.

Mid-Currituck Bridge

Agenda

November 2, 2010
1:00 P.M. to 3:00 P.M.

For remote participants – please join meeting at
https://www2.gotomeeting.com/join/174448779
Conference Call: (919) 233-7091
Please call (919) 571-3000 if you have technical difficulties

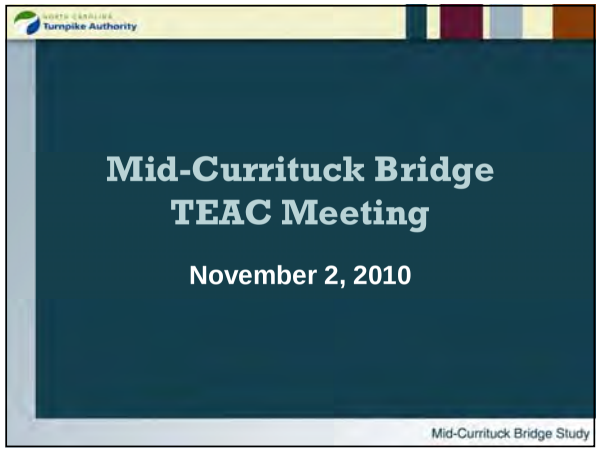
Purpose: Discuss new studies of groundwater and surface water hydrology in Maple Swamp and FHWA/NCTA's Preferred Alternative.

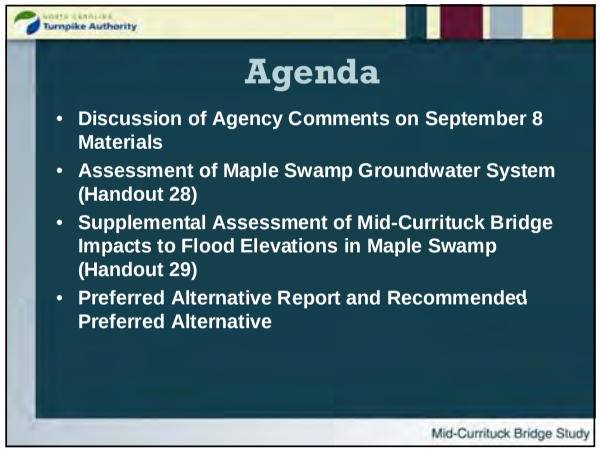
Previous Action Items: Agencies review and provide comments on Handout 25 (Reasons for a Determination that ER2 is Not a Practicable Alternative to a Bridge across Currituck Sound), Handout 26 (Mid-Currituck Bridge Stormwater Management) and Handout 27 (Construction Methodologies for Mid-Currituck Bridge).

New Action Items: Agencies review and provide comments on new studies of groundwater and surface water hydrology in Maple Swamp and FHWA/NCTA's Preferred Alternative.

- **Discussion of Agency Comments on September 8 Materials**
- **Assessment of Maple Swamp Groundwater System (Handout 28)**
- **Supplemental Assessment of Mid-Currituck Bridge Impacts to Flood Elevations in Maple Swamp (Handout 29)**
- **Preferred Alternative Report**
  - MCB4/C1 with operational hurricane evacuation strategy
  - Avoidance and Minimization Strategies
    - Community Impacts
    - Cultural Resource Impacts
    - Natural Resource Impacts, including Maple Swamp crossing, Mid-Currituck Bridge construction approach and Mid-Currituck Bridge stormwater management
- **Wrap Up / Next Steps**
  - LEDPA decision at 12/7 TEAC Meeting

NORTH CAROLINA Turnpike Authority





September 8 Meeting/ Handout Comments

Mid-Currituck Bridge Study

Maple Swamp Floodwater

Handout 29

- **Revised floodplain studies**
  - More detailed location survey
  - Accounted for recent logging
  - Considered a range of bridge/fill lengths
- **Minimum 2,500-foot bridge in the central to eastern part of Maple Swamp would result in no impact on floodwater elevation**

Mid-Currituck Bridge Study

Maple Swamp Groundwater

Handout 28

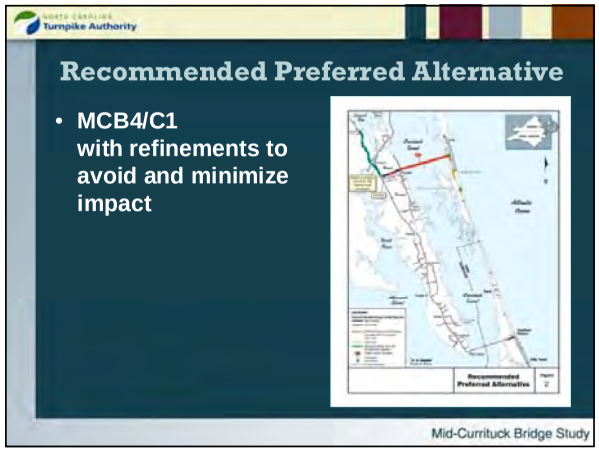
- **Existing groundwater levels likely show only minimal elevation changes**
- **Groundwater flows are quite small**
- **With crossing design that maintains surface water hydrology, groundwater flows and levels would not be affected by fill**

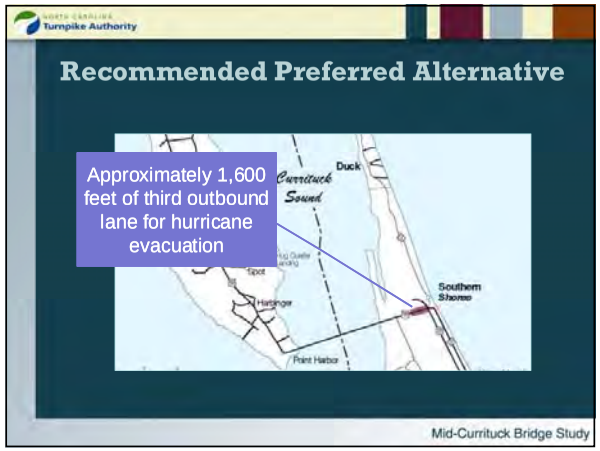
Mid-Currituck Bridge Study

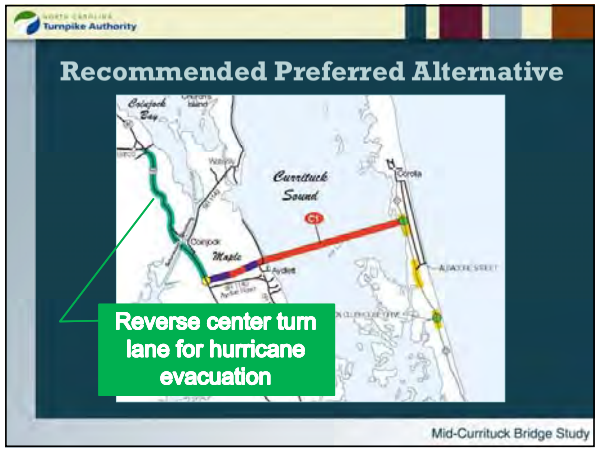
Preferred Alternative Report

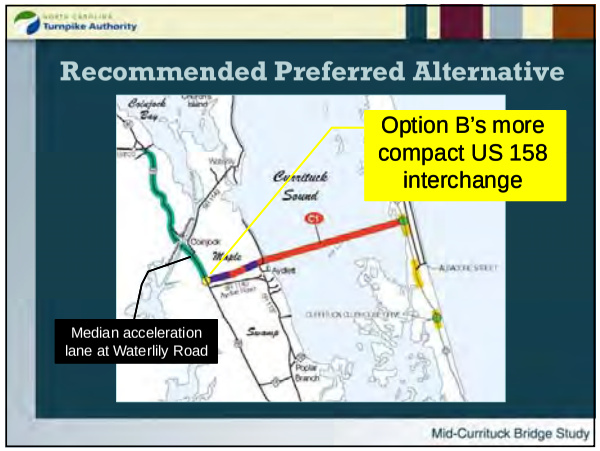
- **Project Description**
- **Open Houses and Public Hearings**
- **Previous Agency Coordination Meetings**
- **Impact Avoidance and Minimization**
- **DEIS Comments Relevant to Preferred Alternative Selection**
- **Traffic Forecasts**
- **Appendix A: Comparison of Key Impacts**
- **Appendix B: Handouts 23 to 29**

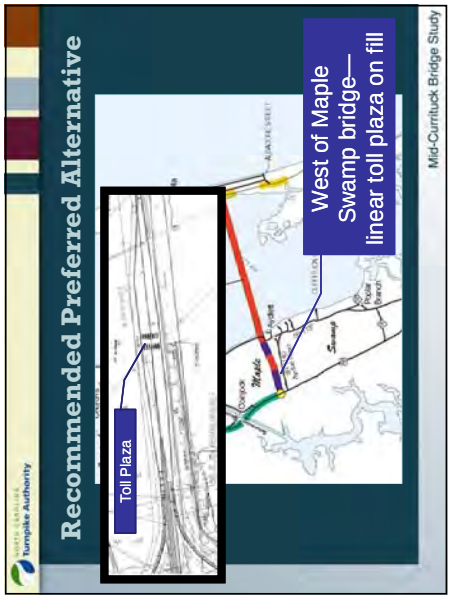
Mid-Currituck Bridge Study

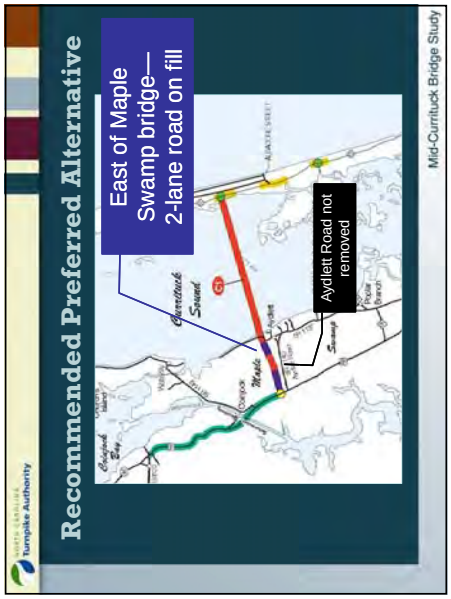

Turnpike Authority
Recommended Preferred Alternative
• MCB4/C1 with refinements to avoid and minimize impact
Mid-Currituck Bridge Study


Turnpike Authority
Recommended Preferred Alternative
Approximately 1,600 feet of third outbound lane for hurricane evacuation
Currituck Sound
Duck
Southern Shores
Point Harbor
Mid-Currituck Bridge Study


Turnpike Authority
Recommended Preferred Alternative
Currituck Sound
Corolla
Coinjock Bay
Maple
Aydlett
C1
Reverse center turn lane for hurricane evacuation
Mid-Currituck Bridge Study

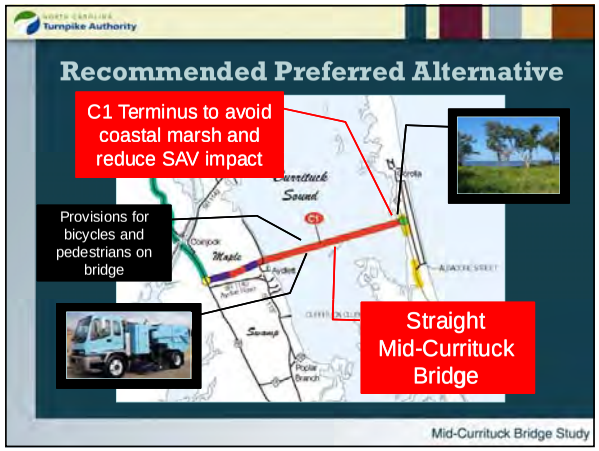

Turnpike Authority
Recommended Preferred Alternative
Option B's more compact US 158 interchange
Currituck Sound
Coinjock Bay
Maple
Aydlett
C1
Median acceleration lane at Waterlily Road
Mid-Currituck Bridge Study

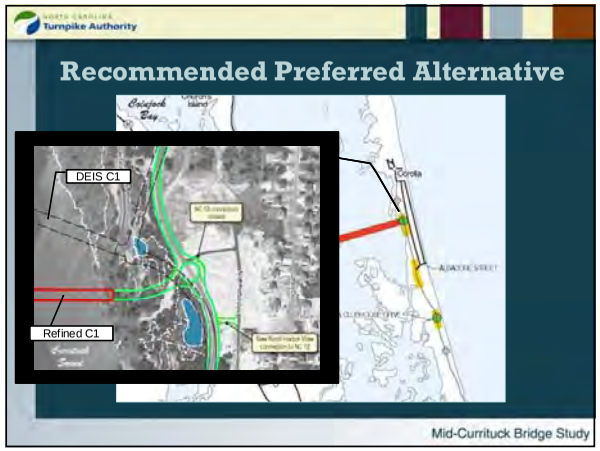

Recommended Preferred Alternative
Toll Plaza
West of Maple
Swamp bridge—
linear toll plaza on fill
Mid-Currituck Bridge Study

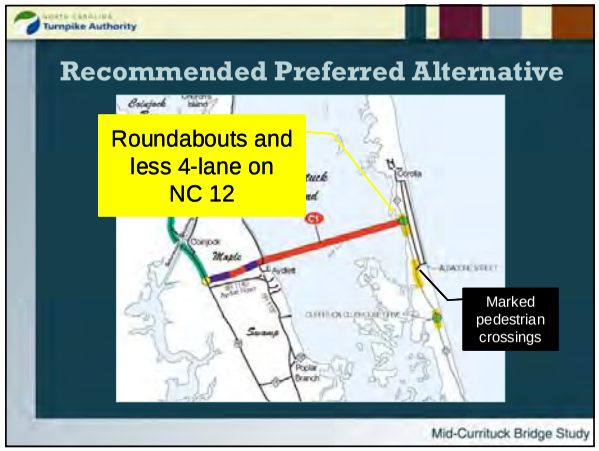

Recommended Preferred Alternative
East of Maple
Swamp bridge—
2-lane road on fill
Aydlett Road not
removed
Mid-Currituck Bridge Study

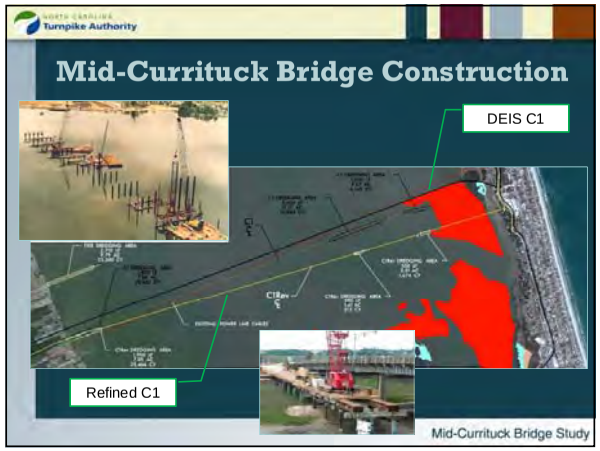
Recommended Preferred Alternative
Mid-Currituck Bridge Study

Recommended Preferred Alternative
2,640-foot-long
bridge in Maple
Swamp
Option A: 7,913 feet
Option B: 360 feet
Mid-Currituck Bridge Study

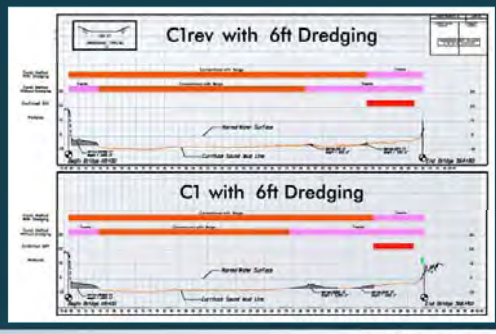

Turnpike Authority
Recommended Preferred Alternative
C1 Terminus to avoid coastal marsh and reduce SAV impact
Provisions for bicycles and pedestrians on bridge
Straight Mid-Currituck Bridge
Currituck Sound
Maple
Swamp
Corolla
Poplar Branch
Mid-Currituck Bridge Study


Turnpike Authority
Recommended Preferred Alternative
DEIS C1
Refined C1
Corolla
Mid-Currituck Bridge Study


Turnpike Authority
Recommended Preferred Alternative
Roundabouts and less 4-lane on NC 12
Marked pedestrian crossings
Maple
Swamp
Corolla
Poplar Branch
Mid-Currituck Bridge Study


Turnpike Authority
Mid-Currituck Bridge Construction
DEIS C1
Refined C1
Mid-Currituck Bridge Study

Mid-Currituck Bridge Construction



Mid-Currituck Bridge Study

Recommended Preferred Alternative

MCB4/C1 with refinements

- **Substantial congestion reduction and travel time benefits**
- **Components avoid and minimize natural resource and community impacts**
- **Bridge conforms to area land use plans**
- **Can be financed**

Mid-Currituck Bridge Study

Mid-Currituck Bridge Construction

Dredging Needed	Linear Feet	Acres	Cubic Yards
C1 Alignment	6,800	22.9	50,100
C1 Refined Alignment	3,050	10.5	31,700
Supply Dock	2,710	9.8	25,300

Mid-Currituck Bridge Study

Natural Resources

- **Shortest Mid-Currituck Bridge**
- **No CAMA wetland impacts**
- **Wetland use** (25 feet from slope stake)
  - Hurricane evacuation: 0 acres
  - Outer Banks: 1 acre
  - Mainland Non-Maple Swamp: 3 acres
  - Maple Swamp: 27 acres
  - Total: 31 acres (ER2: 8.6, MCB4/A: 10.6, and MCB4/B: 36.6)

Mid-Currituck Bridge Study

Natural Resources

- **Mid-Currituck Bridge Stormwater Management**
  - Frequent deck cleaning
  - Water quality monitoring
  - Capturing and treating over shoreline wetlands
  - Other, e.g. land purchase
- **Other Stormwater Management**
  - Customary road BMPs
  - Minimize habitat disturbance from Maple Swamp bridge runoff

Mid-Currituck Bridge Study

Natural Resources

- **No groundwater impact in Maple Swamp**
- **No surface water impact (normal or storm surge in Maple Swamp)**
- **Reduced impervious surface and upland impact on the Outer Banks**

Mid-Currituck Bridge Study

Natural Resources

- **Work trestle over SAV existing at the time of construction**
- **Barge construction for 84% of 4.7-mile bridge length, rest built from trestle**
- **Construction Dredging**
  - Bridge: 10.5 acres (was 22.9 acres)
  - Supply Dock: 9.8 acres
  - Hydraulic (vacuum) dredging
  - Sediment shroud and/or turbidity curtains
  - No dredging in moratorium period (2/15 to 9/30)

Mid-Currituck Bridge Study

Community Impacts

- **No change in Aydlett circulation system**
- **Increased turning safety at Waterlily Road**
- **Reduced impact from NC 12 improvements, including avoiding the improved portion of Corolla Bay**

Mid-Currituck Bridge Study

Other

- **Historic Resources**
  - No Adverse Effect on Daniel Saunders House
  - No Effect on other historic properties

- **Single 35-foot navigation span in deepest part of Currituck Sound**

Mid-Currituck Bridge Study

Wrap Up/Next Steps

December 7 TEAC Meeting Focus

Selection of Preferred Alternative

Mid-Currituck Bridge Study

Discussion

Mid-Currituck Bridge Study

Turnpike Environmental Agency Coordination (TEAC) Meeting

MEETING MINUTES

Date: November 2, 2010
9:30 a.m. To 11:30 a.m.
NCTA Board Room

Project: STIP R-2721, R-2828, and R-2929 – Triangle Expressway Southeast Extension (Raleigh Outer Loop)

Triangle Expressway Extension Spotlight:

Attendees:

George Hoops, FHWA
Christopher Militscher, USEPA
Eric Alsmeyer, USACE
Gary Jordan, USFWS
David Wainwright, NCDENR-DWQ
Travis Wilson, NCWRC
Amy Simes, NCDENR
Delores Hall, OSA (via telephone)
Regina Page, NCDOT Congestion Management (via telephone)
Deanna Riffey, NCDOT-Natural Environment Unit
Steve Gurganus, NCDOT-Human Environment Unit
Derrick Weaver, NCDOT-PDEA
Doug Taylor, NCDOT-Roadway Design Unit
Tony Houser, NCDOT-Roadway Design Unit
Chris Lukasina, CAMPO
Gerald Daniel, CAMPO
Steve DeWitt, NCTA
Jennifer Harris, NCTA
Christy Shumate, HNTB
John Burris, HNTB
Kevin Markham, ESI
Joanna Rocco, URS
Roy Bruce, Lochner
Kristin Maseman, Lochner
Doug Wheatley, Lochner
Steve Browde, Lochner
Wendee Smith, Mulkey
Tim Savidge, Catena Group
Mike Wood, Catena Group

Presentation Materials (Posted on TEAC website):

- Agenda
- Draft Meeting Minutes – 9/8/10 TEAC Meeting
- Handout 5 – Public Informational Meetings (Sept. 2010), Summary and Comment Analysis
- Handout 6 – Preliminary Alternative Corridors, Major Constraints/Issues
- Impact Table – Southeastern Extension Preliminary Alternative Corridors by Phase, Summary of Potential Impacts

Purpose:
Discuss revisions to purpose and need statement, summary of public comments and alternatives screening discussion.

General Discussion:
The following information was discussed at the meeting:

- **Purpose and Need Update:** NCTA stated that the revised version of Purpose and Need is on Constructware. The revisions address comments from earlier TEAC meetings and written comments from NCDENR-DWQ. Also, written responses to NCDENR-DWQ comments are posted to Constructware.

- **Alternatives Screening:** The Alternatives Development and Analysis Report is being prepared and should be distributed prior to next month's TEAC meeting.

- **Summary of Public Comments (Handout 5):** Lochner presented the summary of public responses to date, indicating that over 1,000 people attended the September Public Informational Meetings. To date over 2,000 comments have been received. Several neighborhood petitions have also been received with nearly 1,000 signatures. Most comments express support for the project located in the protected corridor and dismay over other new location alternatives. Some comments related to the perceived "fairness issue" of tolling only a portion of this loop facility.

  Lochner stated that the public comments are helpful in evaluating alternative corridors as they typically include details relative to human and natural environment impacts.

  Several local governments have passed resolutions regarding the project. Most indicate support for the project located in the project corridor. The Wake County Board of Commissioners resolution states opposition to the blue, purple, red, and pink corridors. The City of Garner resolution states opposition to the red corridor.

  NCTA explained that public involvement activities have included significant effort to educate the public on the project development process. That included explaining to citizens the role of the protected corridor in the study process.

- **Alternatives Screening Discussion (Handout 6):** Lochner summarized the major constraints and relative advantage of each corridor in the Phase I and Phase II areas, mentioning a few new constraints that have emerged since the Public Informational Meetings. There is a proposed mixed-use development (Randleigh Farm property) planned jointly by Wake County and City of Raleigh and purchased using open space funds. The green corridor in Phase II would bisect this property. Adjacent to Randleigh Farm is a potential historic site known to include remnants of a nineteenth century mill and with anecdotal evidence of Civil War significance. OSA suggested meeting with NCTA staff to review the known facts related to the historic significance of this property. To avoid or minimize impacts to the Randleigh Farm and the adjacent potential historic sites, two other corridor alternatives in the Phase II area were reintroduced. The tan corridor would impact Randleigh Farm along its eastern edge, reducing the amount of direct impacts to the site relative to the green corridor. The grey corridor would completely avoid the Randleigh Farm area, including an eastern swing into Johnston County.

  USACE asked whether there have been traffic projections for the various alternative corridors. HNTB stated that preliminary traffic projections are similar for the protected corridor (orange) and the blue and purple corridors to the south. The red corridor to the north is projected to serve smaller traffic volumes than the others. USEPA requested that traffic data be made available to TEAC members and NCTA agreed.

  NCTA asked for agency feedback on eliminating some of the preliminary alternative corridors from further consideration. In considering the red corridor, discussion turned to dwarf wedgemussel habitat in the Swift Creek watershed. USFWS indicated that the red corridor may be the only alternative with a chance for a "no adverse effect" determination for the species. The Catena Group has found fairly young dwarf wedgemussel individuals in Swift Creek in the vicinity of the Wake-Johnston County line, near the protected corridor. They have not yet surveyed the area between Lake Wheeler and Lake Benson, and there have been limited past surveys in this area. State listed

mussel species have been found in this area, and it is possible that dwarf wedgemussel could be found there. However, since there would be no genetic connection between a potential population above the Lake Benson dam and the known population below the dam, impacts above the dam could minimize direct effects on the downstream population and its habitat. Any population between Lake Benson and Lake Wheeler would be isolated from other area populations. The population near the County line is a priority for conservation efforts and the habitat in this area is severely impacted by sedimentation from area development activity.

According to the USFWS, under the Endangered Species Act the agency can not mandate that NCTA study the red corridor as a Detailed Study Alternative (DSA). But, their best professional judgment is that the red alternative is the only build avoidance/minimization option and likely the only option that has the potential for a "no adverse effect" call. Any other build or upgrade options will almost certainly receive an "adverse effect" call, but not necessarily a "jeopardy call".

Stressing the complexity of the Section 7 consultation process as it has been applied to dwarf wedgemussel impacts in Swift Creek, USFWS explained that the consultation for the recent Clayton Bypass project included more than 40 meetings. Numerous local ordinances were developed or changed to deal with the impacts.

Per NCTA, Catena will survey Swift Creek above Lake Benson for mussels. Catena will also survey Mahler's Creek, a tributary to the downstream portion of Swift Creek, as the red corridor crosses this area. Catena will also survey White Oak Creek and Little Creek as these areas could contain dwarf wedgemussels and are likely to contain rare mussel species which may be federally listed before this project is complete.

Relative to Phase I (south side): The group agreed with NCTA recommendations to eliminate the yellow, blue, purple, and white (west of NC 55 Bypass) alternative corridors. All other corridors remain under consideration. USEPA stated that by reporting impacts per mile, NCTA could more effectively compare the improve existing roadways option to the new location alternatives. In general, the group will accept elimination of the improve existing roadways option as long as NCTA provides a more robust explanation for its elimination in the Alternatives Report.

Relative to Phase II (east side): Only the green alternative was presented at the Public Informational Meetings. The tan and grey alternatives were later added based on coordination with Wake County and the City of Raleigh regarding the Randleigh Farm property. The tan alternative minimizes impact to the Randleigh Farm property by following an alignment along the property's eastern boundary and is acceptable to the City of Raleigh and Wake County. The grey alternative avoids the Randleigh Farm and potential historic site completely, but based on a number of considerations, the group agreed to drop this corridor. The grey corridor is about four miles longer than the other options and at about $50 million per mile, its cost would be significantly higher. It would also have much more stream and wetland impacts and could result in greater indirect and cumulative effects.

The group concurred to further consider the following corridors only:

Orange to red to green
Orange to green
Orange to tan to green
Orange to pink to red to green
Orange to red (along I-40) to green – is a new corridor to possibly consider

Previous Action Items:

- Lochner to revise alternatives impact table to replace Natural Heritage Program Occurrences as an evaluation criterion with separate breakouts of federal and state protected species. (*Completed*)

New Action Items:

- NCTA will follow up with Delores Hall regarding Randleigh Farm property and adjacent potential historic site
- NCTA will survey Swift Creek above Lake Benson Dam and Mahler's Creek and review existing survey data for White Oak Creek and Little Creek.
- NCTA will eliminate the following corridors: blue, purple, yellow, grey, and options west of NC 55 Bypass (white).
- NCTA will make traffic analysis for improve existing and hybrid options available to TEAC members.
- NCTA will provide draft alternatives report for agency review and comment.

Resolutions:

- Eliminate purple, blue, and yellow corridors from further consideration.
- Eliminate proposed grey corridor from further consideration.
- Eliminate improve existing roadways alternative from further consideration.
- Eliminate hybrid alternative from further consideration.

Next Steps:

- Complete draft Alternatives Report and circulate for agency review and comment.

MEETING MINUTES

Date: November 2, 2010
1:00 PM to 3:00 PM
NC Turnpike Authority Board Room (Suite 400)

Project: STIP R-2576 Mid-Currituck Bridge Study

Mid-Currituck Bridge Spotlight:

Attendees:

Bill Biddlecome, USACE
Scott McLendon, USACE
Gary Jordan, USFWS
Chris Militscher, USEPA
Ron Sechler, NMFS (by phone)
George Hoops, FHWA
Amy Simes, NCDENR
Cathy Brittingham, NCDENR-DCM
Kevin Hart, NCDENR-DMF (by phone)
David Wainwright, NCDENR-DWQ
Travis Wilson, NCWRC
Jennifer Harris, NCTA
Ted Devens, NCDOT-PDEA
Brian Yamamoto, NCDOT-PDEA
Doug Taylor, NCDOT-Roadway Design
Tony Houser, NCDOT-Roadway Design
Jose Luque, CDG-ACSID
Bernardo Palicio, CDG-Dragados USA
James Hinda, CDG-Dragados USA
Roy Bruce, CDG-Lochner
Steve Browde, CDG-Lochner
Ron Ferrell, CDG-PBS&J
Tracy Roberts, HNTB
John Burris, HNTB
Spencer Franklin, HNTB
Neal Williams, CDG-Weeks Marine
John Page, PB
Bobby Norburn, PB

Persons Who Were Provided Materials but Were Unable to Attend:

Steve Lambert, Albemarle Commission
Bill Brazier, USCG
Ted Bisterfield, USEPA
Jim Hoadley, NCDENR-DCM
Sara Winslow, NCDENR-DMF
Brian Wrenn, NCDENR-DWQ
Peter Sandbeck, NCDCR-HPO
Renee Gledhill-Early, NCDCR-HPO

Presentation Materials: (All materials posted on the TEAC website)

- Meeting Agenda
- Preferred Alternative Report (including previous and new handouts)
- Assessment of Maple Swamp Groundwater System (Handout 28)
- Supplemental Assessment of Mid-Currituck Bridge Impacts to Flood Elevations in Maple Swamp (Handout 29)
- PowerPoint slides

Purpose:
Discuss new studies of groundwater and surface water hydrology in Maple Swamp and FHWA/NCTA's Preferred Alternative.

General Discussion:
The following information was discussed at the meeting:

- **Introduction and Previous Meeting Comments** – Tracy Roberts opened the meeting by noting meeting handouts and asking the attendees to introduce themselves. He also reviewed the meeting agenda.

  John Page started the slide presentation and asked if there were any comments on the September 8 meeting handouts. Kevin Hart and Ron Sechler said they are going to send written comments on the September 8 and November 2 meeting handouts. Bill Biddlecome also said that he already sent NCTA his comments on the September 8 handouts, but NCTA has not received them yet. (Bill had a copy of his comments and copies were made and distributed to the meeting attendees.) Travis Wilson and Cathy Brittingham also will be providing comments on the September 8 meeting handouts.

  The October 1, 2010 meeting between NCTA and NCDENR-DWQ to discuss stormwater management strategy was briefly discussed. David Wainwright asked about storm water collection over Maple Swamp and NCTA's proposal for direct discharge. He wants more information on why the first 1.5 inches of storm water over Maple Swamp cannot be treated (i.e., why treatment would be impractical or a hardship) before he supplies comments.

  Chris Militscher said that USEPA would provide comments once his agency receives the FEIS.

- **Handout 28** – John went through the slide for Handout 28. He said that he would be brief unless there were specific questions. He said that existing groundwater levels likely show only minimal elevation changes. In addition, groundwater flows are quite small. The bottom line is that with a Maple Swamp crossing design that maintains surface water hydrology, groundwater flows and levels would not be affected by fill. In response to a question, he noted the amount of soil that would be mucked out for fill sections in the swamp would range from 2 to 5 feet. John asked if there were any questions on Handout 28 – there were none.

- **Handout 29** – John went through the slide for Handout 29. He said that in response to agency comments, NCTA conducted revised Maple Swamp floodplain studies based on a more detailed location survey, recent logging in the swamp, and a range of bridge and fill length alternatives. The results of the revised studies indicated that a minimum 2,500-foot bridge in the central to eastern part of Maple Swamp would result in no impact on floodwater elevation. John asked if there were any questions on Handout 29 – there were none.

- **Preferred Alternative Report** – John addressed the Preferred Alternative Report. He indicated that NCTA's recommended Preferred Alternative is MCB4/C1 with refinements to respond to agency and public comments on the DEIS alternatives, as well as to avoid and minimize impacts. He reviewed the components of the recommended Preferred Alternative, including: reversing center turn lane along US 158 for hurricane evacuation between the bridge interchange and NC 168; the addition of approximately 1,600 feet of third outbound lane for hurricane evacuation on US 158 on the Outer Banks to the west of NC 12; the use of Option B's more compact US 158/Mid-Currituck Bridge interchange; a median acceleration lane for left turns at the US158/Waterlily Road intersection; a 2,640-foot-long bridge in Maple Swamp (the Option A bridge was 7,913 feet and Option B was 360 feet); a linear toll plaza on fill in Maple Swamp to the west of the Maple Swamp bridge; a 2-lane road on fill between the Maple Swamp bridge and the sound bridge; the retention of Aydlett Road in its current location; a straight Mid-Currituck Bridge that avoids coastal marsh and reduces SAV impact at its eastern terminus at NC 12; provisions for bicycles and pedestrians on the bridge; roundabouts on NC 12 at the intersections with the bridge and Currituck Clubhouse Drive; less 4-lane widening on NC 12; and marked pedestrian crossings on NC 12. In response to a question about wildlife underpasses in Maple Swamp, John said that additional wildlife underpasses are being considered. John showed a slide that

compared the refined C1 terminus on the Outer Banks to the DEIS C1 terminus. He discussed that the realigned terminus using the roundabout avoids wetlands in the bridge terminus area, which reduced wetland impacts on the Outer Banks by 4 acres to about 1 acre. The refined alignment also avoids the already developed portion of the Corolla Bay subdivision.

Roy Bruce discussed the three slides related to Mid-Currituck Bridge construction procedures with the recommended Preferred Alternative. He discussed that, as shown on the slides, dredged areas have been reduced on the east with the refined alignment for the recommended Preferred Alternative. He discussed the slide showing the quantities of dredging needed with the DEIS and refined C1 alignments, as well as the proposed supply dock. As shown on the slide, the refined C1 alignment has substantially less dredging impacts than the DEIS C1 alignment. However, although the design of the supply dock has not been revised yet, the anticipated dredging impacts for the supply dock are up based on a new bathymetric survey that NCTA recently completed. Roy said that NCTA is looking at options to refine the design of the supply operation based on the new survey data to reduce dredging impacts, so this issue will be further discussed with the agencies at a future meeting. Several agencies commented on the extent of the supply dock dredging impacts, so Roy reiterated that NCTA will attempt to refine the plan and reduce these impacts.

John noted the benefits of the recommended Preferred Alternative (MCB4/C1 with refinements), as follows: substantial congestion reduction and travel time benefits; components avoid and minimize natural resource and community impacts; bridge conforms to area land use plans; and can be financed. He then discussed the natural resources benefits and impacts of the recommended Preferred Alternative as shown on 4 slides (see attached). Jennifer Harris asked John to explain in more detail the pictures on two of the slides showing logged areas in Maple Swamp. John said these are August 2010 pictures showing the extensive logging that has recently occurred in the swamp.

John discussed the slide summarizing community impacts with the recommended Preferred Alternative (see attached), as well as the slide discussing historic resources impacts (see attached) and navigation span length in Currituck Sound (i.e., a single 35-foot-long navigation span in the deepest part of Currituck Sound). Bill Biddlecome asked about the navigation span length and whether NCTA has talked to the USACE navigation section. It was discussed that NCTA has coordinated with the US Coast Guard about navigation span issues, but not USACE. It was noted that there is no maintained channel in the sound to the north of the proposed bridge. Bill will provide NCTA with a contact at USACE to coordinate with on navigation issues – it will be the same contact at USACE that NCDOT coordinated with during the Bonner Bridge replacement project development.

- **General Discussion –** Chris Militscher noted a difference in the dredging volumes shown in the Preferred Alternative Report (page 7) versus what is shown on the slides. Roy responded that the slides are correct and that they reflect new numbers based on new survey data received after preparation of the Preferred Alternative Report.

  Chris Militscher asked for more details on the supply dock. Roy explained that the supply dock location is independent of the design and location of the C1 alignment and that NCTA is looking at different options for its location. The impacts shown on the slide are likely the worst-case impacts of the supply dock. He said that NCTA realizes that the currently calculated impacts for the supply dock are substantial, so different alternatives are being considered to minimize or avoid these impacts. Chris summarized the worst-case impacts with the supply dock as presented during the slideshow. Jennifer Harris noted that the refined C1 alignment reduces impacts, including dredging. Ron Sechler asked to see the slide again showing the location of the supply dock. As shown on the slide, it was discussed that it is only on the mainland (i.e., a supply dock is not needed on the Outer Banks side) in an area of vacant land, but Roy reiterated that NCTA is looking at other location options and designs to reduce impacts further.

Chris Militscher asked if NCTA had talked to the NCDOT Natural Environment Unit about the dredging spoil disposal site mentioned on page 20 of the report (i.e., the existing borrow pit east of US 158 and north of Aydlett Road in Coinjock). Jennifer Harris responded not yet. Chris asked where the borrow for the fill in the swamp is coming from. Roy Bruce responded that there are some possible upland sites that NCTA is considering, but nothing definitive yet.

Kevin Hart asked about the type of construction barge that would be used. Roy described the currently anticipated barge type. Kevin asked about the amount of displacement for these barges. Neal Williams responded that the barges need approximately 1.5 feet of draft when empty and 3 to 4 feet when loaded.

Kevin Hart asked about SAV impacts with the refined C1 alignment. Roy responded that the bridge is shorter over SAV with the refined alignment, but NCTA needs to review the recently updated SAV survey prepared by East Carolina University to determine the exact impacts. It was discussed that there could potentially be new SAV on the west side of the sound at the proposed supply dock location. In addition, SAV on the east side of the sound could possibly have temporarily receded at the bridge terminus. Kevin said that any areas of the sound with temporarily receded SAV would still be considered habitat, even if SAV is not currently present. John Page discussed the location of the refined alignment in relationship to known SAV habitat and the depth of the sound. He said that there is less shallow water along the refined C1 alignment and less known SAV. In addition, we are bridging the known areas of SAV on the east side of the sound. Therefore, NCTA thinks there is now less SAV impact than with the DEIS C1 alignment.

Travis Wilson asked about the survey dates for the SAV and bathymetric data shown on the slides. Roy said the bathymetric survey data shown on the slides is the current data from Fall 2010, but the SAV data is based on the 2007 USACE SAV surveys. It was discussed that dredging is being proposed only where it is needed to provide 6 feet of depth and where there is no SAV present. Jennifer Harris said one way to picture the relatively limited extent of the proposed dredging is that it is intended to smooth out some bumps on the sound bottom, but will not be widespread.

Cathy Brittingham read to the group from the NC Marine Fisheries Commission (MFC) rules on dredging. She asked Kevin Hart for clarification of the DMF rules related to dredging in or near SAV beds. Kevin said he will find these rules and provide them to the group. It was discussed that both the MFC and DMF rules apply to the proposed project.

Gary Jordan referenced the text on page 31 of the Preferred Alternative Report that discusses avoiding and minimizing wetland fill impacts as an important consideration to take into account when making design revisions. He asked specifically what is the amount of wetland impacts savings between the DEIS alternatives and the recommended Preferred Alternative. He noted that the wetland impacts savings between Option B and Option C (i.e., the recommended Preferred Alternative) did not seem to add up based on the Option C Maple Swamp bridge length of 2,640 feet. It was discussed that the net reduction in impacted wetland in Maple Swamp with the recommended Preferred Alternative is smaller than expected because of the presence of the linear toll plaza in the swamp.

Bill Biddlecome asked how the wetland impact acreages on page 18 of the Preferred Alternative Report were calculated. John Page said the impacts were determined based on the slope-stake line plus an additional 25-foot buffer. John said that Table 3-9 of the DEIS (page 3-44) confirms the wetland impact acreages shown on page 18 of the Preferred Alternative Report. The bottom row of Table 3-9 shows "Wetland within Slope-Stake Line, plus Additional 25-foot buffer." The definition of and reason for using "slope-stakes plus 25" was discussed. Gary Jordan said he

would like to see an explanation of the reason for using “slope-stakes plus 25” to calculate wetland impacts included in DEIS Table 3-9, as well as in the Preferred Alternative Report.

Bill Biddlecome asked how much would using MCB4/A/C1 with the design refinements made for the recommended Preferred Alternative reduce the wetland impacts. It was noted that the reduction on the Outer Banks with the NC 12 refinements was 4 acres, but the Waterlily Road safety feature would add about 0.5 acre. Thus, with these changes, the MCB4/A/C1 impacts would be about 3.5 acres less than the 10.6 acres in the DEIS or 7.1 acres.

The issue of providing cost savings by making further refinements to the alternatives was discussed. It was noted that the costs in the Preferred Alternative Report are not for the revised alternatives. Roy Bruce said he thinks the cost difference between revised MCB4/A/C1 and the recommended Preferred Alternative is about $50 million. The recommended Preferred Alternative saves about $50 million, but impacts approximately 20 acres more of wetland, all in Maple Swamp. Roy said that using dredging provides another roughly $30 million in savings. Jennifer and Roy further discussed the cost savings provided by dredging, but also noted that NCTA is interested in pursuing other possible construction methods that would save money while also reducing dredging. Cathy Brittingham asked if it would be possible to use sunken barges. It was discussed that this is not possible because the type of barge that could be sunk would have to be brought into place from the Intracoastal Waterway, which would add dredging impacts.

Chris Militscher asked about the typical section of the proposed road on fill through Maple Swamp. It was discussed that the typical section for the Option B road on fill (not including the toll plaza) through Maple Swamp would include two 12-foot lanes with 10-foot outside shoulders and no median. However, subsequent to the meeting, further review of the typical section for the road on fill through the swamp as shown on the Public Hearing Maps indicated that the outside shoulder width to the start of the fill slope is 11 feet, with 8 feet between the edge of the travel lane and the face of the guardrail (including a 6-foot paved shoulder), so the total section width is 46 feet plus the fill slope.

Gary Jordan asked about the vertical clearance of the Option C bridge through Maple Swamp. Roy Bruce responded that the vertical clearance is about 10 feet from the ground to the bottom of the structure.

Kevin Hart asked if there will be other openings under the proposed project in the swamp. It was discussed that there will be hydraulic equalizer pipes through fill sections to maintain surface water flow, but they have not been designed yet.

Jennifer Harris asked if the discussions today helped to address some of the comments in the USACE letter. It was indicated that today’s discussions helped to address some of the USACE comments, but additional information is still needed to answer some comments. It was again noted that unfortunately NCTA did not receive the mailed copy of the letter prior to today’s meeting. Bill Biddlecome said that the letter is based in part on their initial review of the Preferred Alternative Report.

Cathy Brittingham asked what the vertical clearance of the new sound bridge would be outside of the navigation span. Roy Bruce responded that there would be about 16 feet of clearance from the water level to the bottom of the girders. It was discussed that DCM requires the maintenance of existing navigation uses of the sound. Roy said the proposed bridge would be higher than the typical clearance height for the Wright Memorial Bridge. It was also noted that it is difficult to navigate north-south in Currituck Sound because it is so shallow in some areas in the middle of the sound (only 1 to 2 feet deep).

Bill Biddlecome asked if NCTA was going to revise the Preferred Alternative Report. Jennifer Harris responded yes based on comments made by the agencies and the need to update the

dredging impact information. Jennifer stated that NCTA will continue avoidance and minimizations efforts to make the recommended Preferred Alternative more competitive with ER2 from a wetland impacts perspective to address agency concerns, and noted that resolving this issue also could lead to further revisions to the report. Scott McLendon said to not keep revising the report if the Preferred Alternative is still a moving target. Jennifer agreed that revisions would not be made to the recommended Preferred Alternative until comments were received on the current report and discussed.

Travis Wilson and Cathy Brittingham would like to have the report updated to reflect the updated dredging information for the revised C1 alignment presented in the slide show and to be provided with at least the updated pages (i.e., something more user friendly than the slides). It was agreed that the Word file would be updated using track changes and posted on the TEAC web site.

- **Next Steps** – Cathy Brittingham asked about the date for the next TEAC meeting. Scott McLendon said he thought we were still far enough apart on the selection of the Preferred Alternative that another meeting is not needed until NCTA answers USACE’s funding concerns. Jennifer said she would rather answer all agency comments at once before the next meeting, so comments are needed from the other agencies.

  Scott McLendon asked if there were any looming financing issues that required a quick decision on the Preferred Alternative (similar to the Monroe Bypass project). Jennifer responded that there were none but that a decision should be made as quickly as possible. She added that NCTA would continue to refine the Preferred Alternative to try to minimize impacts, as well as continue to attempt to explain ER2 funding problems to answer the USACE concerns.

  It was discussed that the agencies will provide comments within 30 days, so there will probably not be a December TEAC meeting (i.e., not enough time for NCTA to digest and respond to comments before the meeting). The agencies agreed to provide comments by December 3. Scott said he thinks we are getting close to either agreeing on a Preferred Alternative, or not being able to agree.

  The meeting concluded at 2:55 PM.

Mid-Currituck Bridge

Agenda

January 20, 2011
10:00 A.M. to 12:00 P.M.

For remote participants – please join meeting at
https://www2.gotomeeting.com/join/544909690
Conference Call: (919) 233-7091
Please call (919) 571-3000 if you have technical difficulties

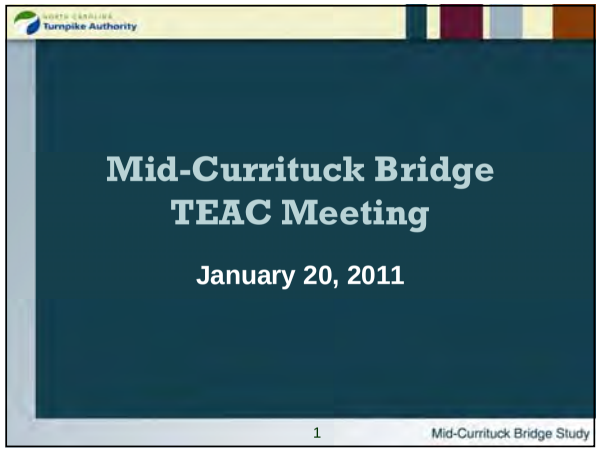
Purpose: Affirm the Preferred Alternative and establish it is the LEDPA. Discuss responses to comments on the October 2010 Preferred Alternative Report (as presented in Handout 30) and reflected in the changes to the Preferred Alternative presented in the January 2011 Preferred Alternative Report.

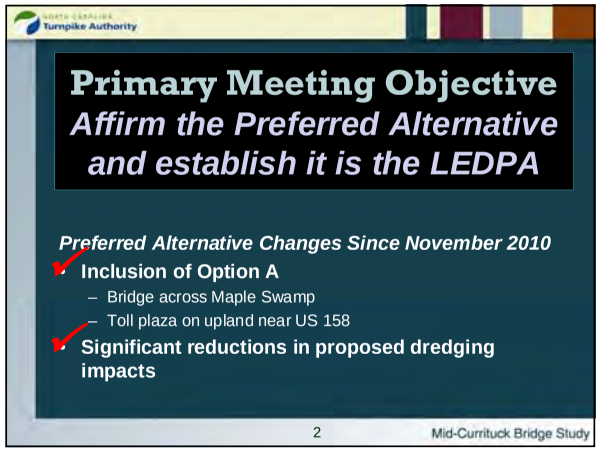
Previous Action Items: Agencies review and provide comments on the October 2010 Preferred Alternative Report and, as desired, the various meeting handouts distributed since discussions of the Preferred Alternative began in August 2010.

New Action Items: Agencies provide any significant objections or Issues of Concern on FHWA/NCTA's Preferred Alternative as presented in the January 2011 Preferred Alternative Report.

- **Recommended Preferred Alternative**
  - Components of the revised Preferred Alternative, including the inclusion of Option A (bridging Maple Swamp) in the Preferred Alternative
  - Natural resource impacts
  - Community impacts
  - Other impacts
  - Conclusion
- **Other Discussions**
  - Construction methodology
  - Stormwater management
  - Other responses to comments the agencies would like to discuss
- **Next Steps**
  - FHWA/NCTA publically announces the Preferred Alternative
  - Continue discussions with agencies on additional avoidance, minimization and mitigation
  - FHWA/NCTA continue Final EIS preparation
- **SAV Survey Findings**
- **Wrap Up**

NORTH CAROLINA Turnpike Authority





Turnpike Authority

Agenda

1. **Recommended Preferred Alternative**
2. **Other Discussions**
   - Construction methods
   - Stormwater management
   - Other responses to comments the agencies would like to discuss
3. **Next Steps**
4. **SAV Survey Findings**
5. **Wrap Up**

Turnpike Authority

1. Recommended Preferred Alternative

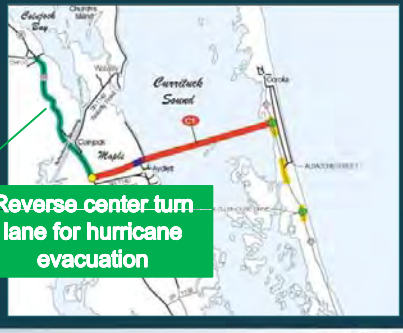
Turnpike Authority

Recommended Preferred Alternative

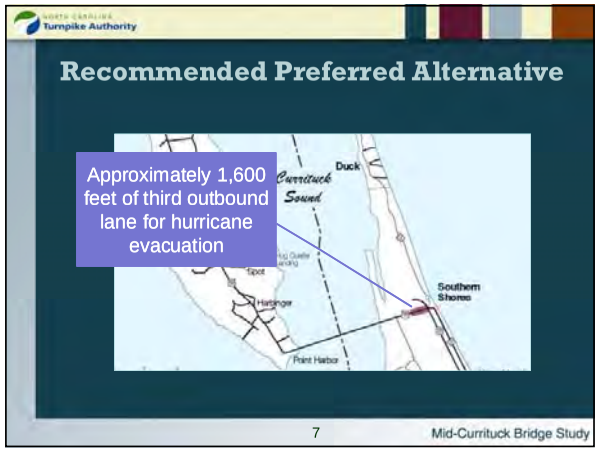
- **MCB4/C1 with design Option A and various refinements**

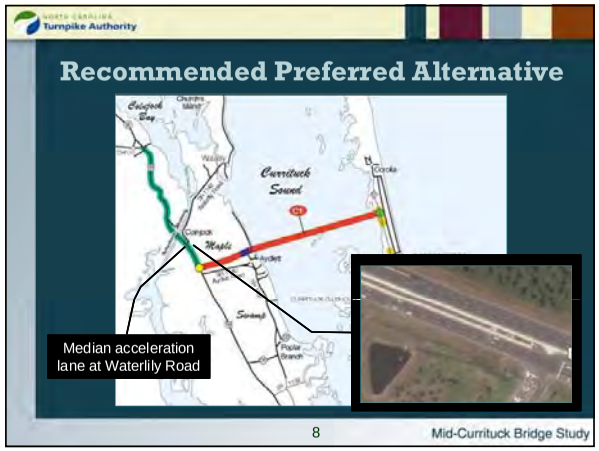
Turnpike Authority

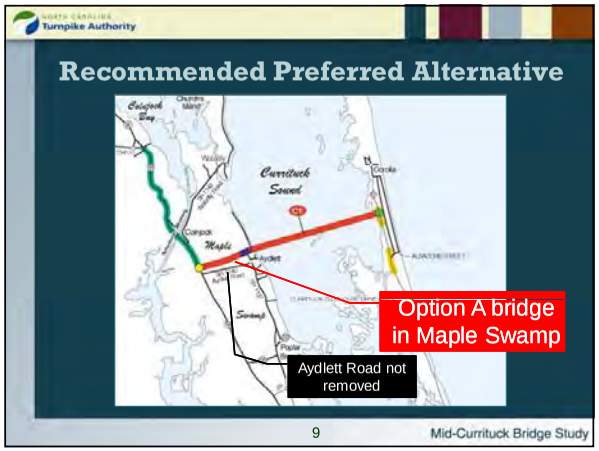
Recommended Preferred Alternative

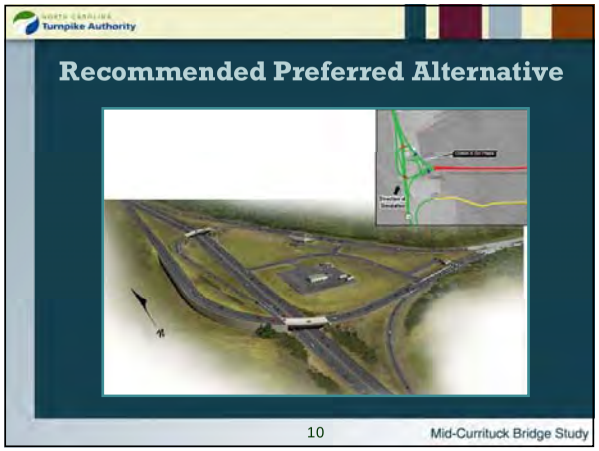


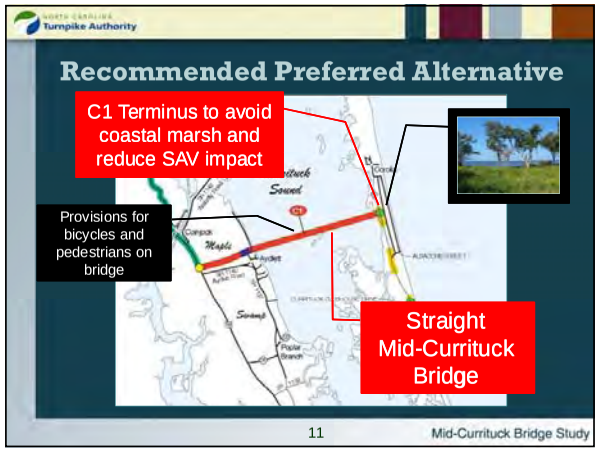
Reverse center turn lane for hurricane evacuation

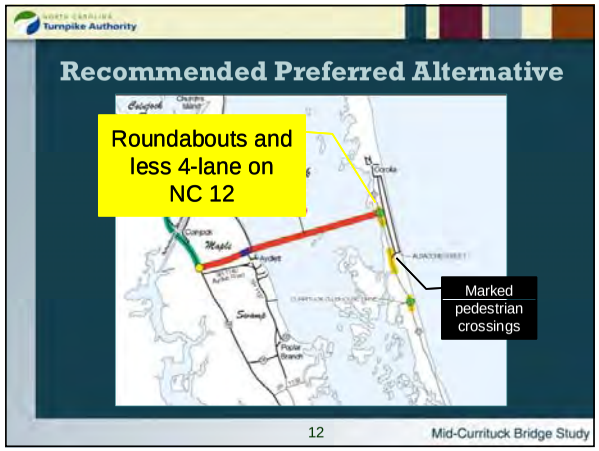

Turnpike Authority
Recommended Preferred Alternative
Approximately 1,600 feet of third outbound lane for hurricane evacuation
Currituck Sound
Duck
Southern Shores
Point Harbor
7
Mid-Currituck Bridge Study

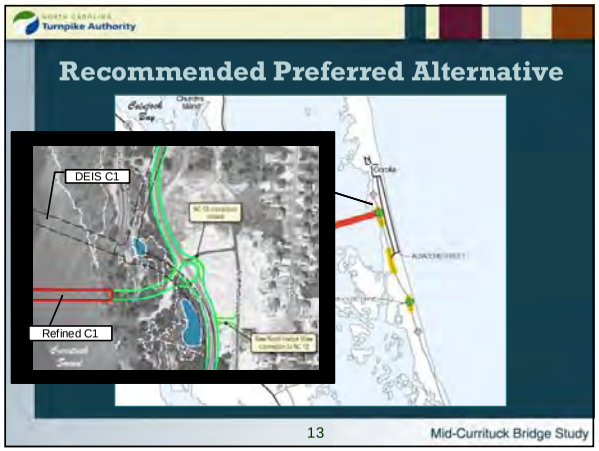

Turnpike Authority
Recommended Preferred Alternative
Currituck Sound
Maple
Median acceleration lane at Waterlily Road
8
Mid-Currituck Bridge Study

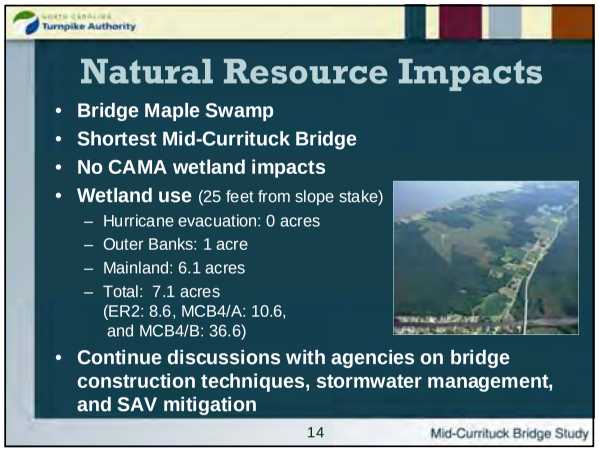

Turnpike Authority
Recommended Preferred Alternative
Currituck Sound
Maple
Option A bridge in Maple Swamp
Aydlett Road not removed
9
Mid-Currituck Bridge Study


Turnpike Authority
Recommended Preferred Alternative
10
Mid-Currituck Bridge Study


Turnpike Authority
Recommended Preferred Alternative
C1 Terminus to avoid coastal marsh and reduce SAV impact
Provisions for bicycles and pedestrians on bridge
Straight Mid-Currituck Bridge
11
Mid-Currituck Bridge Study


Turnpike Authority
Recommended Preferred Alternative
Roundabouts and less 4-lane on NC 12
Marked pedestrian crossings
12
Mid-Currituck Bridge Study


Turnpike Authority
Recommended Preferred Alternative
DEIS C1
Refined C1
13
Mid-Currituck Bridge Study


Turnpike Authority
Natural Resource Impacts
• Bridge Maple Swamp
• Shortest Mid-Currituck Bridge
• No CAMA wetland impacts
• Wetland use (25 feet from slope stake)
– Hurricane evacuation: 0 acres
– Outer Banks: 1 acre
– Mainland: 6.1 acres
– Total: 7.1 acres
(ER2: 8.6, MCB4/A: 10.6,
and MCB4/B: 36.6)
• Continue discussions with agencies on bridge construction techniques, stormwater management, and SAV mitigation
14
Mid-Currituck Bridge Study

Community Impacts

- No change in Aydlett circulation system
- Improved turning safety at Waterlily Road
- Reduced impact from NC 12 improvements, including avoiding the improved portion of Corolla Bay

Other Impacts

- Historic Resources
  - No Adverse Effect on Daniel Saunders House
  - No Effect on other historic properties

- Single 35-foot navigation span proposed (final decision pending USCG permitting)

Recommended Preferred Alternative

MCB4/A/C1 with refinements

- Substantial congestion reduction and travel time benefits
- Components avoid and minimize natural resource and community impacts, including the least wetland fill impact
- Bridge conforms to area land use plans
- Can be financed

Questions?
Thoughts?
Agreement?
Issues of Concern?
Significant Objections?

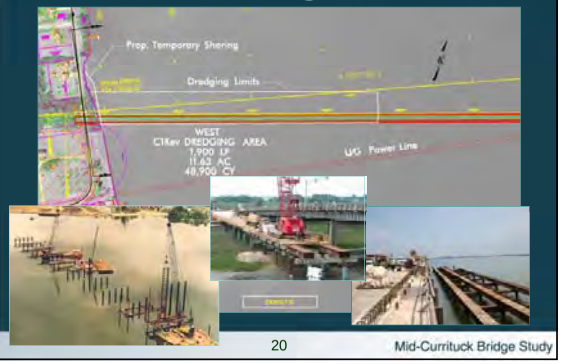
Primary Meeting Objective
Affirm the Preferred Alternative and establish it is the LEDPA

Turnpike Authority

2.
Other Discussions

Turnpike Authority

Mid-Currituck Bridge Construction



Turnpike Authority

Mid-Currituck Bridge Construction

Dredging Needed	Linear Feet	Acres	Cubic Yards
C1 Alignment (where less than 6' deep except SAV beds as originally proposed in DEIS)	7,100	25.0	53,000
C1 Refined Alignment (west side only)	1,900	11.6	48,900
Percent Change	-73%	-54%	-8%

Turnpike Authority

Stormwater Management

- **Mid-Currituck Bridge**
  - Frequent deck cleaning
  - Water quality monitoring
  - Other, e.g. land purchase, energy dissipation measures from scupper discharge (as needed), capture and treat stormwater water at bridge ends, etc.
- **Maple Swamp Bridge**
  - Frequent deck cleaning
  - Energy dissipation measures from scupper discharge
- **Customary Road BMPs**

Other Responses to Comments the Agencies Would Like to Discuss

3. Next Steps

- FHWA/NCTA publically announces the Preferred Alternative
- Continue discussions with agencies on additional avoidance, minimization, and mitigation
- FHWA/NCTA continue Final EIS preparation

4.
SAV Survey Findings

2010 SAV Survey

- Conducted by ECU for NCTA
- October 2010
- Combination of sonar and ground truthing
- Focus on revised C1 bridge corridor
- SAV map produced

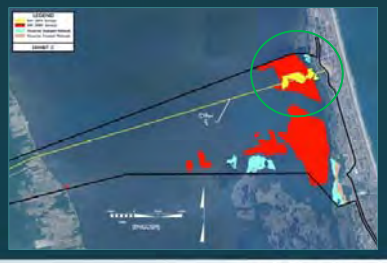
2010 SAV Survey

- **Species found**
  - Freshwater eelgrass or wild celery *(Vallisneria americana)**
  - Wideongrass *(Ruppia maritima)**
  - Eurasian water milfoil *(Myriophyllum spicatum)*
  - Sago pondweed *(Stuckenia pectinata)**
- **In areas <3 feet deep mostly *Vallisneria***

*species listed in 15A NCAC 03I .0101(4)(i)

2010 SAV Survey

- **On east, no SAV beyond the 2007 area except in very shallow areas not surveyed in 2007**



2010 SAV Survey

- **On east, no SAV beyond the 2007 area except in very shallow areas not surveyed in 2007**

2010 SAV Survey

- **On west, sparse SAV close to shoreline**

SAV Surveys in the Last 10 Years

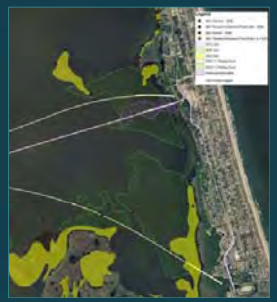
- 2003 (by ECSU)
- 2006 (transect only by ECSU)
- 2007 (by USACE)
- 2010 (by ECU)

(Dates shown are the collection dates)

SAV Surveys in the Last 10 Years

- 2003 (by ECSU)
- 2006 (transect only by ECSU)
- 2007 (by USACE)
- 2010 (by ECU)

(Dates shown are the collection dates)



SAV Surveys in the Last 10 Years

Other 15a NCAC 03I .0101(4)(i) criteria

- Areas shown are believed to be six feet deep or less
- Water quality data collected in 2006 and 2007 indicates secchi depths:
  - Currituck Sound: 0.8 to 3.2 feet
  - Near C1 east terminus: 0.8 to 2.0 feet
- Limited wave exposure except under windy conditions

Wrap Up

Turnpike Environmental Agency Coordination (TEAC) Meeting

MEETING MINUTES

Date: January 20, 2011
10:00 AM to 12:00 PM
NC Turnpike Authority Board Room

Project: STIP R-2576 Mid-Currituck Bridge Study

Mid-Currituck Bridge Spotlight:

Attendees:

Bill Biddlecome, USACE
Scott McLendon, USACE
Brad Shaver, USACE
Gary Jordan, USFWS
Chris Militscher, USEPA
Ron Sechler, NMFS
George Hoops, FHWA (by phone)
Amy Simes, NCDENR
Cathy Brittingham, NCDENR-DCM
Kevin Hart, NCDENR-DMF (by phone)
David Wainwright, NCDENR-DWQ
Travis Wilson, NCDENR-NCWRC
Jennifer Harris, NCTA
Brian Yamamoto, NCDOT-PDEA
Herman Huang, NCDOT-HEU
Doug Taylor, NCDOT-RDU
Jose Luque, CDG-ACSID
Bernardo Palicio, CDG-Dragados USA
James Hinda, CDG-Dragados USA
Roy Bruce, CDG-Lochner
Steve Browde, CDG-Lochner
Ron Ferrell, CDG-PBS&J
Neal Williams, CDG-Weeks Marine
Tracy Roberts, HNTB
John Burris, HNTB
Kiersten Giugno, HNTB
Spencer Franklin, HNTB
John Page, PB
Don Brown, PB
Michael Bright, NCDOT-Utilities
Lonnie Brooks, NCDOT-SDU
Steve Mitchell, NCDOT-PDEA
Chris Underwood, NCDOT-PDEA
Brian Wrenn, NCDENR-NCDWQ
Mehdi Zanganeh, CDG-Lochner (by phone)
Stephen Lane, NCDENR-DCM (by phone)
Bruce Ellis, NCDOT-NEU (by phone)
Benjetta Johnson, NCDOT-CM (by phone)
Jerry McCrain, CDG-PBS&J
Andrew Hochburn, CDG-Lochner (by phone)
Charlan Owens, NCDENR-DCM (by phone)
Greg Hebeler, CDG-Golder (by phone)
David Joyner, NCTA

Persons Who Were Provided Materials (Electronically) but Were Unable to Attend:

Steve Lambert, Albemarle Commission
Bill Brazier, USCG
Ted Bisterfield, USEPA
Sara Winslow, NCDENR-DMF
Peter Sandbeck, NCDCR-HPO
Renee Gledhill-Early, NCDCR-HPO
Scott Slusser, NCDOJ

Presentation Materials: (All materials posted on the TEAC website)

- Meeting Agenda
- January 2011 Preferred Alternative Report (including Handout 23 through Handout 30)
- Response to Written Comments on the October 2010 Preferred Alternative Report (Handout 30 included in the Appendix of the January 2011 Preferred Alternative Report)
- PowerPoint slides

Purpose:
Affirm the Preferred Alternative and establish it as the LEDPA (Least Environmentally Damaging Practicable Alternative). Discuss responses to comments on the October 2010 Preferred Alternative Report (as presented in Handout 30 and reflected in the changes to the Preferred Alternative presented in the January 2011 Preferred Alternative Report).

General Discussion:
The following information was discussed at the meeting:

- **Introduction** – Tracy Roberts opened the meeting by noting meeting handouts and asking the attendees to introduce themselves. He also reviewed the meeting agenda.

- **Preferred Alternative Report** – John Page reminded the meeting attendees that the Preferred Alternative Report was provided to the agencies two weeks ago. He emphasized that the purpose of this meeting was to seek affirmation on the Preferred Alternative and to establish it as the LEDPA. John summarized that FHWA and NCTA's recommended Preferred Alternative is MCB4/A/C1 with refinements to respond to agency and public comments on the Draft Environmental Impact Statement (DEIS) alternatives, as well as to avoid and minimize impacts. He reviewed the components of the recommended Preferred Alternative and the refinements, including the Option A bridging of Maple Swamp, the addition of a median acceleration lane at Waterlily Road, hurricane evacuation measures (operational and physical), a straighter bridge across Currituck Sound, roundabouts and less four-laning on NC 12, striped pedestrian crossings on NC 12, and a revised bridge terminus on NC 12 (resulting from the straighter bridge) which reduced the wetland impact. John also went over some of the impacts that were reduced as a result of the refinements to the Preferred Alternative, including natural resource impacts, community impacts, and other impacts such as historic (which were reduced by not adding the third outbound lane for hurricane evacuation on US 158). John then opened the meeting to questions and comments.

- **General Discussion –** Bill Biddlecome had a question about dredging. He indicated he was confused by what was presented on page 22 of the Preferred Alternative Report, where the length and acreage of dredging has been substantially reduced, yet the cubic yardage was only slightly lower. Roy Bruce explained that although the length of proposed dredging is now shorter and the acreage is less, the water depth of the area proposed for dredging is shallower, so the dredging required in this area (westside of Currituck Sound) would have to be dredged deeper than the areas on the eastside of Currituck Sound where dredging has been eliminated. Thus a smaller amount of bottom area dredged would require more cubic yardage of dredged materials. Page B-76 in the Preferred Alternative Report shows the only remaining area proposed for dredging.

  David Wainwright asked what kind of construction would be used, where dredging was now proposed, and how long the temporary bridge would be. Roy Bruce stated that construction would be from barges for much of the sound, and that dredging is now proposed to be done on the west side of the sound only. The temporary bridge would be about 4,000 feet long on the east side of the sound. Kevin Hart added that DMF would prefer top down construction in SAV areas (habitat and existing) to reduce those impacts. Jennifer Harris stated that additional construction details would be discussed with the agencies as they are known.

  David Wainwright asked what the cost would be for the recommended Preferred Alternative. Roy Bruce indicated that the cost would be approximately $660 million. Jennifer Harris added that whatever the final cost was (including construction techniques), NCTA would need to assess if the project was financially feasible. Jennifer reminded the agencies that the addition of Option A (bridging Maple Swamp) added $90M to the cost of the project and that this was a major concession

to address agency concerns regarding wetland impacts. Jennifer also noted that NCTA has discussed and addressed many construction-related concerns earlier in the environmental process than is usual. Jennifer requested that the agencies separate the Preferred Alternative/LEDPA decision from permit related issues like stormwater management and construction techniques. This level of information is not typically known at this point in the NEPA process (even during Concurrence Point [CP] 3 [LEDPA] of the Merger Process).

Cathy Brittingham noted that this is the first project that she has worked on with NCTA. Typically, when the LEDPA is signed (CP 3 in Merger), the agencies are reasonably sure that it is a permittable project. Cathy asked NCTA what was needed at this point from the agencies. Jennifer Harris stated that NCTA wants to know if there are any red flags, significant objections or issues of concern that the agencies see that might prevent or substantially delay NCTA from obtaining the necessary permits. NCTA understands that there are unknowns (such as construction techniques, SAV mitigation, and stormwater management), but wants to know if there are any issues that would prevent NCTA from developing the Preferred Alternative further and obtaining permits in the future. George Hoops stated that based on the feedback he has heard from the agencies, they believe that the Preferred Alternative could be permittable if the issues of construction techniques, stormwater management, and SAV mitigation could be resolved. Bill Biddlecome stated that NCTA is moving in the right direction with the Preferred Alternative being MCB4/A/C1 in terms of reducing wetland impacts, but there are still concerns regarding dredging and stormwater impacts on the aquatic ecosystem.

Jennifer Harris asked the agencies if they have known these details (such as SAV mitigation, construction techniques, and stormwater management) at this stage on other projects. Scott McLendon stated that he thought the Washington Bypass project was proposed to be constructed using a top-down construction methodology and that this was known at CP 3 (LEDPA). Lonnie Brooks stated that the project was design-build (so a specific construction methodology wouldn't have been known at CP 3) and that the permit drawings for the Washington Bypass proposed a work bridge. Travis Wilson stated that he could not think of a comparable project to the Mid-Currituck Bridge and that is why the agencies want more information than is typically requested at this point. Travis stated that he did not think it was possible for NCTA to get a response from the agencies at this meeting that the project as presented and with what is known would definitely be permittable.

Ron Sechler noted that impacts to seagrass (SAV) are important on this project. He stated that it is difficult to deal with, but the technology is there to mitigate impacts.

Jennifer Harris noted that it sounded as if a LEDPA would not be able to be agreed upon at this meeting, but she asked if there was something on which agreement could be reached. Jennifer wanted to know if NCTA could get agreement on the current components of the Preferred Alternative, and then NCTA could address the remaining issues in future agency coordination on avoidance, minimization, and mitigation, as well as during the permitting process. Jennifer asked if anyone had a better idea and asked for input on how the project could be advanced at this point. Scott McLendon added that there is agreement that NCTA is on the right track, but that a LEDPA cannot be agreed to at this meeting because of unresolved resource concerns regarding stormwater management, in-water construction impacts, and SAV impacts/mitigation. It is not known if the project can obtain permits and constructability still needs to be examined. The agencies are satisfied that NCTA will be bridging Maple Swamp, but they cannot say at this point that Alternative ER2 is off the table. The agencies agreed that it was NCTA's choice to continue to advance its Preferred Alternative. However, the agencies are not asking NCTA to do any more analysis or provide additional information on ER2. Cathy Brittingham reiterated that nobody is asking for more work on ER2.

Cathy Brittingham noted the following potential issues of concern: 1) stormwater management; 2) dredging; 3) shading and pile impacts on SAV resulting from the permanent and temporary bridges; and 4) in-water work restrictions (including dredging and pile installation) during the fisheries moratorium. Cathy stated that unsatisfactory resolution of any of these issues could lead to a permit being denied. Cathy later clarified that one of the concerns with pile driving was the noise and

vibration impact on migratory fish. Travis Wilson added that pile installation even with a vibratory hammer was still an aquatic impact.

Kevin Hart added that the fisheries moratorium applies only to SAV (existing and habitat).

Jennifer Harris briefly summarized what was heard so far. No agency wants more information on ER2; there is no objection on the components of the Preferred Alternative; and she re-iterated Cathy's list of potential issues of concern. NCTA and FHWA intend to move forward with MCB4/A/C1 as the Preferred Alternative. Jennifer added that NCTA will announce to the public the Preferred Alternative (via a newsletter and press release), while acknowledging there are issues that need to be resolved to the agencies' satisfaction prior to permitting.

Gary Jordan raised a concern with the potential for migratory birds and vehicle collisions on long coastal bridges. He noted Executive Order (EO) 13186 "Responsibilities of Federal Agencies to Protect Migratory Birds" signed by President Clinton on January 10, 2001 to protect migratory birds. Gary noted that this EO is not mentioned often, but it is important on this project because of the bridge's length and coastal location. He showed a picture of bird fencing (attached) that is used on a bridge in California to reduce bird kills and wants NCTA to look into using a similar device. This issue was a US Fish and Wildlife Service comment on the DEIS.

Roy Bruce asked if dredging was the most important of Cathy's four potential issues of concern. Cathy said it was not necessarily the most important. Impacts to SAV may be more of a concern, but the issues are not in any particular order of priority.

Chris Militscher gave his ranking of the most important issues in order of importance: bridging Maple Swamp, dredging, stormwater management, and impacts to SAVs.

- **Construction Techniques, Stormwater Management, and Other Issues** – Roy Bruce briefly presented the currently proposed construction techniques. Chris Militscher asked if viable disposal sites for dredged material had been located yet. Roy Bruce stated that potential sites have been identified, but there are no specific proposals at this time. Roy Bruce presented the stormwater management approach, which would include frequent bridge deck cleaning, water quality monitoring, energy dissipation measures from scupper discharge (as needed), capture and treatment of storm water at the bridge ends, and other features. John Page asked if there were other responses to the agency comments on the Preferred Alternative Report and related handouts that anyone would like to discuss. None were raised.

- **Next Steps** – It was noted that NCTA would announce its decision to move forward with the Preferred Alternative, continue discussion with the agencies on the remaining project details (particularly the four potential issues of concern), and FHWA and NCTA would continue preparing the FEIS. It is understood that there is no agreement at this time on the LEDPA; however, the agencies agree that NCTA is heading in the right direction with the development of MCB4/A/C1 as the Preferred Alternative. *Update: NCTA announced its Preferred Alternative on February 7, 2011. The press release making the announcement is attached.*

- **SAV –** East Carolina University completed a survey of SAV in October 2010, focusing on the revised C1 bridge corridor. John Page presented a description of the survey and its findings. John also showed a map with locations identified as including SAVs from surveys in the last 10 years and other criteria related to the NC Marine Fisheries Commission criteria for SAV habitat. David Wainwright asked if he could get a large map so that he could see the data better. NCTA said it would provide the map to agency representatives (attached).

  Jennifer Harris wanted clarification on the moratorium and if the moratorium applied to SAV habitat. Travis Wilson stated that the moratorium could be applied to bottom disturbing activity in SAV habitat, for example driving piles, for the NCWRC and NCDMF recommended dates of February 15th through September 30th. Jennifer Harris reiterated her understanding of the moratorium, noted it was primarily on the eastside of Currituck Sound (since that is where SAV beds and SAV habitat are located), and indicated that this issue would be considered in future construction planning.

Travis also noted that the water temperature (a factor in determining moratorium dates) may vary from season to season and, therefore, the time-frame for the moratorium could be flexible on a real time, season by season basis. If the temperature conditions after February 15th are not yet conducive to fish activity, then it is conceivable that NCTA would be allowed to continue constructing in the area beyond February 15th. This would have to be determined at that time. Travis confirmed that above water work, as well as in-water work that does not disturb the bottom, could be done at any time. Travis also clarified that push barges with spuds (the type anticipated to be used to build the bridge) are allowed during the moratorium.

- **Summary –** Jennifer Harris summarized what was stated at the meeting:
  - There are no additional studies or information necessary or being requested by the agencies for Alternative ER2.
  - NCTA will focus additional design efforts, impact assessments, and FEIS preparation based on the Preferred Alternative (MCB4/A/C1), as discussed.
  - NCTA will continue to discuss with the agencies suitable measures for addressing dredging, construction techniques, stormwater management, and the fisheries moratorium (for bottom disturbing activities in SAV beds and SAV habitat).
  - NCTA will announce to the public that MCB4/A/C1 is the Preferred Alternative and that additional coordination is on-going with the agencies related to the items mentioned in the previous bullet.

Cathy Brittingham asked when the next TEAC meeting would take place. Jennifer Harris said that it would depend upon how soon NCTA could prepare additional information to address the potential issues of concern as discussed during the meeting.

Bill Biddlecome asked if the agencies needed to follow up with letters with any comments they may have on the revised Preferred Alternative. Jennifer responded that they did not need to unless they had additional comments that weren't discussed during the meeting. Jennifer asked that the meeting attendees pay particularly close attention to these meeting minutes to be sure NCTA documented their positions correctly.

The meeting was adjourned at 11:40 AM.

Although not discussed during the meeting, Travis Wilson requested that the minutes reflect that the moratorium discussion was based on comments from the agencies requesting an in-water work moratorium that would be in addition to NCTA's commitment to a dredging moratorium.

MAIN BRIDGE CLOSE-UP VIEW

SCHUYLER HEIM BRIDGE

2/14/10

Prepared by: DES, Bridge Architecture and Aesthetics

Cal-trans

STATE OF NORTH CAROLINA
TURNPIKE AUTHORITY

BEVERLY EAVES PERDUE
GOVERNOR

1578 MAIL SERVICE CENTER, RALEIGH, N.C. 27699-1578

DAVID W. JOYNER
EXECUTIVE DIRECTOR

FOR IMMEDIATE RELEASE
February 7, 2011

Contact: Jennifer Harris, PE (919) 571-3000

TURNPIKE AUTHORITY CONFIRMS PREFERRED ALTERNATIVE FOR MID-CURRITUCK BRIDGE PROJECT

RALEIGH — The North Carolina Turnpike Authority, in conjunction with the Federal Highway Administration, has confirmed the Preferred Alternative for the proposed Mid-Currituck Bridge in Currituck County. The Preferred Alternative, MCB4/C1 with Design Option A, was selected based on numerous factors including: cost and design considerations, travel benefits, minimization of impacts to natural resources and the surrounding community, comments and suggestions from environmental regulatory and resource agencies, and input from the public.

The Preferred Alternative will be documented in the project's Final Environmental Impact Statement (EIS), which is anticipated for release by summer 2011. FHWA is expected to sign its Record of Decision by fall 2011, signifying final federal approval of the project.

MCB4 was identified as the Recommended Alternative in the project's Draft EIS, which was released in March 2010. Based on public comments received on the Draft EIS and in coordination with environmental regulatory and resource agencies, Alternative MCB4 was revised to further avoid and reduce environmental and community impacts. NCTA is now working to address several additional environmental issues that must be resolved before it can be issued the permits needed to construct the project.

The proposed Mid-Currituck Bridge is a seven-mile, two-lane, toll project that would cross Currituck Sound and connect the mainland at U.S. 158 near Aydlett with N.C. 12 on the Outer Banks south of Corolla. The bridge is expected to reduce travel time and traffic congestion as well as provide an alternate hurricane evacuation route for the northern Outer Banks.

The Preferred Alternative calls for a straight bridge over Currituck Sound that would intersect N.C. 12 between the first phase of the Corolla Bay subdivision and the northern end of the Monteray Shores subdivision. The bridge approach road would be at least 300 feet away from the homes and lots located west of N.C. 12. It also includes a toll plaza at the U.S. 158 interchange and a two-lane bridge over Maple Swamp between the interchange and the community of Aydlett. In Aydlett, an approach road to the Currituck Sound bridge crossing would continue on fill. Aydlett Road will remain open to local traffic. Current left turn movements will be maintained at Waterlily Road and U.S. 158; a median acceleration lane would be provided for safety at this location.

Under the current plan, only certain portions of N.C. 12 would be widened to four lanes, including stretches running along the bridge landing, the Food Lion and TimBuck II Shopping Center area and Currituck Clubhouse Drive. Left turn lanes would also be added at two-lane intersections between the bridge landing and Currituck Clubhouse Drive, and roundabouts would be constructed at the bridge landing and Currituck Clubhouse Drive.

Plans also include several improvements to aid in hurricane evacuations. On the mainland, the center turn lane on U.S. 158 between the Mid-Currituck Bridge and N.C. 168 could be reversed to accommodate more traffic. On the Outer Banks, three westbound lanes would be provided on U.S. 158 from N.C. 12 to just west of Duck Woods Drive.

Preliminary project costs are estimated at $660 million, with final costs to be determined during design. It is anticipated that project costs would be financed through a combination of state appropriation bonds, toll revenue bonds and private equity obtained through a public-private partnership. The project is scheduled to open to traffic in 2016.

For more information, visit www.ncturnpike.org/projects/Mid_Currituck, email midcurrituck@ncturnpike.org or call 1-800-961-5465 toll free. A graphic depicting the Preferred Alternative is available online at www.ncturnpike.org/projects/Mid_Currituck.

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SAV Data from 2003, 2006, 2007, and 2010

NORTH CAROLINA Turnpike Authority

Mid-Currituck Bridge Study

Currituck and Dare Counties

STIP No. R-2576

Draft Environmental Impact Statement Comparison of Key Impacts (March 5, 2010 Draft)
Handout 19—March 9, 2010

The following pages present a draft of the "Comparison of Key Impacts" table to be included in the Summary of the Draft Environmental Impact Statement (DEIS). It is a draft because it is subject to change prior to the Federal Highway Administration (FHWA) and the North Carolina Turnpike Authority signing the DEIS.

The table summarizes key community, natural resource, other physical feature, and indirect and cumulative impacts presented in detail in the DEIS and associated technical reports. Its focus is on key differences between the alternatives.

The five primary columns are the five corridor alternatives: ER2, MCB2/C1, MCB2/C2, MCB4/C1, and MCB4/C2. Where differences exist between mainland approach design Option A and Option B, the differences are indicated either in text or by further subdividing the columns. Where differences exist in impacts with the third outbound lane for hurricane evacuation versus reversing the center turn lane of US 158 for hurricane evacuation, the number related to reversing the center turn lane is indicated in parentheses.

Table S-1 (continued). Comparison of Key Impacts DRAFT

	ER2	MCB2/C1	MCB2/C2	MCB4/C1	MCB4/C2
Access Changes					
• Neighborhoods	Super-street would reduce number of 4-way intersections and limit direct access across US 158 in Dare County. Along NC 12, four street intersections would be closed to through traffic but not emergency vehicles (Widgeon Drive, Wood Duck Drive, Canvas Back Drive, and Old Squaw Road). Alternate access exists. Left turns limited at Crown Point and Orion's Way on the Outer Banks with provisions for U-turns.	Same as ER2. Plus, with Option B, Aydlett traffic would use the Mid-Currituck Bridge approach road to travel to and from Aydlett, and Narrow Shore Road would be relocated to pass over a toll plaza. Access road that connects NC 12 to the north end of Harbor View on the Outer Banks would be closed.	Same as ER2. Plus, with Option B, Aydlett traffic would use the Mid-Currituck Bridge approach road to travel to and from Aydlett, and Narrow Shore Road would be relocated to pass over a toll plaza.	With Option B Aydlett traffic would use the Mid-Currituck Bridge approach road to travel to and from Aydlett, and Narrow Shore Road would be relocated to pass over a toll plaza. Left turns limited at Crown Point and Orion's Way on the Outer Banks with provisions for U-turns. Access road that connects NC 12 to the north end of Harbor View on the Outer Banks would be closed.	With Option B Aydlett traffic would use the Mid-Currituck Bridge approach road to travel to and from Aydlett, and Narrow Shore Road would be relocated to pass over a toll plaza. Left turns limited at Crown Point and Orion's Way on the Outer Banks with provisions for U-turns.
• Business	Substantial changes in business access at the US 158/NC 12 interchange; notable parking loss at Home Depot (40 spaces/ 10 percent).	Substantial changes in business access at the US 158/NC 12 interchange, but less than ER2; substantial changes in business access in the Albacore Street area in Currituck County Outer Banks. With Option B, direct access from US 158 would be lost for customers of a gas station near the end of a frontage road.	Substantial changes in business access at the US 158/NC 12 interchange, but less than ER2. With Option B, direct access from US 158 would be lost for customers of a gas station near the end of a frontage road.	Substantial changes in business access in the Albacore Street area in Currituck County. With Option B, direct access from US 158 would be lost for customers of a gas station near the end of a frontage road.	Minor except with Option B, direct access from US 158 would be lost for customers of a gas station near the end of a frontage road.

Table S-1. Comparison of Key Impacts DRAFT

	ER2	MCB2/C1		MCB2/C2		MCB4/C1		MCB4/C2	
Community Impacts									
Loss of Neighborhood or Community Cohesion									
• Mainland	Minor	Visual barrier to cohesion in Aydlett				Visual barrier to cohesion in Aydlett			
• Outer Banks	Minor	Physically divides Corolla Bay subdivision.		None		Physically divides Corolla Bay subdivision.		None	
Relocations with and (without) a third outbound lane for hurricane evacuation[1]									
		Option A	Option B	Option A	Option B	Option A	Option B	Option A	Option B
• Homes	6 plus 10 vacation rental units (1 plus 10 vacation rental units)	6 plus 10 vacation rental units (6 plus 10 vacation rental units)	8 plus 10 vacation rental units (8 plus 10 vacation rental units)	6 plus 10 vacation rental units (6 plus 10 vacation rental units)	8 plus 10 vacation rental units (8 plus 10 vacation rental units)	5 (5)	7 (7)	5 (5)	7 (7)
• Businesses	5 (2 with no third outbound lane for hurricane evacuation)	7 (5 with no third outbound lane for hurricane evacuation)		8 (6 with no third outbound lane for hurricane evacuation)		5 (3 with no third outbound lane for hurricane evacuation)		6 (4 with no third outbound lane for hurricane evacuation)	
• Outdoor Advertising Signs	29 (none with no third outbound lane for hurricane evacuation)	6 (3 with no third outbound lane for hurricane evacuation)	16 (13 with no third outbound lane for hurricane evacuation)	6 (3 with no third outbound lane for hurricane evacuation)	16 (13 with no third outbound lane for hurricane evacuation)	6 (3 with no third outbound lane for hurricane evacuation)	16 (13 with no third outbound lane for hurricane evacuation)	6 (3 with no third outbound lane for hurricane evacuation)	16 (13 with no third outbound lane for hurricane evacuation)
• Gravesites	66 (none with no third outbound lane for hurricane evacuation)	36 (20 with no third outbound lane for hurricane evacuation)	35 (19 with no third outbound lane for hurricane evacuation)	36 (20 with no third outbound lane for hurricane evacuation)	35 (19 with no third outbound lane for hurricane evacuation)	36 (20 with no third outbound lane for hurricane evacuation)	35 (19 with no third outbound lane for hurricane evacuation)	36 (20 with no third outbound lane for hurricane evacuation)	35 (19 with no third outbound lane for hurricane evacuation)
Land Use Plan Compatibility	Inconsistent in that widening roads are not in land use plans or rejected in land use plans; but bridge is compatible					Compatible		Compatible	

[1] The first number indicates the impact assuming the construction of a third outbound lane for hurricane evacuation. The number in parentheses is the impact if improving hurricane clearance times is accomplished by reversing the existing center turn lane.

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Table S-1 (continued). Comparison of Key Impacts DRAFT

	ER2	MCB2/C1		MCB2/C2		MCB4/C1		MCB4/C2	
Submerged Aquatic Vegetation (SAV) Impact									
• Existing SAV Shaded	0.0 acre	4.3 acres		5.5 acres		4.3 acres		5.5 acres	
• Existing and Potential (water depths < 6 feet) SAV Shaded	0.1 acre	14.5 acres		17.8 acres		14.5 acres		17.8 acres	
Permanent Wetland Impacts for Option A and Option B with and (without) a third outbound lane for hurricane evacuation[3]									
		Option A	Option B	Option A	Option B	Option A	Option B	Option A	Option B
• Fill	5.1 (4.6) acres	12.8 (12.4) acres	42.9 (42.4) acres	10.2 (9.8) acres	40.3 (39.9) acres	8.5 (8.1) acres	38.6 (38.2) acres	5.9 (5.5) acres	36.0 (35.6) acres
• Pilings	0.0 acre	0.0 acre	0.0 acre	0.0 acre	0.0 acre	0.0 acre	0.0 acre	0.0 acre	0.0 acre
• Clearing	0.0 acre	25.7 acres	0.3 acres	30.6 acres	5.1 acres	25.8 acres	0.3 acres	30.6 acres	5.1 acres
Total Permanent Impacts	5.1 (4.6) acres	38.6 (38.2) acres	43.2 (42.8) acres	40.7 (40.3) acres	45.3 (44.9) acres	34.4 (34.0) acres	38.9 (38.5) acres	36.5 (36.1) acres	41.0 (40.6) acres
Temporary Wetland Impacts	2.1 acres	1.7 (0.0) acres	1.7 (0.0) acres	1.7 (0.0) acres	1.7 (0.0) acres	2.1 (0.0) acres	2.1 (0.0) acres	2.1 (0.0) acres	2.1 (0.0) acres
Total Wetland Impacts	7.2 (4.6) acres	40.3 (38.2) acres	44.9 (42.8) acres	42.4 (40.3) acres	47.0 (44.9) acres	36.6 (34.0) acres	41.1 (38.5) acres	38.7 (36.1) acres	43.2 (40.6) acres
Total Coastal Area Management Act (CAMA) Wetland Impacts	0.7 acre	0.7 acre		2.2 acres		0.0 acre		0.0 acres	
CAMA Areas of Environmental Concern Affected—with construction of a third outbound lane for hurricane evacuation (without third outbound lane, if different)									
• Fill	0.9 (0.8) acre	0.9acre		0.9 acre		0.0 acre		0.0 acre	
• Pilings	0.0 acre	0.1 acre		0.2 acre		0.1 acre		0.2 acre	
• Clearing	0.0 acre	0.0 acre		1.5 acres		0.0 acre		1.5 acres	
Essential Fish Habitat Affected									
• Fill	1.8 acres	1.8 acres		1.8 acres		0.0 acre		0.0 acre	
• Pilings	0.0 acre	0.1 acre		0.2 acre		0.1acre		0.2 acre	
• Shading (water depths < 6 feet)	0.1 acre	14.5 acres		17.8 acres		14.5 acres		17.8 acres	
• Clearing	0.0 acre	0.0 acre		3.2 acres		0.0 acre		3.2 acres	

[3] The first number or numbers indicate the impact assuming the construction of a third outbound lane for hurricane evacuation. The number or numbers in parentheses is the impact if improving hurricane clearance times is accomplished by reversing the existing center turn lane.

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Table S-1 (continued). Comparison of Key Impacts DRAFT

	ER2	MCB2/C1		MCB2/C2		MCB4/C1		MCB4/C2	
Natural Resource Impacts									
Water Quality Impact	Increased levels of highway runoff with 89.0 acres of increased impervious surface (53.4 acres without construction of a third outbound lane for hurricane evacuation).	Increased turbidity levels during Currituck Sound bridge construction; increased levels of bridge and highway runoff with 120.4 to 126.8 acres for Option A and 120.0 to 126.4 acres for Option B of increased impervious surface (115.2 to 121.6 acres for Option A and 114.8 to 121.2 acres for Option B without construction of a third outbound lane for hurricane evacuation).				Increased turbidity levels during Currituck Sound bridge construction; increased levels of bridge and highway runoff with 81.0 to 86.6 acres for Option A and 80.6 to 86.2 acres for Option B of increased impervious surface (74.4 to 80.0 acres for Option A and 74.0 to 79.6 acres for Option B without construction of a third outbound lane for hurricane evacuation).			
Natural Upland Biotic Communities Impact for Option A and Option B									
		Option A	Option B	Option A	Option B	Option A	Option B	Option A	Option B
• Fill in Natural and Naturalized Upland Communities[2]	85.3 acres	113.4 acres	121.7 acres	110.0 acres	118.4 acres	44.1 acres	52.4 acres	40.8 acres	49.1 acres
• Clearing Natural and Naturalized Upland Communities[2]	0.0 acre	2.7 acres	0.5 acres	2.5 acres	0.4 acres	2.7 acres	0.5 acres	2.5 acres	0.4 acres
Land Wildlife Habitat Impact	Least invasive	Removal and alteration of wildlife habitat (both by habitat use and bridging) and habitat edge effects							
Aquatic Bottom Shaded (water depths < 6 feet)	0.1 acre	14.5 acres		17.8 acres		14.5 acres		17.8 acres	
Water Wildlife Habitat Impact	Minor	Altered light levels and the introduction of piles as a hard substrate in Currituck Sound; localized noise, turbidity, and siltation during construction							

[2] Includes mixed pine-hardwood forest, hardwood forest, maritime shrub-grassland, and maritime forest.

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Table S-1 (concluded). Comparison of Key Impacts DRAFT

	ER2	MCB2/C1	MCB2/C2	MCB4/C1	MCB4/C2
Visual Impact	Interchange introduced into views in Kitty Hawk; changes in views along NC 12 from US 158 to Albacore Street.	Mid-Currituck Bridge features introduced into views along US 158 and in Aydlett (including views of Currituck Sound); would adversely affect views of Currituck Sound from the Corolla Bay subdivision; interchange introduced into views in Kitty Hawk; changes in views along NC 12 from US 158 to bridge terminus.	Mid-Currituck Bridge features introduced into views along US 158 and in Aydlett (including views of Currituck Sound); would adversely affect views from the outdoor recreation area at TimBuck II commercial area; interchange introduced into views in Kitty Hawk; changes in views along NC 12 from US 158 to bridge terminus.	Mid-Currituck Bridge features introduced into views along US 158 and in Aydlett (including views of Currituck Sound); would adversely affect views of Currituck Sound from the Corolla Bay subdivision; changes in views along NC 12 from Seashell Lane to bridge terminus.	Mid-Currituck Bridge features introduced into views along US 158 and in Aydlett (including views of Currituck Sound); would adversely affect views from the outdoor recreation area at TimBuck II commercial area; changes in views along NC 12 from Seashell Lane to bridge terminus.
Floodplains	No impact	No impact except with the use of mainland approach road Option B, which would result in a significant encroachment on the floodplain (as a significant alteration to a water course) by the fill placed in Maple Swamp. If selected, additional studies would be needed to determine how to avoid or minimize the associated maximum 0.2-foot increase in the 100-year storm's water surface elevation just north of the fill.			
Indirect and Cumulative Effects	Forecast development would be the predominant contributor to cumulative impacts, irrespective of whether a detailed study alternative is implemented.	Forecast development would be the predominant contributor to cumulative impacts, irrespective of whether a detailed study alternative is built. The improved accessibility to Currituck County Outer Banks with the bridge would cause the order of future development to change such that development occurs first in Currituck County and later in Dare County. However, the extent of development on the Outer Banks by 2035 would be the same with or without the bridge. In addition, in terms of indirect impacts, the presence of the bridge could result in business development in proximity to the bridge's interchange with US 158 and associated use of farmland and visual change. This development, however, is desired by Currituck County.			

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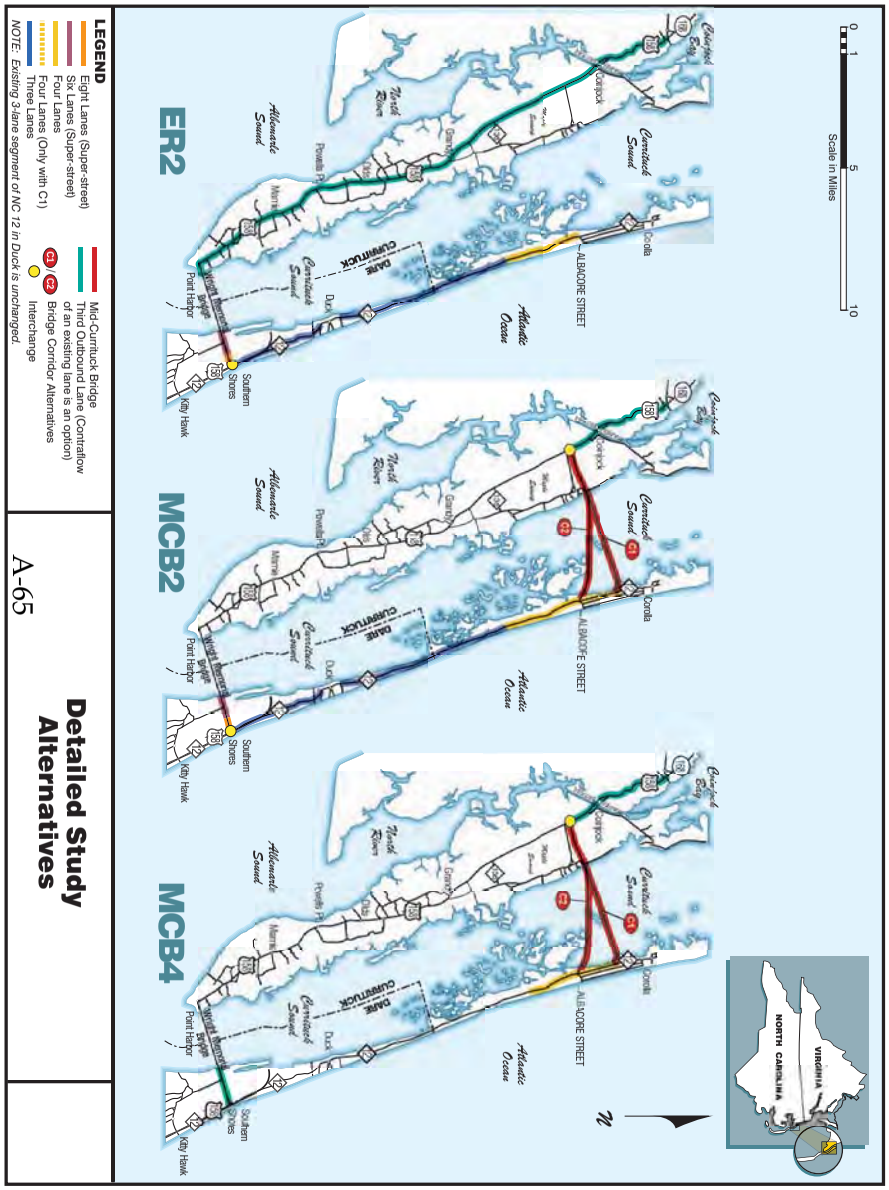
Table S-1 (continued). Comparison of Key Impacts DRAFT

	ER2	MCB2/C1	MCB2/C2	MCB4/C1	MCB4/C2
Threatened and Endangered Species Habitat Affected	May affect but is not likely to adversely affect two species. Habitat does not occur in the project area for other species in the counties.	May affect but is not likely to adversely affect nine species. Habitat does not occur in the project area for other species in the counties.			
Other Physical Features					
Noise Impact	Increased noise levels (up to 9 dBA) on NC 12 from US 158 to Albacore Street with pavement closer to homes, particularly in four lane sections where more motor vehicles could travel the speed limit.	Increased noise levels (up to 10 dBA) on NC 12 from US 158 to Mid-Currituck Bridge terminus with pavement closer to homes, particularly in four lane sections where more motor vehicles could travel the speed limit.		Increased noise levels (up to 10 dBA) on NC 12 from Seashell Lane to Mid-Currituck Bridge terminus with four lanes of pavement closer to homes and because more motor vehicles could travel the speed limit.	
Accelerated Sea Level Rise	Existing roads affected by sea level rise.	Existing roads would be affected by sea level rise. A Mid-Currituck Bridge would be a useful asset in reducing the impact of sea level rise on the project area's road system. Under all sea level rise scenarios considered, the entire barrier island would be inundated at the Dare/Currituck County Line, creating a breach in the island and making a Mid-Currituck Bridge the only way off the Currituck County Outer Banks.			



NORTH CAROLINA Turnpike Authority

Mid-Currituck Bridge Study

Currituck and Dare Counties

STIP No. R-2576

Summary of Agency Comments on the Draft Environmental Impact Statement Handout 20—July 14, 2010

The material contained in this handout was presented at the June 28, 2010 Post-Hearing Meeting for the Mid-Currituck Bridge Study. The purpose of the Post-Hearing Meeting was to present for discussion with representatives of various North Carolina Department of Transportation (NCDOT) branches the outcomes of the public and agency comment process for the Mid-Currituck Bridge Project that will be particularly important to the selection of a Preferred Alternative and further development of the project. This material is being provided for your information and does not replace any material to be provided to the TEAC under the Section 6002 agreement. The original agency comment letters, presented in the same order in which they are summarized in this handout, are attached.

Federal Agencies

1. US Army Corps of Engineers—June 7, 2010

a. Explain why the 1998 DEIS indicates that the extent of development would be greater with the bridge and the current DEIS indicates the extent of development would be the same with and without the bridge. Explain why the conclusions related to day trips differ between the 1998 and the current DEIS.

b. Why purchase additional right-of-way on the mainland to allow for additional bridge lanes when traffic numbers are based on full build-out of the road accessible Outer Banks? Also, the DEIS states that the travel time savings offered by a three or four lane bridge is not worth the additional cost.

c. The Preferred Alternative should be developed to a higher level of detail (construction details known) in the Final Environmental Impact Statement (FEIS), particularly as it relates to any dredging in Currituck Sound.

d. Explain why the 1998 DEIS and the current DEIS reach different conclusions related to crime.

e. Two issues pertaining to practicability that will weigh heavily in the decision process are the funding aspect for this project and the construction techniques. These issues will need to be discussed and resolved before we can proceed with the selection of the LEDPA. This information can be included as part of the preferred alternative report that NCTA will prepare in accordance with Section 10 (Selection of Preferred Alterative (LEDPA) of the Section 6002 Coordination Plan for the STIP R-2576).

f. Suggested wording changes, corrections, or additions on page xxii (EFH), xxv (funding), 2-41 (funding), 2-42 (community impact), 3-11 (relocations), 3-32 (biotic communities), 3-38 (biotic communities), 3-48 (dredging), and 3-79 (waste disposal).

g. Clarifications requested on pages 2-15 (travel time benefits), 2-35 (travel time benefits), and 3-14 (land use plan compatibility).

h. Disagreement with reasons for identifying MCB4 as the recommended alternative presented on page 2-42.

2. US Department of Agriculture—Natural Resources Conservation Service—April 6, 2010

The NRCS does not have any comments at this time.

3. US Department of Commerce—National Oceanic and Atmospheric Administration, National Marine Fisheries Service—June 4, 2010

a. Alternative ER2 would have the least adverse impact to EFH and other NOAA trust resources. A new bridge should be considered only if it is determined that improvements to existing highways would not meet the purpose and need for the project.

b. If a new bridge is required and without taking construction methods into consideration, MCB4/A/C1 would damage less coastal habitat than other alternatives requiring a bridge.

c. Bridging Maple Swamp should be a component of any bridge alternative chosen. It is recommended that a plan be developed for preserving the remaining un-impacted areas of Maple Swamp, to be included in the project's compensatory mitigation plan.

d. Taking construction methods into consideration, it is not clear if MCB4/A/C1 or MCB4/A/C2 would have the lesser impact on EFH. Minimizing disturbances to the sea bottom should be a priority. Adverse impacts to EFH, even if temporary,

require compensatory mitigation because of the diminution of ecological services to fishery resources.

e. Additional study is needed of the areas the DEIS describes as probable SAV, potential SAV, and unlikely SAV to determine exact acreages based on a current survey suited to the area of the proposed bridge. Detailed surveys for SAV also should include the areas where dredging may occur and barges may affect the sea bottom.

f. It is recommended that the amount of the EFH mitigation be based on a functional assessment. NMFS would accept improvements to water quality as a portion of the migration strategy for offsetting impacts to estuarine habitats.

g. The DEIS should more thoroughly discuss the indirect and cumulative effects of the proposed highway improvements so they may be adequately addressed during the permitting process. NMFS is concerned that increased rate of development, that would be likely with a new bridge on both the mainland and barrier island, would further degrade water quality, including water clarity in Currituck Sound.

h. The EFH Assessment does not provide a sufficient discussion of the impacts to EFH from the various alternatives considered. NMFS is unable to complete the EFH consultation based on the information provided in the DEIS.

i. While additional information is needed for NMFS to complete the EFH consultation, based on the information provided thus far, NMFS concludes that the project would result in substantial adverse impacts to EFH. NMFS provided four EFH Conservation Recommendations in their letter. Section 305(b)(4)(B) of the Magnuson-Stevens Act and its implementing regulations at 50 CFR 600.920(k), requires NCTA to provide a written response to NMFS' EFH recommendations within 30 days of receipt.

j. NMFS' comments do not satisfy the consultation responsibilities under Section 7 of the Endangered Species Act of 1973, as amended.

k. NMFS had specific comments on the DEIS:

Section 2.1.7 – NMFS recommends that a stormwater management plan be a high priority in the project design.

Section 2.4 – NMFS recommends that NCTA and FHWA use a construction approach that does not require dredging in Currituck Sound.

Section 3.3.1.2 – The South Atlantic Fishery Management Council designates SAV, shallow estuarine bottom, and emergent marsh as EFH for penaeid shrimp

and estuarine species within the snapper/grouper complex. The project area also functions as an important secondary nursery area for diadromous species that utilize these waters, and this fact should be noted in the Final EIS. A seasonal restriction on in-water work may be required if extensive dredging is planned within Currituck Sound.

Section 3.3.1.3 – Water quality enhancement measures should be considered at every opportunity in the project design.

Section 3.3.1.4 – The DEIS should initiate a concerted effort to address runoff from a new bridge.

Section 3.3.2.4 – Measures to avoid, minimize, and mitigate the less conspicuous impact versus Maple Swamp are lacking.

Section 3.3.4.3 – Impacts to SAV from shading must be mitigated.

Section 3.3.4.4 – NMFS will work cooperatively with the NCTA, FHWA, and NC Division of Water Quality to develop specific recommendations on how to mitigate these chronic impacts.

Section 3.3.6 – NCTA and FHWA should pursue an alternative that involves bridging rather than filling Maple Swamp (Option A). Also, alternatives that involve construction of a new bridge across Currituck Sound would have direct and indirect impacts to SAV. Selection of the exact alignment should be done in a manner that results in the least adverse impacts to SAV and wetlands.

Section 3.3.6.4 – The value of the large tract of forested wetlands (Maple Swamp) is likely high. Option A (using a bridge to cross the swamp, rather than fill) should be required as an appropriate avoidance and minimization measure. Preserving the remaining portion of the swamp should be a component of offsetting the unavoidable impacts from using a bridge to cross the swamp. The Ecosystem Enhancement Program (EEP) does not provide an SAV mitigation option; therefore, mitigation to offset unavoidable losses of SAV habitat must be addressed independently from other wetland losses.

Section 3.3.7 – The DEIS should be revised to reflect the need to mitigate for impacts to SAV habitat from shading; this will make it consistent with federal guidance. NMFS does not agree with NCTA's and FHWA's determination that all options considered in the DEIS would not have a substantial, long-term adverse impact on EFH or managed species.

Section 3.6 – NMFS recommends that unconsolidated estuarine bottom (a category of EFH) be added to Table 3-17.

Section 3.6.3 – NMFS is committed to development of a project that would address the transportation need of Currituck County while avoiding and minimizing short- and long-term impacts to waters and wetlands that support NOAA trust resources.

4. US Department of the Interior—Fish and Wildlife Service—May 25, 2010

a. Overall, this project will have substantial impacts to fish and wildlife resources.

b. The Department strongly prefers the C1 alternatives over C2 alternatives. Overall, C1 would have the fewest impacts to wildlife. C2 would traverse over a wider band of coastal marsh and forested wetlands, affect more acres of wetlands, be in close proximity to other important coastal wetlands, shade shallower aquatic bottom, and shade more existing submerged aquatic vegetation (SAV). C1 would land on the Outer Banks at a location with only a narrow band of coastal marsh fringe and that has already been disturbed for proposed development. C1 is farther away from emergent wetlands within Currituck Sound, which are important to many coastal birds and waterfowl.

c. A Maple Swamp Crossing option not considered in the DEIS would be to bridge Maple Swamp and remove existing Aydlett Road. This would have the least impact on Maple Swamp and its hydrology, allow for onsite wetland restoration in the roadbed of the removed Aydlett Road, and provide the highest level of permeability for wildlife movements through Maple Swamp. The Department strongly opposes a road on fill through Maple Swamp. Even with provision for wildlife crossings, the fill will still have significant impacts on wildlife resources through fragmentation, interruption of wildlife movements, and significant alterations in wetland hydrology.

d. Would there be structures in addition to the five wildlife crossing structures for the conveyance of hydrology? If not, the wildlife crossing structures could be permanently flooded, thus rendering them nearly useless for terrestrial wildlife. If the five wildlife crossing structures are not properly placed with consideration of topography and hydrology, it is very possible that the smallest structures would be completely inundated. Larger bridge structures would be far more effective wildlife passage structures. What is the rationale for having the larger bridge structures along the outside edges?

e. Almost all the Gordonia Forest has been clear cut. Portions of the main document and some impact tables need to be revised to reflect current conditions.

f. The hydrology of Maple Swamp has been significantly affected by the clear cutting. A persistent higher water table would likely convert the former swamp

forest into emergent or shrub-scrub wetlands. If Option B is selected, it is unclear what ramifications occur with such altered hydrology.

g. Because the Gordonia Forest has been clear cut, the value of preserving portions of Maple Swamp has somewhat diminished, but preservation of portions of Maple Swamp is still worthwhile. The Department still supports the purchase of the landlocked parcels for wetland preservation credits. Some wetland restoration or enhancement may be needed because of the effect of logging operations (rutting, log landings, compaction, and hydrology alteration) on the landscape. Any such restoration or enhancement should be conducted so as to promote the growth or re-growth of the Gordonia community type.

h. There are several inconsistencies and/or errors in the DEIS and supporting documents in their treatment of threatened and endangered species. These include the treatment of the red-cockaded woodpecker, green sea turtles, Kemp's ridley sea turtles, leatherback sea turtles, shortnose sturgeon, and seabeach amaranth. Also, biological conclusions for sea turtles should be rendered separately for beach nesting activity (USFWS purview) and in the water (National Marine Fisheries Service purview).

i. The proximity of the bridge to the Currituck National Wildlife Refuge would have the potential to reduce or remove foraging areas used by wintering waterfowl to feed and rest. This would come from the direct loss of wetland habitats and submerged aquatic plants (SAV).

j. There is essentially no evaluation of what the effects to waterfowl would be. At a minimum, the following potential impacts should be addressed: direct habitat loss, temporary construction impacts to include short-term noise impacts to wintering waterfowl, long-term noise effects, and potential avoidance from visual disturbance.

k. The construction of a large and high bridge perpendicular to the Atlantic coast migration corridor will cause significant mortality from direct bird strikes on the bridge and collisions with vehicles on the bridge. There is no analysis of mortality due to direct bird strikes on the bridge. The bridge should be designed to discourage birds from perching on or underneath it.

l. Because of the FHWA policy to "avoid significant encroachments, where practicable," it appears that the FHWA would be obligated to select either an Option A alternative or to select the combination alternative previously described in this letter. Information from additional floodplain studies referenced on page 3-74 would be crucial prior to selecting an option for crossing Maple Swamp. Because the existing Aydlett Road has already affected the non-tidal functions of the floodplain, the Department thinks it prudent to study the

effects of an option which both removes Aydlett Road and bridges Maple Swamp, thus representing more natural conditions.

m. The Department is concerned that the Mid-Currituck Bridge may increase the residential build-out of the roadless area at Carova, thereby stimulating public and political pressure for infrastructure improvements, including the extension of NC 12 northward. The government restraints (including the Coastal Barrier Resources Act, the National Wildlife Refuge System Improvement Act of 1997, a resolution of the NCDOT Board of Transportation, substandard lot sizes in zoning law, and the Currituck County Land Use Plan) listed in the DEIS to prevent this extension could change over time, making the extension of NC 12 northward possible. This would have adverse ramifications on the management of the Currituck National Wildlife Refuge.

n. Black bears are a significant wildlife resource within the study area. The DEIS does not mention black bear. The DEIS should evaluate the effects to this keystone species.

o. There is an inconsistency with wetland acreage impacts on page 3-48 and Table 3-11 and Table S-1. Table 3-11 also does not have a note to explain the superscript number in the table.

p. The extent of logging in Maple Swamp needs to be properly documented in the DEIS and associated documents.

q. The descriptions of the platted subdivisions of Carova are confusing and inaccurate.

r. ER2 has the least impacts to fish and wildlife resources and federal trust resources. However, it is understood that since ER2 would not generate tolls, it would be very unlikely that the NCTA would be able to construct ER2. Of the four remaining build alternatives, the Department prefers MCB4/C1 with a bridge over Maple Swamp and removal of Aydlett Road.

5. US Environmental Protection Agency—June 4, 2010

a. EPA's primary environmental concerns regarding the Clean Water Act remain unresolved.

b. EPA's review has identified: significant environmental impacts to jurisdictional waters of the U.S. that should be avoided in order to protect adequately the environment, potential degradation of water quality to Currituck Sound, severe impacts to fish and wildlife resources, and indirect and cumulative effects within the project study area. Further, EPA believes that the proposed action might

cause significant environmental degradation under the Clean Water Act and Section 404(b)(1) Guidelines.

c. NCTA and FHWA need to further demonstrate that the environmental impacts to jurisdictional waters of the U.S. can be further avoided and minimized and potentially mitigated for and that water quality is not further degraded as a direct result of this project and its associated indirect and cumulative impacts. NCTA and FHWA should consider substantial changes to the recommended alternative or consideration of some other project alternative, including the improvement to existing roadway facilities.

d. Alternative MCB2/C1/A might be environmentally acceptable provided that certain 'in-kind' mitigation strategies (outlined in the agency comment letter) are adhered to within the same hydrologic cataloguing unit.

e. EPA believes that Alternative ER2 is a reasonable and feasible alternative and its potential impacts can be addressed through additional avoidance and minimization measures. ER2 should be designated as the environmentally preferred alternative.

f. General – Include long-term maintenance costs.

g. Project Purpose and Need – The traffic flow and travel time benefits from a new bridge crossing do not in the long-term outweigh the direct adverse effects to the natural environment. EPA does not believe that there have been any documented hurricane evacuation problems in this area of the Outer Banks since 1930. EPA does agree that reducing hurricane evacuation clearance times in general is a desirable goal and should be reasonably weighed against other costs, benefits and adverse environmental effects. Local planning and early warning appear to be important components to effective hurricane evacuation, including the consideration of minimizing new development along isolated and remote areas of barrier islands. The DEIS does not indicate if the N.C. Board of Transportation considers R-2576, the Mid-Currituck Bridge Study project, to be a priority project under its current priority plans and what funding could be made available for ER2 if it is selected as the preferred alternative.

h. Detailed Study Alternatives and Options – EPA requests that the FEIS include clarification as to the actual costs of a new bridge. Detailed cost assumptions and estimations should be included in the FEIS.

i. Human and Natural Resource Impacts – Some of the information contained in Table S-1 are not relevant issues (such as relocation of outdoor advertising signs and grave sites) for the comparison of alternatives.

Based on the magnitude difference in wetland and other water resource impacts, EPA believes that ER2 is the environmental preferred alternative and appears to

be the Clean Water Act Section 404 Least Environmentally Damaging Practicable Alternative (LEDPA).

The impacts to water quality are expected to be very significant. The DEIS does not fully address the fact that water quality in Currituck Sound has declined substantially in the last several decades primarily due to an increase in turbidity and nutrient loading from non-point source runoff. For purposes of differentiating the impacts between the alternatives, Section 3.3.4.3 is inadequate for fully addressing the magnitude of impacts to water habitat. The DEIS does not reference appropriate studies or supporting documentation that bridge pilings would be beneficial to the Currituck Sound ecosystem.

EPA does not consider runoff from construction, including increased turbidity, siltation, and sedimentation in aquatic habitat areas to be a 'minimal' effect. Construction impacts may not be temporary but could become permanent considering the existing water quality problems in Currituck Sound. EPA believes that only the 'top-down' method of construction would be acceptable. Moving large construction equipment and materials via NC 12 would potentially be very disruptive to local residents and have a substantial impact to local traffic. This issue is not discussed in the DEIS.

EPA believes that a full collection and treatment system is needed for any of the bridge alternatives.

The discussion concerning invasive species control at Section 3.3.5 is not adequate. To EPA's knowledge, there are few or no long-term and cost-effective successes to controlling invasive plants.

For purposes of assessing the potential indirect impacts from borrow sites needed for the proposed project alternatives, the DEIS does not provide adequate details and defers to the final design stages; additional information should be provided in the FEIS.

A conceptual mitigation plan is not included in the DEIS, and should be included in the FEIS.

j. Floodplains – Page 3-72 states that "should MCB2/B or MCB4/B be selected for implementation, additional studies would be conducted during the final design so adverse floodplain impacts.. ..could be avoided or minimized, as well as affects to groundwater hydrology, hydrological characteristics of Maple Swamp, and supported ecological functions". EPA believes that these studies should be completed prior to the issuance of a FEIS. Option A (i.e., Bridging Maple Swamp) should be considered in combination with the removal of Aydlett Road. EPA does not concur with the statement concerning floodplain impacts for

MCB2/A and MCB4/A on page xxiii (that the two alternatives would involved no significant encroachment on the 100-year floodplain in the project area; that the two alternatives would not create a significant risk beyond risks associated with development on the Outer Banks and the mainland that exist today; and that the two alternatives would not have a significant adverse impact on natural and beneficial floodplain values).

k. Sea Level Rise – Raising the grade of the roadways to accommodate sea level rise estimates will increase fill heights and create additional impacts to jurisdictional water resources. EPA does not agree that a Mid-Currituck Bridge would be a useful asset in reducing the impact of sea level rise on the project's area road system. EPA does not concur with the suggestion that a breach in the island at the Currituck/Dare County line could be addressed through a new bridge. The statement that a Mid-Currituck Bridge could 'stay in service up to 75 years,' is not reasonable nor is there a reference to other similar bridge structures in the coastal plain that have lasted that period of time without significant repairs or replacement.

l. Fish and Wildlife Impacts – The discussion contained in the summary of impacts table is not a reasonable representation of the differences in the impacts between the alternatives. The bridge alternatives represent a major or severe impact to wildlife species, including direct impacts from habitat loss, habitat fragmentation, and indirect and cumulative effects. Inaccuracies concerning endangered and threatened species should be addressed in the FEIS.

m. Farmland Impacts – The DEIS does not provide a relevant discussion of North Carolina's initiatives in protecting farmlands from continued losses to development. The DEIS does not address if Currituck County is participating in the Voluntary Agricultural District (VAD) program. The DEIS does not indicate if these potential farmland losses will affect the specific operations of current agriculture and what economic impact may result.

n. Indirect and Cumulative Impacts – EPA does not concur with the statement concerning the type and density of development compared to the 'No-build alternative' and the bridge alternatives. The lack of transportation improvements and its constraint on development' statement included on Page 3-89 is not accurate or supported by actual development facts. EPA does not agree with the assessment of potential development in the Carova area.

State Agencies

1. North Carolina Department of Agriculture and Consumer Services—Agricultural Services—April 27, 2010

Based on the secondary, cumulative, and direct impacts, this project will adversely affect the agricultural, environmental, and economic resources in the proposed area. The total negative impact on the environment and agribusiness economy will be proportionately related to the total acres of farm and forest land taken out of production. Increased division of land units and its reduced accessibility for agricultural production will also increase the negative impact on agriculture. Due to these adverse impacts, additional consideration should be given to alternative routes and/or designs that would reduce the loss of farm and forest lands.

2. North Carolina Department of Cultural Resources—State Historic Preservation Office—April 16, 2010

a. The Draft Environmental Impact Statement correctly identifies the historic properties within the undertaking's Area of Potential Effects as well as the effects the undertaking would have on them. It also commits to additional archaeological survey and testing once a preferred alternative has been selected.

b. A potentially confusing use of the term "historic properties" occurs on page 3-19 and on the following pages discussing cultural resources. Making a distinction between simply old versus historic will help to avoid any confusion on the part of the reader/public.

3. North Carolina Department of Environment and Natural Resources—General—June 10, 2010

Based on the current data provided for review, there continues to be a number of weaknesses and information voids in the DEIS that will need to be addressed in order for our agencies to complete their review.

4. North Carolina Department of Environment and Natural Resources—Division of Coastal Management—June 4, 2010

a. In the future, DCM could identify these following issues as issues of concern as defined by the Section 6002 Coordination Plan for the Mid-Currituck Bridge Project STIP Project R-2576 if they are not satisfactorily addressed during the environmental review process: stormwater management, permanent and temporary impacts to sub-aquatic vegetation and habitat and associated compensatory mitigation, permanent and temporary impacts to CAMA Coastal Wetlands and associated compensatory mitigation, construction methodologies and associated permanent and temporary impacts to CAMA Areas of

Environmental Concern (AEC's), CAMA Land Use Plan conformity, and impacts of sea level rise.

b. Provision of additional detail on construction methods prior to selection of the preferred alternative is important, particularly related to dredging. Waiting until the permitting process to select final construction methods could result in substantial delay or denial of a permit.

c. Additional bridge elevation to accommodate sea level rise could have substantial impacts on the natural environment and this information should be provided before selection of the preferred alternative.

d. Consider having a 10-foot wide shoulder on only one side of the bridge.

e. Demonstrate that navigation will not be impeded.

f. Provide discussion of the NCDOT report prepared in accordance with Session Law 2008-107, Section 25.18, Stormwater Runoff from Bridges.

g. Coordinate with both the NC Division of Marine Fisheries and the NC Wildlife Resources Commission to determine dates for any fisheries moratoriums.

h. Hydrologic impacts anticipated with Option B could cause the loss or alteration of portions of the unique loblolly bay forest.

i. If temporary impacts do not recover pre- project conditions then they may need to be reclassified as permanent impacts with accompanying compensatory mitigation to be provided.

j. A CAMA major permit will be required.

k. Coordinate with the US Army Corps of Engineers and DWQ on impact of hydraulic changes with Option B on wetlands and the need for mitigation.

l. Additional information was requested related to travel time savings for multiple origin and destination combinations, how the restoration of Aydlett Road would be accomplished with Option B, outfalls into Currituck Sound along NC 12, identifying wetland impacts according to wetland type and quality, permanent and temporary impacts due to the potential dredging of Currituck Sound, how SAVs will be located and protected during construction, methods for minimizing turbidity, changes to Maple Swamp since it was logged, conceptual mitigation proposal, additional information that might be provided by DCM Transportation Projects Field Representative for NCDOT Division 1, information from additional recent sea level rise reports and forums, dimensions of the potential

breach from sea level rise at the Dare and Currituck county line, and information on the impact of sea level rise on the long-term maintenance of the alternatives.

m. Suggested corrections on pages xii (TIP R-2544/2545 is funded in the STIP), xxii (regulatory requirements), and Table 3-5 and its associated text (dredging impacts).

n. A provisional CAMA consistency determination was provided:

Option B is <u>not</u> consistent with the Currituck County 2006 LUP certified by the Coastal Resources Commission (CRC) on May 18, 2007 and amended on September 25, 2008 and June 24, 2009.

ER2 and MCB2 are <u>not</u> consistent with the Town of Duck 2004 LUP certified by the CRC on April 8, 2005.

Additional information is needed concerning protection of Natural Heritage Areas in Currituck County, anticipated shoreline stabilization, use of vegetated buffers along shorelines, anticipated wetland mitigation within the Town of Kitty Hawk, handicapped accessibility of proposed public access facilities, use of vegetated roadside swales and handling of stormwater drainage, proposed highway corridor and multi-path/trail enhancements, relocation of utilities underground, inclusion of traffic signals in Lower Currituck, and anticipated infrastructure and service needs for Currituck County.

Additional information is needed to make a consistency determination for the Town of Kitty Hawk 2004 LUP, certified by the CRC on June 2005.

The alternatives are consistent with the Town of Southern Shares 1997 LUP certified by the CRC on September 25, 1998. Which of the alternatives were found to be consistent needs to be clarified with DCM.

5. North Carolina Department of Environment and Natural Resources—Division of Environmental Health—April 8, 2010

a. Relocation and/or replacement of potable water supply lines will require engineered plans and specifications to be submitted to the Public Water Supply Section for review and approval before construction. Final approval must be issued before placing the water mains into service.

b. The Currituck County Water System and the Southern Outer Banks Water Systems have water service in the proposed project area, and should be contacted to determine precise locations of water mains such that construction does not affect utility piping or services to customers.

6. North Carolina Department of Environment and Natural Resources—Division of Marine Fisheries—May 10, 2010

a. When constructing roads in wetlands, bridge construction is the NCDMF's preferred alternative, as culverts will minimally allow hydrologic flow.

b. The NCDMF preferred alternative, that is not addressed in the DEIS, is to remove the existing Aydlett Road and construct a new bridge over Maple Swamp to allow water to flow unimpaired.

c. The NCDMF recommends C1 to minimize SAV and marsh impacts.

d. After the bridge alternative is chosen, the NCDMF requests that the applicant minimizes and avoids impacts to SAV and soft bottom habitat. If dredging is chosen as the construction method, impacts to the nursery area will occur and elevated turbidity levels may adversely affect SAV. Additional damage to SAV could also occur from bottom disturbance associated with the bridge construction (prop dredging etc). The NCDMF would request a dredging moratorium from February 15 – September 30, to ensure the environmental integrity of the area is protected during critical times of usage by finfish and invertebrates.

e. The ER2 design is the least environmentally damaging alternative, and is the NCDMF preferred alternative. If the bridge is to be constructed, the NCDMF recommends that the C1 option is selected as the Outer Banks approach design, as this design minimizes wetland and SAV impacts.

7. North Carolina Department of Environment and Natural Resources—Division of Water Quality—June 1, 2010

a. The interchange at NC 12 and US 158 (STIP Project No. R-4457) should be included in the No-Build Alternative and both MCB2 alternatives.

b. The DWQ is concerned with the effects on the macro benthos, SAV, fish and wildlife, and overall water quality of untreated stormwater runoff from the bridge. In order to obtain a 401 Water Quality Certification, the NCTA will have to provide reasonable assurance to the DWQ that the associated water protection criteria are met.

c. Detail on the characteristics, location, and impacts of off-site bridge stormwater treatment components are needed. An operation and maintenance agreement would be needed for stormwater treatment using deck filters and perhaps some detention basin options. Coordination with DWQ's stormwater permitting unit is encouraged.

d. Update the EIS to account for recent logging in Maple Swamp, including impacts to swamp hydrology and flooding. If potential land-locked parcels to be preserved have been logged, then the resource desiring protection no longer exists.

e. Consideration of SAV mitigation options should begin as soon as possible.

f. The DWQ does not view billboard relocations as a compensable impact and will not be considering them as such in determining the preferred alternative.

g. Consider modeling sea level rise in 2035, the project design year.

h. Separate comments will be provided on the suitability of the indirect and cumulative impacts assessment to meet the requirements of DWQ's Cumulative Impacts and the 401 Water Quality Certification and Isolated Wetland Permit Program.

i. Requests for the inclusion of additional information in the DEIS and all future environmental documentation included maps of jurisdictional features, what features of MCB4 might be funded by NCDOT, maps of SAVs, sea level rise map, confirmation on the use of night-time construction lighting, utilities in the area and potential relocation requirements, ponds, discussion of early corridor studies, and a more detailed land suitability map.

j. Additional clarifications or requests for information to better explain material presented on page 1-3 (congestion description), Figure 2-11 (explain black rectangles and include STIP Project R-4457), and Section 2.1.7.2 (drainage capture intentions), as well as an indication that there are no riparian buffer areas currently located within the Pasquotank River Basin.

k. The comments also included several general comments reminding NCTA of information that will be needed in association with an application for a Section 401 Water Quality Certification. They include that the environmental document should provide a detailed and itemized presentation of the proposed impacts to wetlands and streams with corresponding mapping, should provide a conceptual (if not finalized) mitigation plan, and will need to demonstrate the avoidance and minimization of impacts to wetlands (and streams) to the maximum extent practical. Mitigation will be required for impacts of greater than 150 linear feet to any single perennial or intermittent stream. All impacts, including but not limited to, bridging, fill, excavation and clearing, and rip rap to jurisdictional wetlands, streams, and riparian buffers need to be included in the final impact calculations. These impacts, in addition to any construction impacts, temporary or otherwise, also need to be included as part of the 401 Water Quality Certification Application.

l. Stormwater shall not be permitted to directly discharge into streams or surface waters.

8. North Carolina Department of Environment and Natural Resources—Natural Heritage Program—May 26, 2010

a. The Program's preference is Option B, which involves a new road at ground level, but with several wildlife underpasses and culverts.

b. The Program has little or no preference between Options C1 and C2 as neither affects known rare species or Significant Natural Heritage Areas.

c. The Program's hope is that widening on existing roads such as US 158 can be done on the sides of the existing roads opposite the natural areas, if feasible.

9. North Carolina Department of Environment and Natural Resources—Washington Regional Office—May 27, 2010

Permits associated with open burning, asbestos material, and sedimentation and erosion control during construction are needed, as well as a 401 Water Quality Certification. Compliance with Coastal Stormwater Rules is required.

10. North Carolina Department of Environment and Natural Resources—Washington Regional Office, Aquifer Protection Section—April 19, 2010

During the selection of a final preferred alternative for this project any potential impacts to any of the several permitted non-discharge wastewater treatment and disposal facilities present on the Outer Banks of Currituck County should be considered. Examples include the Ocean Sands and Monteray Shores wastewater treatment and disposal systems near the eastern terminus of bridge corridor C2. The Pine Island-Currituck Club wastewater treatment and disposal system could potentially be affected by the widening of NC 12.

11. North Carolina Department of Environment and Natural Resources—Wildlife Resources Commission—May 21, 2010

a. The bridge project has the potential to exacerbate or directly contribute to stressors in Currituck Sound related to: decline in ecosystem/habitat function, water quality, SAVs, fish and wintering waterfowl, waterbird nesting habitat, coastal marshes, and sound waters.

b. ER2 is the least damaging alternative to fish and wildlife resources in the project study area.

c. Fragmentation of Maple Swamp would have significant adverse impacts on the quality of this habitat and its use by wildlife. MCB with Option A is the least environmentally damaging of the two options.

d. With Option B, removal of several feet of muck and replacing it with a compactable soil will affect the subsurface hydrology, which could result in permanent changes in the vegetative community in Maple Swamp.

e. Wildlife crossings could be subjected to seasonal inundation, reducing their effectiveness.

f. Consider both bridging Maple Swamp and removing Aydlett Road.

g. Bridge corridor C1 would minimize impacts on fish and wildlife resources using marshes and SAV. MCB4 would minimize impacts to fish and wildlife resources compared to MCB2.

h. NCTA should coordinate with resource agencies to address potential construction impacts as soon as sufficient information becomes available.

Local Government

1. Town of Duck—May 21, 2010

a. The town favors MCB4, and believes that widening only would not meet the purpose and need for the project, and have a negative impact on the town.

b. A bridge alternative is necessary not only to meet the legislative standard evacuation time of 18 hours, but also to provide an alternative evacuation route in the event NC 12 is blocked during a severe storm event.

c. The town strongly favors the bridge alternative since it would divert a significant amount of traffic that would otherwise be required to travel through the town to reach the Currituck portion of the Outer Banks.

d. Concerns related to widening are: relocation, closing local streets to facilitate traffic flow, hazards to crossing bicyclists and pedestrians, and increases in driver speed.

e. The bridge would be consistent with the town's adopted land use plan. Widening would not be consistent with the plan.

2. Town of Nags Head—May 20, 2010

The board of commissioners passed a resolution supporting MCB4.

3. Town of Southern Shores—May 5, 2010

The board of commissioners passed a resolution supporting MCB4 and rejecting the drainage improvements associated with MCB2.

NORTH CAROLINA Turnpike Authority

Mid-Currituck Bridge Study

Currituck and Dare Counties

STIP No. R-2576

Summary of Public Participation and Comment
Handout 21—June 28, 2010

The material contained in this handout was presented at the June 28, 2010 Post-Hearing Meeting for the Mid-Currituck Bridge Study. The purpose of the Post-Hearing Meeting was to present for discussion with representatives of various North Carolina Department of Transportation (NCDOT) branches the outcomes of the public and agency comment process for the Mid-Currituck Bridge Project that will be particularly important to the selection of a Preferred Alternative and further development of the project. This material is being provided for your information and does not replace any material to be provided to the TEAC under the Section 6002 agreement. A full categorized list of public comment is being prepared and will be provided to the TEAC once it is completed.

Open Houses and Public Hearings

Three Pre-Hearing Open Houses and three Public Hearings were held on May 18, May 19, and May 20, 2010 as follows:

Date	Location	Time	Format
May 18, 2010	Ramada Plaza Nags Head Beach 1701 South Virginia Dare Trail Kill Devil Hills, NC	3:30 - 6:30PM	Open House
		7:00 - 8:33PM	Public Hearing
May 19, 2010	Outer Banks Center for Wildlife Education, Currituck Heritage Park on NC 12 Corolla, NC	3:30 - 6:30PM	Open House
		7:00 - 9:02PM	Public Hearing
May 20, 2010	Currituck County Center 120 Community Way Barco, NC	3:30 - 6:30PM	Open House
		7:00 - 8:51PM	Public Hearing

Public Hearings were held immediately following each of the Pre-Hearing Open Houses.

The open houses and public hearings were announced via a flyer, newspaper advertisements, and web site postings. On March 31, 2010, the North Carolina Turnpike Authority (NCTA) released a formal statement announcing the upcoming open houses and hearings.

A total of 13,131 project flyers were mailed. The mailing list included property owners, citizens who requested to be placed on the project mailing list, local officials, and resource agencies.

Advertisements for the open houses and hearings were included in the Outer Banks Sentinel (April 28, May 5, and May 12), Virginian Pilot (May 2, May 9, and May 16), and The Coastland Times (April 25, April 29, May 2, May 6, May 9, May 12, and May 16).

A web site for the Mid-Currituck Bridge (http://www.ncturnpike.org/projects /Mid_Currituck/) is hosted and maintained by NCTA. The schedule for the hearings and open houses was posted on the web site. In addition, all materials displayed and distributed at the Pre-Hearing Open Houses and Public Hearings were made available for download on the project web site.

The Draft Environmental Impact Statement (DEIS), associated technical reports, and the public hearing maps were available on the project web site and at eight public review locations in the project area.

Attendance

Total attendance was approximately 386 (based on sign-in sheets) across the three days of Pre-Hearing Open Houses and Public Hearings. Some citizens attended more than one Pre-Hearing Open House and Public Hearing and some citizens opted not to sign in.

Attendees were asked to sign in at a welcome table and to take a Citizens Summary, public hearing ground rules, and a comment sheet. Attendees also signed in prior to the start of each Public Hearing. Boxes for completed comment sheets were available at Station 6 and/or at the welcome table. The Citizens Summary provided a project overview, brief explanation of the DEIS, and project schedule. Contact information was provided, including the project web site address. Attendees were encouraged to view the self-running slide show that provided background on toll roads and NCTA, a brief explanation of the project, and current project status. Following the slide show, attendees viewed the public hearing maps and other displays. Several representatives from the NCTA, NCDOT, and private firms contracted by NCTA were present to assist with citizens' questions. Displays and handouts were the same for all three Open Houses.

Comments

Oral comments were delivered and recorded at the three Public Hearings. Written comments included completed comment forms distributed at the open houses, comment forms received after the open houses via fax and mail, written statements submitted at the Public Hearings, and comments received via e-mail (most through the project e-mail address: midcurrituckbridge@ncturnpike.org).

Written comments received from citizens were collected between April 5, 2010 and June 7, 2010. Any comments postmarked after June 7 were not included or summarized below, but will be reviewed and considered throughout the ongoing public involvement process. The number of comments received by source is as follows:

Comment Source	Number of Comments Received
Comment Forms	168
• Received in Person at Open Houses	50
• E-mailed, Mailed, or Faxed	118
E-mail, Letter, or Fax	345
Written Statement provided at Public Hearing	11
Town Resolutions	3
Oral Comments	70
TOTAL	597

Public Preferences

The following table displays the stated preferences and opposition from all comments received by unique individuals via comment sheets, e-mail, letters, and oral presentation. Where an individual stated a preference through multiple channels, their preference is counted once. The stated preferences are more numerous than stated opposition in part because the comment sheet questionnaire emphasized preferences.

Stated Preferences	
ER2	14
MCB	132
MCB2	27
MCB4	180
No-Build	64
C1	65
C2	93
Option A	76

Stated Preferences	
Option B	21
Center Lane Reversal for Hurricane Evacuation	113
Addition of Third Outbound Lane for Hurricane Evacuation	29

Stated Opposition	
ER2	40
MCB	50
MCB2	31
MCB4	7
No-Build	0
C1	13
C2	18
Option A	1
Option B	9
Center Lane Reversal for Hurricane Evacuation	1
Addition of Third Outbound Lane for Hurricane Evacuation	4

In considering these numbers, it is important to keep in mind that they do not represent a random sample and statistically valid poll, they do not represent a vote where the majority rules, and both majority and minority opinions are important to consider.

Based on these preferences one can see a notable number of persons favoring the No-Build Alternative and a notable number favoring MCB4. Also, there is general opposition to widening NC 12, particularly in Dare County. Preferences are divided between the two Outer Banks termini alternatives, C1 and C2. Almost all commenters favor mainland approach design Option A. In terms of hurricane evacuation improvements, commenters favor reversing the third outbound lane. Those who favor the No-Build Alternative did include comments indicating that they did not think hurricane evacuation improvements were needed.

Range of Public Comment

A broad range of comments was received in addition to the preferences indicated in the previous section. They covered a broad range of topics related to the project and its impacts. Those deemed at this time particularly important to the selection of a Preferred Alternative, including potential design refinements and additional impact assessment are presented in Handout 22.

The following sections list common comment topics under several categories. A comprehensive, categorized list of comments is being prepared and will be available once it is completed.

Purpose and Need-Related

- Roads are congested and travel time needs to be improved.
- Road congestion and long travel times are a limited problem, confined to only 26 days of the year.
- Evacuation improvements are unnecessary and evacuation improvements are needed.
- The bridge is needed for access to public services.
- There are other priority needs for government expenditure, both transportation and non-transportation.
- Who decided that identified project needs need to be addressed?
- Traffic forecasts and conclusions related to the travel benefits offered by the alternatives are incorrect.
- Weekend travel patterns associated with people picking up their keys from real estate offices is not taken into account in the traffic forecasts.
- Modern weather forecasting allows plenty of advance warning for hurricane clearance.
- Additional factors should be considered in hurricane evacuation modeling.
- Only real estate interests are advocating construction of the bridge.

Alternatives-Related

- Other Alternatives.
  - There are more cost effective ways to accomplish the project goals (than a bridge or road widening). For example, staggering check-in and check-out times will address summer weekend traffic problems.
  - Growth management is needed. Consider the principals of smart growth.
  - Build interchanges (flyovers) at US 158 and NC 168, as well as US 158 and NC12. This is the greatest need.
  - Consider other locations for the bridge, including further north and close to the Dare/Currituck County line.
- Road Widening Positives.
  - Widening would improve hurricane evacuation.
  - Widening would affect the environment less than a bridge.
  - Widening would improve traffic congestion.
- Road Widening Concerns.
  - Widening NC 12 would destroy community character and/or harm property values.
  - Widening roads is not cost effective.
  - Widening the roads creates a safety hazard.
  - Widening would be ineffective for reducing traffic and/or hurricane evacuation.

- Bridge Positives.
  - The bridge would alleviate traffic congestion.
  - The bridge would provide for improved hurricane clearance times.
  - The bridge would offer greater safety for motorists.
  - The bridge would offer greater convenience for motorists.
  - The bridge would provide economic benefits.
  - The bridge would provide better access to public services.
  - The bridge would improve travel times.
  - The bridge would have environmental benefits.
- Bridge Concerns.
  - The bridge would provide inadequate hurricane clearance time improvement.
  - The bridge would provide inadequate traffic congestion relief.
  - If the bridge were built, growth would have to be managed.
  - Many local residents do not want a bridge.
  - The bridge would hurt local property values.
  - The bridge would increase visitors to the beach and strain existing infrastructure.
  - The bridge would damage community character/quality of life.
  - The bridge would damage the environment.
  - The bridge would damage the local economy.
  - The bridge would bring noise.
  - The bridge would increase crime on the Outer Banks.
  - The bridge would be in the wrong place.
  - The bridge would damage views
  - The bridge's cost is unreasonable.
  - A Spanish firm should not build and operate the bridge.
- Bridge Corridor C1 Positives.
  - C1 would have the fewest impacts on businesses and people.
  - C1 would have the least environmental impact.
  - C1 would be shorter and/or cheaper.
  - C1 would be in the less developed corridor.
- Bridge Corridor C1 Concerns.
  - C1 would adversely affect residential neighborhoods.
  - C1 would adversely affect property values.
  - C1 would make neighborhoods along NC 12 south of the bridge dangerous.
  - C1 would cause undesirable traffic patterns.

- Bridge Corridor C2 Positives.
  - C2 would have less environmental impact.
  - C2 would enter the Outer Banks in a commercial area, an appropriate place to accommodate more traffic.
  - C2 would have fewer impacts on the local transportation network.
- Bridge Corridor C2 Concerns.
  - C2 would cost more.
  - C2 would have greater environmental impact.
  - C2 would have greater business impacts.
  - There is already too much traffic in the C2 corridor.
- Mainland Approach Road Option A and Option B.
  - Option A would have the least impact on the community of Aydlett.
  - Option B would have a significant impact on the community of Aydlett.
  - Consider passing through Aydlett at grade with Option A.
  - My property will be affected.
  - Cost should be a primary consideration to decide the corridor and attendant options.
- Hurricane Evacuation Options.
  - Reversing the center turn lane would be less expensive and cause less environmental impact.
  - A bridge would not reduce hurricane clearance times.
  - Hurricane evacuation options are not needed.
- Drainage.
  - Put drainage improvements on NC 12 immediately.
  - Do not use infiltration strips to address drainage problems, particularly in Southern Shores where they are the widest.
- Funding and Toll Related Issues.
  - The bridge would be too expensive.
  - State funds are scarce.
  - The tolls seem reasonable.
  - The toll would be too expensive.
  - Locals should pay a discounted toll.
  - The funding plan seems unreliable. State tax dollars may have to pay more debt service than anticipated.

Stakeholder Involvement-Related

- Requests were made for specific information or personal outreach.
- Comments were made regarding stakeholder outreach program and the associated public perception.
- Comments were made related to the influence of politics in the decision-making process.

Affected Environment and Environmental Consequences-Related

- Community Characteristics and Impacts.
  - General land use and what community features are in the project area.
  - Effects on neighborhood or community cohesion.
  - Effects on quality of life.
  - Grave site relocation.
  - Potential for concentrations of low income, minority populations, or limited English proficiency populations to suffer disproportionately adverse health or environmental effects.
  - Compatibility with local land use plans.
  - Effects on the existing business community, including businesses whose access would change or that would be bypassed by bridge traffic.
  - Changes in neighborhood and community access.
  - Effects on recreation opportunities (including the potential for increases in beach driving, boating in Currituck Sound, and duck blinds) and other community services and facilities.
  - Effects on bicycle and pedestrian movement and provisions, and providing bicycle access on the bridge.
  - Increased crime rates on the Outer Banks.
- Natural Resource Characteristics and Impacts.
  - Effects on water quality.
  - Effects on biotic resources and terrestrial and aquatic wildlife, including waterfowl.
  - Effects on submerged aquatic vegetation.
  - Effects on commercial fishing.
  - Effects on US Army Corps of Engineers jurisdictional areas and associated mitigation.
  - Effects on threatened and endangered species.
  - Effects on essential fish habitat.
- Other Physical Characteristics and Impacts.
  - Effects on traffic noise levels and noise abatement.
  - Effect on air quality.

  - Effects of accelerated sea level rise resulting from climate change.
  - Visual effects.
  - Effects on floodplains.
  - Effects of potential hazardous waste spills.
- Construction Impacts.
  - Procedures for waste disposal.
  - Construction traffic.
  - Contractor contact information.
- Indirect and Cumulative Effects.
  - Induced development resulting from the bridge.
  - Induced day trips resulting from the bridge, particularly those who want to drive on the beach.
  - Effect in the indirect and cumulative effects assessment's findings of the recent approval by Currituck County of a development on property owned by the Audubon Society with a density higher than what is called for in the land use plan.

NORTH CAROLINA Turnpike Authority

Mid-Currituck Bridge Study

Currituck and Dare Counties

STIP No. R-2576

Summary of Positions and Additional Needs Derived from DEIS Comments

Handout 22—June 28, 2010

The material contained in this handout was presented at the June 28, 2010 Post-Hearing Meeting for the Mid-Currituck Bridge Study. The purpose of the Post-Hearing Meeting was to present for discussion with representatives of various North Carolina Department of Transportation (NCDOT) branches the outcomes of the public and agency comment process for the Mid-Currituck Bridge Project that will be particularly important to the selection of a Preferred Alternative and further development of the project. This material is being provided for your information and does not replace any material to be provided to the TEAC under the Section 6002 agreement. The findings presented in this handout are expected to evolve as we continue to process and consider the comments, particularly the additional design refinement and additional impact assessment sections. The additional design refinement and additional impact assessment sections are based on both agency and public comment.

Positions on Detailed Study Alternative Components

1. Agencies.

   a. There is a general preference for ER2, which is viewed as having lower natural resource impact and less potential for induced development. ER2 is not financially feasible because it would involve only improvements to existing roads. Tolls cannot be collected and no project right-of-way and construction funds are in the State Transportation Improvement Program (STIP). Several agencies acknowledged the lack of funding with ER2 may not make it financially feasible.
   b. With a bridge, there is a general preference for Outer Banks terminus C1 because of less potential Currituck Sound and coastal marsh impact. Not dredging in Currituck Sound during construction is preferred.
   c. With a bridge, there is a general preference for mainland approach Option A, which would bridge Maple Swamp and is viewed as having lower natural resource and hydrologic impacts. Some commenters suggest a hybrid consisting of Option B (which includes removing Aydlett Road) with a bridge across Maple Swamp.
   d. There is no particular preference regarding hurricane evacuation.

2. Public.

   a. Preferences are divided between the No-Build Alternative and MCB4. There is general opposition to widening NC 12, particularly in Dare County, and the use of infiltration strips for drainage. Those who favor the No-Build Alternative are concerned the bridge will bring additional development, additional day visitors (particularly beach drivers), and crime. They are concerned that the unique character afforded by the relative isolation of the Currituck County Outer Banks will be lost. They feel it is worth dealing with congestion in order to retain that character. Other reasons given for favoring the No-Build Alternative include financial and natural resource impacts. Those who favor MCB4 feel the bridge is the best way to address traffic congestion and hurricane evacuation and that both are important to address. Many of those who favor the bridge live or own homes along NC 12 in Southern Shores and Duck. Many of those who oppose the bridge appear to be permanent residents of the Currituck County Outer Banks or live in Aydlett through which the mainland bridge approach would pass.
   b. Preferences are divided between the two Outer Banks termini alternatives. Those who favor C1 generally do so because the C2 bridge terminus is in a commercial area and NC 12 in that area already carries substantial traffic. Those who favor C2 are concerned about community impacts associated with C1 and feel that a commercial area is the best place to add bridge traffic.
   c. Almost all commenters favor mainland approach design Option A because it would have less impact on the mainland community of Aydlett by placing the toll plaza in an interchange at US 158 and retaining Aydlett Road.
   d. In terms of hurricane evacuation improvements, commenters either favor making no hurricane evacuation-related improvements (generally because of a belief that contemporary forecasting techniques would allow for evacuations to be ordered several days in advance) or reversing the center turn lane on US 158 which would function as a third outbound lane (as opposed to building a new outbound lane). The latter is favored because of perceived lower cost and lower environmental impact.

Additional Design Refinements Requested or Identified as Appropriate Based on Comments

1. Strategy to provide for left turns at Waterlily Road with Option A, which has toll plazas as part of the US 158 interchange.

2. Alignment refinements with the C2 terminus to reduce displacement impacts, including a commercial pier, at TimBuck II.

3. Specification of formal pedestrian crossings along NC 12, particularly near bridge terminus C1. Here pedestrians cross NC 12 between Harbor View Drive on the east and recreation facilities on the west.

4. Consideration of an alternate NC 12 widening design in association with MCB4, such as, roundabouts instead of signals at major intersections with four lanes only leading up to the roundabouts.

5. Consideration of bridge features to minimize bird strikes.

6. Consideration of a water line on the bridge was requested by Currituck County.

Additional Impact Assessment Requested or Identified as Appropriate Based on Comments

1. Hydrology—Additional assessment of hydrologic impacts on groundwater and the storm surge (100-year floodplain) when crossing Maple Swamp on fill, including taking into account changes in swamp hydrology resulting from recent clear cutting in the swamp and the effect on proposed wildlife crossings.

2. Water Quality—Mitigation plan for bridge runoff impacts and other water quality enhancement measures, including a stormwater management plan, keeping in mind that there is strong agency support for capturing and treating runoff.

3. Community Impacts.

   a. Pedestrian crossing impact of additional NC 12 traffic with the C1 terminus in the Monteray Shores area.
   b. Additional detail to aid the Division of Coastal Management in determining Coastal Area Management Act (CAMA) land use plan compatibility.
   c. Impact to businesses on US 158 of diversion of traffic to a bridge.

4. Natural Resource Impacts.

   a. Revisions of the wildlife habitat impact assessment based on recent clear cutting in Maple Swamp.
   b. Mitigation of SAV and potential SAV impacts, including impacts from shading.
   c. Additional detail on essential fish habitat impacts.
   d. Impacts on duck blinds and additional assessment of impacts to water fowl.
   e. Impacts on black bear.

5. Indirect and Cumulative Effects.

   a. Additional consideration of day trip impacts that might be associated with a Mid-Currituck Bridge, particularly as it relates beach driving.
   b. Effect on the indirect impact assessment of the recent approval by Currituck County of a development with a density higher than what is called for in the land use plan. The property to be developed is owned by the Audubon Society.
   c. Inclusion in the indirect and cumulative impact assessment of an estimate of potential development that might not occur if additional road capacity (either in the form of widened roads and/or a Mid-Currituck Bridge) is not provided. The project's traffic forecasts assume full build out in the NC 12-accessible Outer Banks within the project area. Reduced levels of development associated with inadequate road capacity would be based on assumptions (probably a range) of how much congestion can be tolerated before the growth in demand for beach houses tapers off prior to full build-out.

6. Farmland Impacts—Additional information on state and county farmland preservation policy.

7. Hurricane Evacuation—Additional information of the potential for Virginia to close their border during a hurricane evacuation.

8. Construction Impacts—Additional detail on construction activities and their impacts.

Other Factors Important to Selection of the Preferred Alternative

1. Available funding/financial feasibility of the Detailed Study Alternatives based on a nearly complete traffic and revenue study.

2. Position of Currituck and Dare County emergency management officials regarding a preferred hurricane evacuation alternative.

Comparison of Key Impacts

	ER2	MCB2/C1		MCB2/C2		MCB4/C1		MCB4/C2	
Community Impacts									
Loss of Neighborhood or Community Cohesion									
• Mainland	Minor	Visual barrier to cohesion in Aydlett				Visual barrier to cohesion in Aydlett			
• Outer Banks	Minor	Physically divides Corolla Bay subdivision		None		Physically divides Corolla Bay subdivision		None	
Relocations with and (without) a third outbound lane for hurricane evacuation[1]									
		Option A	Option B	Option A	Option B	Option A	Option B	Option A	Option B
• Homes	6 plus 10 vacation rental units (1 plus 10 vacation rental units)	6 plus 10 vacation rental units (6 plus 10 vacation rental units)	8 plus 10 vacation rental units (8 plus 10 vacation rental units)	6 plus 10 vacation rental units (6 plus 10 vacation rental units)	8 plus 10 vacation rental units (8 plus 10 vacation rental units)	5 (5)	7 (7)	5 (5)	7 (7)
• Businesses	5 (2 with no third outbound lane for hurricane evacuation)	7 (5 with no third outbound lane for hurricane evacuation)		8 (6 with no third outbound lane for hurricane evacuation)		5 (3 with no third outbound lane for hurricane evacuation)		6 (4 with no third outbound lane for hurricane evacuation)	
• Outdoor Advertising Signs	29 (none with no third outbound lane for hurricane evacuation)	6 (3 with no third outbound lane for hurricane evacuation)	16 (13 with no third outbound lane for hurricane evacuation)	6 (3 with no third outbound lane for hurricane evacuation)	16 (13 with no third outbound lane for hurricane evacuation)	6 (3 with no third outbound lane for hurricane evacuation)	16 (13 with no third outbound lane for hurricane evacuation)	6 (3 with no third outbound lane for hurricane evacuation)	16 (13 with no third outbound lane for hurricane evacuation)
• Gravesites	66 (none with no third outbound lane for hurricane evacuation)	36 (20 with no third outbound lane for hurricane evacuation)	35 (19 with no third outbound lane for hurricane evacuation)	36 (20 with no third outbound lane for hurricane evacuation)	35 (19 with no third outbound lane for hurricane evacuation)	36 (20 with no third outbound lane for hurricane evacuation)	35 (19 with no third outbound lane for hurricane evacuation)	36 (20 with no third outbound lane for hurricane evacuation)	35 (19 with no third outbound lane for hurricane evacuation)
Land Use Plan Compatibility	Inconsistent in that widening roads are not in land use plans or rejected in land use plans; but bridge is compatible					Compatible		Compatible	

[1] The first number indicates the impact assuming the construction of a third outbound lane for hurricane evacuation. The number in parentheses is the impact if improving hurricane clearance times is accomplished by reversing the existing center turn lane.

NORTH CAROLINA Turnpike Authority

Mid-Currituck Bridge Study

Currituck and Dare Counties

STIP No. R-2576

Preferred Alternative Identification Information Package

Handout 23—August 10, 2010

As per the requirements of Section 10.2 of the Section 6002 Coordination Plan for the Mid-Currituck Bridge Project, this information package includes the following sections:

- An impacts comparison matrix (introduction on page 1 and the matrix beginning on page 2);
- Responses to substantive comments on the Draft Environmental Impact Statement (DEIS) that relate to selection of the preferred alternative (beginning on page 8); and
- Other pertinent information (beginning on page 17).

Impacts Comparison Matrix

The table on the following pages presents a comparison of key impacts for the five detailed study alternatives, ER2, MCB2/C1, MCB2/C2, MCB4/C1, and MCB4/C2. It is identical to Table S-1 of the DEIS except for changes to the threatened and endangered species material so it matches what is presented in DEIS Section 3.3.8. As responses to agency and public comments are developed, it is expected that the findings of this table will change. The No-Build Alternative would not involve construction of the proposed project and, therefore, would have no direct impacts to the environment.

Figure 2-1 from the DEIS follows the table and shows the location and features of the five detailed study alternatives.

Comparison of Key Impacts (continued)

	ER2	MCB2/C1		MCB2/C2		MCB4/C1		MCB4/C2	
Natural Resource Impacts									
Water Quality Impact	Increased levels of highway runoff with 89.0 acres of increased impervious surface (53.4 acres without construction of a third outbound lane for hurricane evacuation).	Increased turbidity levels during Currituck Sound bridge construction; increased levels of bridge and highway runoff with 120.4 to 126.8 acres for Option A and 120.0 to 126.4 acres for Option B of increased impervious surface (115.2 to 121.6 acres for Option A and 114.8 to 121.2 acres for Option B without construction of a third outbound lane for hurricane evacuation).				Increased turbidity levels during Currituck Sound bridge construction; increased levels of bridge and highway runoff with 81.0 to 86.6 acres for Option A and 80.6 to 86.2 acres for Option B of increased impervious surface (74.4 to 80.0 acres for Option A and 74.0 to 79.6 acres for Option B without construction of a third outbound lane for hurricane evacuation).			
Natural Upland Biotic Communities Impact for Option A and Option B									
		Option A	Option B	Option A	Option B	Option A	Option B	Option A	Option B
• Fill in Natural and Naturalized Upland Communities[2]	85.3 acres	113.4 acres	121.7 acres	110.0 acres	118.4 acres	44.1 acres	52.4 acres	40.8 acres	49.1 acres
• Clearing Natural and Naturalized Upland Communities[2]	0.0 acre	2.7 acres	0.5 acres	2.5 acres	0.4 acres	2.7 acres	0.5 acres	2.5 acres	0.4 acres
Land Wildlife Habitat Impact	Least invasive	Removal and alteration of wildlife habitat (both by habitat use and bridging) and habitat edge effects							
Aquatic Bottom Shaded (water depths < 6 feet)	0.1 acre	14.5 acres		17.8 acres		14.5 acres		17.8 acres	
Water Wildlife Habitat Impact	Minor	Altered light levels and the introduction of piles as a hard substrate in Currituck Sound; localized noise, turbidity, and siltation during construction							

[2] Includes mixed pine-hardwood forest, hardwood forest, maritime shrub-grassland, and maritime forest.

Mid-Currituck Bridge Study Preferred Alternative Identification Information Package

Comparison of Key Impacts (continued)

	ER2	MCB2/C1	MCB2/C2	MCB4/C1	MCB4/C2
Access Changes					
• Neighborhoods	Super-street would reduce number of 4-way intersections and limit direct access across US 158 in Dare County. Along NC 12, four street intersections would be closed to through traffic but not emergency vehicles (Widgeon Drive, Wood Duck Drive, Canvas Back Drive, and Old Squaw Road). Alternate access exists. Left turns limited at Crown Point and Orion's Way on the Outer Banks with provisions for U-turns.	Same as ER2. Plus, with Option B, Aydlett traffic would use the Mid-Currituck Bridge approach road to travel to and from Aydlett, and Narrow Shore Road would be relocated to pass over a toll plaza. Access road that connects NC 12 to the north end of Harbor View on the Outer Banks would be closed.	Same as ER2. Plus, with Option B, Aydlett traffic would use the Mid-Currituck Bridge approach road to travel to and from Aydlett, and Narrow Shore Road would be relocated to pass over a toll plaza.	With Option B Aydlett traffic would use the Mid-Currituck Bridge approach road to travel to and from Aydlett, and Narrow Shore Road would be relocated to pass over a toll plaza. Left turns limited at Crown Point and Orion's Way on the Outer Banks with provisions for U-turns. Access road that connects NC 12 to the north end of Harbor View on the Outer Banks would be closed.	With Option B Aydlett traffic would use the Mid-Currituck Bridge approach road to travel to and from Aydlett, and Narrow Shore Road would be relocated to pass over a toll plaza. Left turns limited at Crown Point and Orion's Way on the Outer Banks with provisions for U-turns.
• Business	Substantial changes in business access at the US 158/NC 12 interchange; notable parking loss at Home Depot (40 spaces/ 10 percent).	Substantial changes in business access at the US 158/NC 12 interchange, but less than ER2; substantial changes in business access in the Albacore Street area in Currituck County Outer Banks. With Option B, direct access from US 158 would be lost for customers of a gas station near the end of a frontage road.	Substantial changes in business access at the US 158/NC 12 interchange, but less than ER2. With Option B, direct access from US 158 would be lost for customers of a gas station near the end of a frontage road.	Substantial changes in business access in the Albacore Street area in Currituck County. With Option B, direct access from US 158 would be lost for customers of a gas station near the end of a frontage road.	Minor except with Option B, direct access from US 158 would be lost for customers of a gas station near the end of a frontage road.

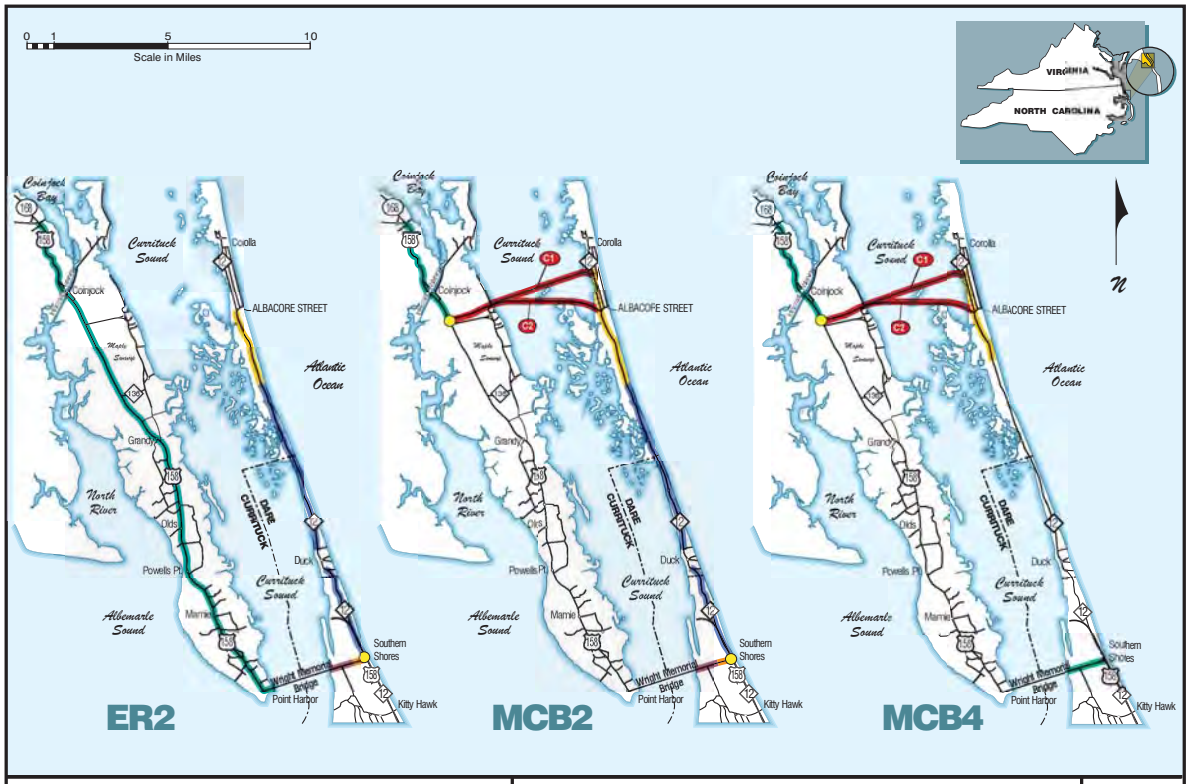
Comparison of Key Impacts (continued)

	ER2	MCB2/C1	MCB2/C2	MCB4/C1	MCB4/C2
Threatened and Endangered Species Habitat Affected	ER2 would have no effect on the eight threatened and endangered species whose habitat is present in the project area and for whom a biological conclusion is required.	May affect but is not likely to affect adversely six of the eight threatened and endangered species whose habitat is present in the project area and for whom a biological conclusion is required. They are the piping plover under USFWS jurisdiction and the West Indian manatee, green sea turtle, Kemp's ridley sea turtle, loggerhead sea turtle, and shortnose sturgeon under National Marine Fisheries Service (NMFS) jurisdiction. There would be no effect on the turtles on land under US Fish and Wildlife Service (USFWS) jurisdiction.			
Other Physical Features					
Noise Impact	Increased noise levels (up to 9 dBA) on NC 12 from US 158 to Albacore Street with pavement closer to homes, particularly in four lane sections where more motor vehicles could travel the speed limit.	Increased noise levels (up to 10 dBA) on NC 12 from US 158 to Mid-Currituck Bridge terminus with pavement closer to homes, particularly in four lane sections where more motor vehicles could travel the speed limit.		Increased noise levels (up to 10 dBA) on NC 12 from Seashell Lane to Mid-Currituck Bridge terminus with four lanes of pavement closer to homes and because more motor vehicles could travel the speed limit.	
Accelerated Sea Level Rise	Existing roads affected by sea level rise.	Existing roads would be affected by sea level rise. A Mid-Currituck Bridge would be a useful asset in reducing the impact of sea level rise on the project area's road system. Under all sea level rise scenarios considered, the entire barrier island would be inundated at the Dare/Currituck County Line, creating a breach in the island and making a Mid-Currituck Bridge the only way off the Currituck County Outer Banks.			

Comparison of Key Impacts (continued)

	ER2	MCB2/C1		MCB2/C2		MCB4/C1		MCB4/C2	
Submerged Aquatic Vegetation (SAV) Impact									
• Existing SAV Shaded	0.0 acre	4.3 acres		5.5 acres		4.3 acres		5.5 acres	
• Existing and Potential (water depths < 6 feet) SAV Shaded	0.1 acre	14.5 acres		17.8 acres		14.5 acres		17.8 acres	
Permanent Wetland Impacts for Option A and Option B with and (without) a third outbound lane for hurricane evacuation[3]									
		Option A	Option B	Option A	Option B	Option A	Option B	Option A	Option B
• Fill	5.1 (4.6) acres	12.8 (12.4) acres	42.9 (42.4) acres	10.2 (9.8) acres	40.3 (39.9) acres	8.5 (8.1) acres	38.6 (38.2) acres	5.9 (5.5) acres	36.0 (35.6) acres
• Pilings	0.0 acre	0.0 acre	0.0 acre	0.0 acre	0.0 acre	0.0 acre	0.0 acre	0.0 acre	0.0 acre
• Clearing	0.0 acre	25.7 acres	0.3 acres	30.6 acres	5.1 acres	25.8 acres	0.3 acres	30.6 acres	5.1 acres
Total Permanent Impacts	5.1 (4.6) acres	38.6 (38.2) acres	43.2 (42.8) acres	40.7 (40.3) acres	45.3 (44.9) acres	34.4 (34.0) acres	38.9 (38.5) acres	36.5 (36.1) acres	41.0 (40.6) acres
Temporary Wetland Impacts	2.1 acres	1.7 (0.0) acres	1.7 (0.0) acres	1.7 (0.0) acres	1.7 (0.0) acres	2.1 (0.0) acres	2.1 (0.0) acres	2.1 (0.0) acres	2.1 (0.0) acres
Total Wetland Impacts	7.2 (4.6) acres	40.3 (38.2) acres	44.9 (42.8) acres	42.4 (40.3) acres	47.0 (44.9) acres	36.6 (34.0) acres	41.1 (38.5) acres	38.7 (36.1) acres	43.2 (40.6) acres
Total Coastal Area Management Act (CAMA) Wetland Impacts	0.7 acre	0.7 acre		2.2 acres		0.0 acre		0.0 acres	
CAMA Areas of Environmental Concern Affected—with construction of a third outbound lane for hurricane evacuation (without third outbound lane, if different)									
• Fill	0.9 (0.8) acre	0.9acre		0.9 acre		0.0 acre		0.0 acre	
• Pilings	0.0 acre	0.1 acre		0.2 acre		0.1 acre		0.2 acre	
• Clearing	0.0 acre	0.0 acre		1.5 acres		0.0 acre		1.5 acres	
Essential Fish Habitat Affected									
• Fill	1.8 acres	1.8 acres		1.8 acres		0.0 acre		0.0 acre	
• Pilings	0.0 acre	0.1 acre		0.2 acre		0.1acre		0.2 acre	
• Shading (water depths < 6 feet)	0.1 acre	14.5 acres		17.8 acres		14.5 acres		17.8 acres	
• Clearing	0.0 acre	0.0 acre		3.2 acres		0.0 acre		3.2 acres	

[3] The first number or numbers indicate the impact assuming the construction of a third outbound lane for hurricane evacuation. The number or numbers in parentheses is the impact if improving hurricane clearance times is accomplished by reversing the existing center turn lane.



LEGEND

- Eight Lanes (Super-street)
- Six Lanes (Super-street)
- Four Lanes
- Four Lanes (Only with C1)
- Three Lanes
- Mid-Currituck Bridge
- Third Outbound Lane (Contraflow of an existing lane is an option)
- C1 / C2 Bridge Corridor Alternatives
- Interchange

NOTE: Existing 3-lane segment of NC 12 in Duck is unchanged.

Detailed Study Alternatives

Figure 2-1

Comparison of Key Impacts (concluded)

	ER2	MCB2/C1	MCB2/C2	MCB4/C1	MCB4/C2
Visual Impact	Interchange introduced into views in Kitty Hawk; changes in views along NC 12 from US 158 to Albacore Street.	Mid-Currituck Bridge features introduced into views along US 158 and in Aydlett (including views of Currituck Sound); would adversely affect views of Currituck Sound from the Corolla Bay subdivision; interchange introduced into views in Kitty Hawk; changes in views along NC 12 from US 158 to bridge terminus.	Mid-Currituck Bridge features introduced into views along US 158 and in Aydlett (including views of Currituck Sound); would adversely affect views from the outdoor recreation area at TimBuck II commercial area; interchange introduced into views in Kitty Hawk; changes in views along NC 12 from US 158 to bridge terminus.	Mid-Currituck Bridge features introduced into views along US 158 and in Aydlett (including views of Currituck Sound); would adversely affect views of Currituck Sound from the Corolla Bay subdivision; changes in views along NC 12 from Seashell Lane to bridge terminus.	Mid-Currituck Bridge features introduced into views along US 158 and in Aydlett (including views of Currituck Sound); would adversely affect views from the outdoor recreation area at TimBuck II commercial area; changes in views along NC 12 from Seashell Lane to bridge terminus.
Floodplains	No impact	No impact except with the use of mainland approach road Option B, which would result in a significant encroachment on the floodplain (as a significant alteration to a water course) by the fill placed in Maple Swamp. If selected, additional studies would be needed to determine how to avoid or minimize the associated maximum 0.2-foot increase in the 100-year storm's water surface elevation just north of the fill.			
Indirect and Cumulative Effects	Forecast development would be the predominant contributor to cumulative impacts, irrespective of whether a detailed study alternative is implemented.	Forecast development would be the predominant contributor to cumulative impacts, irrespective of whether a detailed study alternative is built. The improved accessibility to Currituck County Outer Banks with the bridge would cause the order of future development to change such that development occurs first in Currituck County and later in Dare County. However, the extent of development on the Outer Banks by 2035 would be the same with or without the bridge. In addition, in terms of indirect impacts, the presence of the bridge could result in business development in proximity to the bridge's interchange with US 158 and associated use of farmland and visual change. This development, however, is desired by Currituck County.			

Responses to Substantive Comments on the DEIS that Relate to the Selection of the Preferred Alternative

Based on agency and public comments received, the NCTA foresees working with the participating and cooperating agencies on the following decisions associated with the selection of a preferred alternative and its design features:

1. Selection of the Least Environmentally Damaging Practicable Alternative (LEDPA); and

2. Selection of practicable design and construction avoidance, minimization, and mitigation strategies for the LEDPA.

In addition to the material in this handout, NCTA has distributed four additional handouts related to public and agency comments and NCTA's response:

1. Handout 20—Summary of Agency Comments on the Draft Environmental Impact Statement (includes copies of all agency and local government comments received related to the DEIS);

2. Handout 21—Summary of Public Participation and Comment;

3. Handout 22—Summary of Positions and Additional Needs; and

4. Handout 24—Financial Feasibility Assessment of the Mid-Currituck Bridge.

Selection of the Least Environmentally Damaging Practicable Alternative

Decisions involved in the identification of the LEDPA are:

- ER2 versus MCB2 versus MCB4;
- With the selection of MCB2 or MCB4, C1 versus C2; and
- Selection of a hurricane evacuation strategy.

ER2 versus MCB2 versus MCB4

Substantive public and agency comments related to the practicability of these alternatives relate to:

- Availability of funding.

  The US Army Corps of Engineers indicated that the funding aspect for this project as it relates to practicability weighs heavily in the decision process for the LEDPA.

Response: *The only programmed and reasonably foreseeable source of funding for improvements that would meet the purpose and need for the project includes toll financing. MCB4 can be funded in this manner through a combination of revenue bonds and private financing. Tolls and annual appropriations by the General Assembly of $15 million (as appropriated starting in 2008, increasing to $28 million on July 1, 2013) could be used to fund bridge construction, operation and maintenance costs, interest and other financing costs, and repayment of debt. Components of MCB2 that are common with MCB4 could be financed in the same manner. It is not practicable to finance ER2 with tolls since tolls cannot be applied to surface streets with unlimited access. The General Assembly also has passed legislation that prohibits the tolling of existing facilities. Toll revenue and General Assembly appropriations are not sufficient to fund the additional street improvements associated with MCB2. Handout 24 is also provided to demonstrate this financial feasibility finding.*

- Alternative preferences.

  In the agency comments, there is a general preference for ER2, which is viewed as having lower natural resource impact and less potential for induced development. Several agencies acknowledged the lack of funding with ER2 may not make it financially feasible. Local governments, including Currituck County, the Towns of Nags Head, Kitty Hawk, Southern Shores, and Duck, and the Albemarle Rural Planning Organization (RPO) all support building the Mid-Currituck Bridge and/or oppose widening existing roads.

  With the public, preferences are divided between the No-Build Alternative and MCB4. There is general opposition to widening NC 12, particularly in Dare County. Few supported ER2 or MCB2. Those who favor the No-Build Alternative are concerned a bridge will bring additional development, additional day visitors (particularly beach drivers), and crime to the Currituck County Outer Banks. They are concerned that the unique character afforded by the relative isolation of the Currituck County Outer Banks will be lost. They feel it is worth dealing with congestion in order to retain that character. Other reasons given for favoring the No-Build Alternative include cost, the perceived unreasonableness of making an improvement that is needed today only on summer weekends, and natural resource impacts. Those who favor MCB4 feel the bridge is the best way to address traffic congestion and hurricane evacuation and that both needs are important to address. Many of those who favor the bridge live or own homes along NC 12 in Southern Shores and Duck. Many of those who oppose the bridge appear to be permanent residents of the Currituck County Outer Banks or live in Aydlett (through which the mainland bridge approach would pass).

  Response: *Although ER2 may meet certain aspects of the project's purpose and need (although not as well as MCB2 or MCB4, as documented in Section 2.2 of the DEIS), it also would not be practicable because it would not achieve the transportation system and*

traffic movement pattern objectives of local and state governments. This is reflected in the lack of support of ER2 by local governments, as well as support for the bridge and/or opposition to widening NC 12 in the Coastal Area Management Act (CAMA) land use plans of Currituck County, Southern Shores, and Duck. The CAMA land use plan for Currituck County assumes that the bridge will be built and indicates that the bridge is needed to alleviate traffic congestion and to assist in hurricane evacuations. CAMA in their DEIS response letter made a provisional consistency determination that ER2 and MCB2 are not consistent with the Town of Duck 2004 Land Use Plan certified by the Coastal Resources Commission (CRC) on April 8, 2005. As documented in the DEIS, a Mid-Currituck Bridge is included in the North Carolina Department of Transportation's (NCDOT) 2009 to 2015 State Transportation Improvement Program (STIP), the North Carolina Intrastate System, the North Carolina Strategic Highway Corridor Plan, and the Thoroughfare Plan for Currituck County.

Given the above financial and preference factors, NCTA recommends MCB4 for selection as a part of the LEDPA.

C1 versus C2

Substantive agency comments related to the selection of C1 versus C2 indicate a general preference for Outer Banks terminus C1 because of less potential Currituck Sound and coastal marsh impact. With the public, preferences are divided between the two Outer Banks termini alternatives. Those who favor C1 generally do so because the C2 bridge terminus is in a commercial area and NC 12 in that area already carries substantial traffic. Those who favor C2 are concerned about community impacts associated with C1 and feel that a commercial area is the best place to add bridge traffic.

Response: *NCDOT met with Currituck County representatives on July 16, 2010 to discuss issues raised by the agencies and the public related to C1 and C2. Items of discussion associated with public comment on C1 and C2 included:*

- *C1—U-turn opportunities for Ocean Forest Court, providing access to a public street for the development at the north end of Harbor View, and provisions for pedestrians crossing NC 12 at North Harbor View.*
- *C2—Commercial displacement and eliminating left turns from the secondary driveway at the TimBuck II commercial center.*

One objective of meeting with Currituck County was to discuss how to avoid, minimize, or mitigate these concerns to the satisfaction of county representatives. The preference of the agencies for C1 and the reasons were relayed to Currituck County representatives. The county manager indicated that the county would like to see the concerns raised about C1 and C2 addressed, but did not object to either corridor.

Given the above factors, NCTA recommends C1 for selection as a part of the LEDPA.

Hurricane Evacuation Strategy

The agencies indicated no particular preference regarding hurricane evacuation. The US Environmental Protection Agency (USEPA) indicated that reducing hurricane evacuation clearance times in general is a desirable goal, but should be reasonably weighed against other costs, benefits, and adverse environmental effects. Public commenters either favor making no hurricane evacuation-related improvements (generally because of a belief that contemporary forecasting techniques would allow for evacuations to be ordered several days in advance) or reversing the center turn lane on US 158 to function as a third outbound lane (as opposed to building a new outbound lane). The latter is favored because of perceived lower cost and lower environmental impact.

Response: *A recommendation on a preferred hurricane evacuation strategy appears to be primarily dependent on three items:*

- *The desires of state and local emergency management officials who did not comment on the DEIS;*
- *The decision between ER2, MCB2, and MCB4 in that emergency management officials already have taken the position that reversing the center turn lane for 25 miles, as required by ER2, would not be logistically possible. This is because of numerous opportunities to enter and exit US 158 and the volume of staff and equipment required to attempt to manage such movements so that the center turn lane could make an effective contribution to northbound evacuation capacity.*
- *Public and agency comment.*

NCTA has scheduled a meeting with state and local emergency management officials for August 19 to discuss their preferences and will provide participating and cooperating agencies with the outcome of that meeting when NCTA proposes a recommended hurricane evacuation strategy. At this time, NCTA prefers reversing the center turn lane for selection as a part of the LEDPA.

Selection of Practicable Design and Construction Avoidance, Minimization, and Mitigation Strategies

Key issues involved in the development and selection of practicable design and construction avoidance, minimization, and mitigation strategies are:

- Crossing Maple Swamp on bridge or fill;
- Construction methods; and
- Stormwater management for a Mid-Currituck Bridge.

These issues relate to the implementation of MCB4. The NCTA plans to conduct additional impact assessment and work with participating and cooperating agencies to develop conceptual avoidance, minimization, and mitigation strategies for these three issues. The findings of this effort will be included in the Final Environmental Impact Statement (FEIS). This effort will be one part of NCTA's response to comments made by the public, local government, and environmental resource and regulatory agencies.

Crossing Maple Swamp on Bridge or Fill

Substantive agency comments related to crossing Maple Swamp on bridge versus fill are:

- A strong preference was expressed for bridging Maple Swamp (as included in Option A), with the exception of the Natural Heritage Program, which prefers Option B. Option A is viewed as having lower natural resource and hydrologic impacts.
- A suggestion to both bridge Maple Swamp and remove existing Aydlett Road, combining features of Option A and Option B, respectively.
- A request for additional assessment of hydrologic impacts on groundwater and the storm surge (100-year floodplain) when crossing Maple Swamp on fill. This assessment would include taking into account changes in swamp hydrology resulting from recent clear cutting in the swamp, any removal of muck and its replacement with compatible soil, and the effect of seasonal groundwater inundation on proposed wildlife crossings.
- Continued interest in the purchase of the landlocked parcels for wetland preservation credits, as well as wetland restoration or enhancement because of the effect of logging operations (rutting, log landings, compaction, and hydrology alteration) on the landscape.
- A request for a revised habitat impact assessment that takes into account recent additional logging within and adjacent to the bridge corridor.
- A request for additional information on how the restoration of Aydlett Road would be accomplished with Option B.
- A provisional CAMA consistency determination by the NC Division of Coastal Management that Option B is not consistent with the Currituck County 2006 Land Use Plan certified by the CRC on May 18, 2007 and amended on September 25, 2008 and June 24, 2009.

The focus of the public related to crossing Maple Swamp on bridge or fill related primarily to the closure of Aydlett Road, which accompanied the use of fill in Maple

Swamp with mainland approach Option B. Almost all commenters favor mainland approach design Option A because it would have less impact on the mainland community of Aydlett, place the toll plaza in an interchange at US 158 and retain Aydlett Road. Community impact concerns expressed at the hearing were reflected in the community impact assessment of the DEIS in Sections 3.1.2, 3.1.3, and 3.1.8. The option of fill in Maple Swamp (to reduce project cost) and retaining Aydlett Road (to minimize community impacts) was raised by the public as an option important to consider.

Currituck County commissioners also passed a resolution opposing a toll plaza in Aydlett and placing Aydlett traffic on the bridge approach road. It was included in Section 3.3 of the *Stakeholder Involvement for Draft Environmental Impact Statement Technical Report* included on the CD that was a part of the DEIS. The county also is concerned about the impact of fill in Maple Swamp on flooding.

Response: *In giving additional consideration to this design issue the NCTA plans to take into account the following considerations:*

- *The closing of Aydlett Road is unacceptable to the Aydlett community and Currituck County.*
- *Using fill in Maple Swamp would reduce the project cost by over $80 million dollars as indicated in Table 2-4 of the DEIS. The amount of funding available for the project and the cost-effective use of funds are important considerations. For example, the use of funds for a bridge across Maple Swamp could preclude other mitigation investments that might better serve the long-term preservation of the value and function of Maple Swamp. Clearly the value and function of Maple Swamp is at risk from further logging by its owners.*
- *A decision on how to cross Maple Swamp and related conceptual mitigation strategies will be made in association with participating and cooperating agencies and included in the FEIS. As a part of that discussion and for the FEIS, additional stormwater and groundwater hydraulic studies will be conducted by NCTA and the habitat impact assessment will be updated to reflect recent logging. This work will be completed in conjunction with decisions on how to cross Maple Swamp*
- *Avoidance, minimization, and mitigation strategies related to crossing Maple Swamp will be discussed with the participating and cooperating agencies in the context of available funding, decisions on construction techniques, a bridge stormwater management plan, and recreational features advocated to be part of the bridge and described in Section 2.1.11 of the DEIS. The goal would be the most cost-effective use of available funds to minimize environmental impacts project-wide.*

Construction Methods

Substantive agency comments on construction methods that relate to decisions on the details of the Preferred Alternative include:

- Construction techniques to be used in Currituck Sound need to be resolved, particularly as it relates to the need for and extent of dredging in Currituck Sound and an overall priority for minimizing disturbances to the bottom of the sound. SAV disturbance was a particular concern.
- Top down construction or an approach that does not require dredging should be used.
- Waiting until the permitting process to select final construction methods could result in substantial delay or denial of a permit.
- February 15 to September 30 moratorium on dredging activities.

The public generally did not comment on construction aspects of the project. Concerns raised related to community disturbance by equipment activity (including noise) and debris removal during construction. Information on community disturbance during construction also was requested by USEPA.

Response: *NCTA understands the impacts resulting from dredging, but it was proposed in the DEIS and continues to be considered as a cost saving measure. Like Maple Swamp, impact avoidance, minimization, and mitigation strategies related to bridge construction will be discussed further with participating and cooperating agencies in the context of available funding, a bridge stormwater management plan, and recreational features advocated for the bridge and described in Section 2.1.11 of the DEIS, as well as the approach to crossing Maple Swamp. The goal is to identify the most cost-effective use of available funds while avoiding and minimizing environmental impacts project-wide.*

A decision on what construction technique or combination of techniques will be made for inclusion in the FEIS with associated impacts and conceptual mitigation strategies and commitments. Potential techniques were presented in Section 2.4 of the DEIS. Additional information related to construction techniques, including more information on the extent of dredging and comparative costs, will be presented for consideration by participating and cooperating agencies and in conjunction with decisions on construction techniques.

Stormwater Management for a Mid-Currituck Bridge

Concerns related to the impact on Currituck Sound of automotive pollutants contained in bridge runoff were expressed by both the public and the agencies. Agency comments included:

- A concerted effort to address runoff from a new bridge should be initiated.

- The impacts to water quality are expected to be very significant. Water quality in Currituck Sound has declined substantially in the last several decades primarily because of an increase in turbidity and nutrient loading from non-point source runoff. The effect on water quality of untreated stormwater runoff from the bridge is a concern.
- Provide discussion of the NCDOT report prepared in accordance with Session Law 2008-107, Section 25.18, Stormwater Runoff from Bridges.

Response: *The FEIS will include a conceptual stormwater management plan for the Mid-Currituck Bridge. It will be developed with input from participating and cooperating agencies. The strategy will take into consideration:*

- *The findings of Section 2.1.7 of the DEIS.*
- *The findings of the recently or soon-to-be released NCDOT report prepared in accordance with Session Law 2008-107, Section 25.18, Stormwater Runoff from Bridges entitled: Stormwater Runoff from Bridges, Final Report to Joint Legislation Transportation Oversight Committee In Fulfillment of Session Law 2008-107. Its findings include those of other bridge runoff characterization studies, stormwater control measures used in North Carolina and other states, the results of a bridge monitoring program to support the evaluation of bridge runoff effects, the effect of stormwater runoff from bridges, stormwater control measures (their effectiveness and cost and including a broader range of potential mitigation options than was presented in Section 2.1.7 of the DEIS).*
- *Findings currently available from the US Army Corps of Engineers(USACE) on-going study of water quality in Currituck Sound, including the report released in February 2010 entitled Currituck Sound, North Carolina Ecosystem Restoration Feasibility Study: Feasibility Scoping Meeting Report and available on-line at: http://www.saw.usace .army.mil/Currituck/FSM/Currituck%20Sound%20FSM%20Report_February% 202010_FINAL.pdf.*
- *Agency DEIS comments related to bridge runoff and the resources that could be affected.*

Discussions related to bridge runoff mitigation will be a part of our September TEAC meeting. Matt Lauffer of NCDOT, who led the effort that produced the NCDOT report prepared in accordance with Session Law 2008-107, Section 25.18, will be invited to participate. Participating and cooperating agencies are encouraged to review the NCDOT and USACE reports before the September meeting. NCTA will post the NCDOT report on the TEAC web site. Additional material for this meeting will be provided in August, two weeks prior to the meeting.

Other Pertinent Information

The responses to comments above include descriptions of additional financial analyses and development of conceptual avoidance, minimization, and mitigation strategies that will be developed for substantive comments on the DEIS that relate to the selection of the Preferred Alternative. The responses include commitments to participating and cooperating agency involvement. Other public and agency comments made that are not presented above as substantive comments related to the selection of the Preferred Alternative are described in Handouts 20 and 21. Handout 22 lists additional design refinements requested or identified as appropriate based on comments, as well as additional impact assessment requested or identified as appropriate based on comments. These comments will be addressed in the FEIS, including additional analyses and commitments to conceptual mitigation strategies as appropriate.

Following the release of the FEIS and Record of Decision, NCTA expects that it will regularly coordinate with participating and cooperating agencies to finalize avoidance, minimization, and mitigation strategies for construction and operation as a part of final design and permitting for the project.

NORTH CAROLINA Turnpike Authority

Mid-Currituck Bridge Study

Currituck and Dare Counties

STIP No. R-2576

Financial Feasibility Assessment of the Mid-Currituck Bridge Project Handout 24—August 10, 2010

In order to determine the financial feasibility of the Mid-Currituck Bridge project as a toll facility, the NCTA has estimated all costs related to the project. The expected term of the concession contract is 50 years, which will allow a private partner to participate in the financing and operations of a Mid-Currituck Bridge Project.

Project Construction Cost

As described in the Mid-Currituck Bridge DEIS (Section 2.3), the total cost range to construct each alternative was estimated. These costs including construction, environmental mitigation, right-of-way, and utility relocation:

ER2	**$416.1 to $523.4 million**
MCB2/C1	**$800.1 to $1,062.4 million**
MCB2/C2	**$802.4 to 1,065.1 million**
MCB4/C1	**$600.7 to $816.2 million**
MCB4/C2	**$595.5 to $808.6 million**

A probabilistic range was developed for each alternative considering the inherent variability in the estimating process. The following drivers will determine the final project construction cost:

- Inflation rates for materials
- Unit cost and quantities of materials
- Right of way costs
- Mitigation costs
- Utility relocation costs
- Engineering, design, and construction inspection costs
- Preliminary design level contingencies
- Toll collection methodology
- Hurricane evacuation treatment
- Interchange configuration
- Pavement design
- Bridge substructure
- Stormwater treatment
- Geometric improvements on NC 12 and US 158
- Construction methodology
- Recreational accommodations
- Others

Operations and Maintenance Costs

In order to finance the project a detailed operations and maintenance plan was developed. As described below the operations and maintenance costs will be paid using the toll revenues. Following is a listing of some of the major O&M items:

- Management of the concession
- Routine and Preventive Maintenance
- Bridge Inspection
- Bridge maintenance and repair
- Pavement maintenance and repair
- Bridge deck replacement
- Toll Operations management
- Toll Operations equipment maintenance and replacement
- Debris removal
- Drainage maintenance and replacement
- Traffic signals & ITS maintenance and replacement
- Roadway cleaning
- Cost of equipment
- Insurance
- Traffic incident Management

The estimated average annual O&M cost range: $8.7 to $10.4 million

The Net Present Value of all O&M cost during the project life has been estimated in a range of $140 to $160 Million.

Sources of Funds

The NCTA has identified two funding sources available for the alternatives considered in the Mid-Currituck Bridge Study Draft Environmental Impact Statement. The two funding sources identified are state appropriations and net toll revenues. Based on these two funding sources three financing techniques were analyzed. The three financing techniques are state appropriation bonds, toll revenue bonds, and private equity. The range of funds, available for project construction that could be obtained from these three financing techniques was calculated and presented below. A range was used because the exact amount cannot be calculated due to fluctuations in interest rates and other factors driven by the financial market. It is important to note that these funding sources are only available for a project that includes a tolled Mid-Currituck Bridge.

1. State Appropriation Bonds.

Based on the North Carolina "Current Operations and Capital Improvements Appropriations Act of 2010" as ratified by the NC General Assembly and signed by the Governor on June 30, 2010, the state will appropriate $15,000,000 annually **to be used to pay debt service or related financing expenses on revenue bonds or notes issued for the construction of the Mid-Currituck Bridge**. Therefore, this source of funds cannot be used to finance the option ER2. Effective July 1, 2013 the state appropriation amount will be raised to $28,000,000 annually. The amount of funds that could be obtained from this funding stream has been calculated assuming a forty year debt term. Forty years is typically the longest debt term that can be supported by this type of funding. After accounting for the bond financing costs and potential proceeds from the ability to invest the bond proceeds during the construction period a net bonding capacity range was calculated.

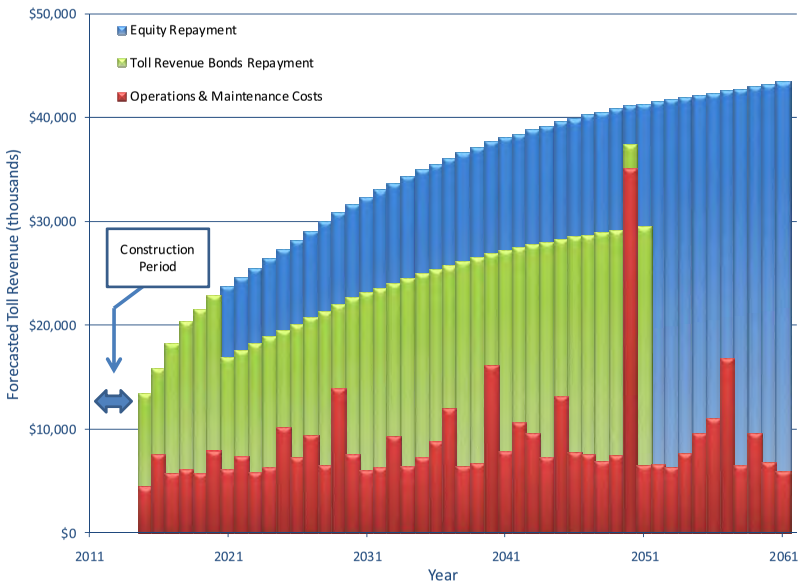
Estimated State Appropriation Bonds Capacity Range: $475 to $506 million.

2. Toll Revenue Bonds.

The "Mid-Currituck Bridge Traffic and Revenue Study, 2008 Update" completed by Wilbur Smith Associates and dated October 17, 2008 has been used to quantify the forecasted toll revenue of the Mid-Currituck Bridge project. The amount of debt that could be issued by the revenue bonds is calculated considering the cash flow to pay the yearly debt service (principal plus interest) that remains after the payment of the Operations costs. The revenue forecast considers 2015 as the project opening year to traffic, and it has been estimated through 2061. The estimated average revenues in dollars 2010 for the first ten years is $21 million per year; the revenues increase until reaching an average toll revenues of $34 million per year during the entire concession period. All the project operation and maintenance (O&M) costs during the concession period will be paid using toll revenues. An average of 30% of the revenues will be used to pay the O&M costs each year. The remaining toll revenue during the concession period will be used for debt repayment and payment of the equity return. The toll revenue bonds will be repaid during the first forty years and the majority of the private equity will be repaid during the last years of the concession period. (See the Uses of Toll Revenue graph below that explains the concept described in this paragraph.)

Estimated Toll Revenue Bonds Capacity Range: $87 to $122 million.

Uses of Toll Revenue



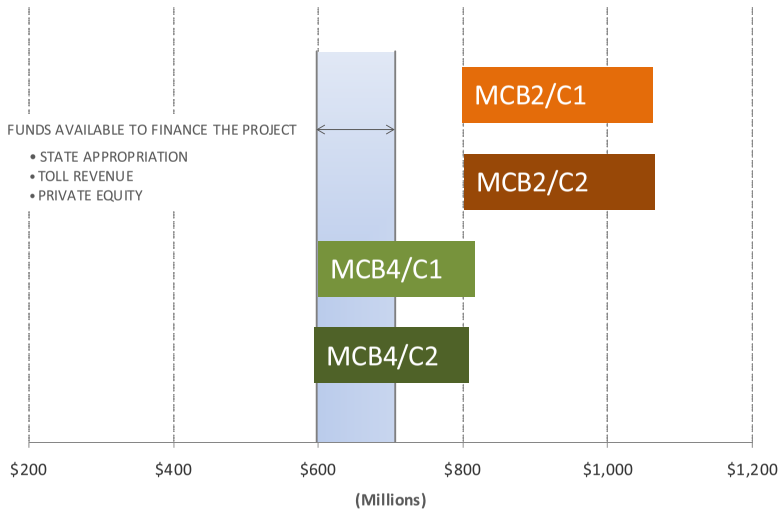
3. Private Equity.

The NCTA is considering a PPP (public private partnership) approach to finance, design, construct, operate, and maintain the project. The PPP approach assumes that a private partner will make a private equity investment to provide additional financing for the project. The amount of this investment will be based on the potential rate of return to the investor over the concession period. The private equity investment will be repaid using the toll revenue stream available after the payment of the O&M costs and the debt service of the revenue bonds. The first payment to the equity will begin 7 years after the project is open to traffic but the majority of the equity return will be paid during the final years of the concession period. (See the Uses of Toll revenue Graph above.) Based on the toll revenue funding stream and the assumed concession period of 50 years the net private equity range was calculated.

Estimated Net Private Equity Range: ***$36 to $79 million.***

Comparison of Available Funding to Construction Costs

Comparison of Available Funding to Construction Costs



Note: ER2 is not included in this graph because no funding is available for that alternative.

NORTH CAROLINA Turnpike Authority

Mid-Currituck Bridge Study

Currituck and Dare Counties

STIP No. R-2576

Reasons for a Determination that ER2 is Not a Practicable Alternative to a Bridge across Currituck Sound
Handout 25—September 8, 2010

Criteria for Practicability and Applicability

From the perspective of relevant US Environmental Protection Agency (USEPA) regulations related to practicability:

- "No discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences." (40 CFR § 230.10(a))
- "An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes." (40 CFR. § 230.10(a)(2)).
- "Where the activity is associated with a discharge which is proposed for a special aquatic site (i.e., wetlands) does not require access or proximity to or siting within the special aquatic site in question to fulfill its basic purpose (i.e., is not water dependent), practicable alternatives that do not involve special aquatic sites are presumed to be available, unless clearly demonstrated otherwise." (40 CFR § 230.10(a)(3)).

The key considerations associated with applying these regulations to the practicability of ER2 in contrast with MCB4 are:

- Will the project affect a special aquatic site (i.e., wetlands)? – **YES.**
- Is the basic project purpose (i.e., highway) water-dependent? In other words, does the project require access or proximity to or siting within the special aquatic site in question to fulfill its basic purpose? This criterion is based on the project's basic purpose, i.e., transportation, as opposed to the purpose defined in the Statement of

Purpose and Need. – **NO**. Highways are not considered water dependent because it is presumed that non-water dependent alternatives exist. (Northwest Bypass Group versus the US Army Corps of Engineers, 552 F. Supp. 2d 97 [D.N.H. 2008]; and Hoosier Environmental Council versus the US Department of Transportation, 2007 LEXIS 90840 [S.D. Ind. 2007]).

- Has the project proponent demonstrated that there are no practicable alternatives in light of overall project purposes? The overall purpose, based on the three purposes presented in the Draft Environmental Impact Statement (DEIS) of the Mid-Currituck Bridge project is to move traffic efficiently between mainland Currituck County and the Currituck County Outer Banks. Efficiency is defined in the DEIS's Statement of Purpose and Need as substantially reducing congestion, travel time, and hurricane evacuation clearance time. In terms of the practicability of ER2, this question asks whether, in light of the overall project purposes, is ER2 available and capable of being implemented in terms of cost, technology, and logistics? – The position of the North Carolina Turnpike Authority (NCTA) is **NO**.

  NCTA's "no" is based on ER2's lack of availability and capability of being built in terms of logistics. Cost is not a factor in this response since ER2 would cost less than MCB4, $416.1 to $523.4 million for ER2 versus $595.5 to $816.2 million for MCB4 as documented in Table 2-4 of the DEIS. Technology is not a factor since road building uses commonly applied technologies.

  ER2 is not logistically available and capable of being implemented for four reasons:

  1. It cannot be financed and no traditional funding is available;
  2. Widening NC 12 contradicts local and state plans;
  3. Local community opposition to widening NC 12 is strong; and
  4. Meeting the purpose and need of the project, as defined in the DEIS, is problematic.

  The remainder of this handout addresses the basis for these four reasons.

Reasons Why ER2 is Not Logistically Available and Capable of Being Implemented

It Cannot Be Financed and No Traditional Funding is Available

The NCTA has identified two funding sources available for the alternatives considered in the DEIS, state appropriations and net toll revenues. Based on these two funding sources, three financing techniques are planned, state appropriation bonds, toll revenue bonds, and private equity. The range of funds available for project construction that could be obtained from these three financing techniques was calculated and presented in

Handout 24. These funding sources are only available for a project that includes a tolled Mid-Currituck Bridge. They are not available for ER2 for the following three reasons:

1. Tolls cannot be used on local roads logistically or according to state law:

   Logistically, one cannot toll a road with driveways and connecting local streets because tolls can be evaded by using other streets. This reason would apply to ER2 in Southern Shores, where local residential streets could be used by NC 12 travelers to evade collection of tolls in Southern Shores. Also, NC 12 and US 158 serve numerous daily local trips and toll collection on these roads would result in persons paying tolls multiple times a day in the course of their daily routine. The only location on the road network where tolls logistically could be conceivably charged would be for trips across the Wright Memorial Bridge.

   However, the NCTA's enabling legislation says:

   – "The Department shall maintain an existing, alternate, comparable nontoll route corresponding to each Turnpike Project constructed pursuant to this Article." (G.S. § 136-89.197)

     There is no direct alternate route to US 158 and NC 12 for nontolled travel. One could say that US 64 might be representative of a free alternative route to the Outer Banks, but the circuitous route around Albemarle Sound would represent a substantial increase in travel time for most Wright Memorial Bridge users and is not in keeping with the intent of this requirement.

   – "The Authority Board is prohibited from converting any segment of the nontolled State highway system to a toll facility." (G.S. § 136-89.187)

     An exception to this rule has been contemplated to fund the reconstruction of I-95 in North Carolina. Also a short section of NC 540 in Wake County between NC 54 and NC 55 is currently free, but will be tolled as a part of the longer 18.8-mile Triangle Expressway. However, in both cases these are a fully access controlled roads that can be readily tolled and alternate highway routes exist (multiple alternatives in Wake County and US 301 parallels I-95).

2. State appropriations can only be spent by NCTA for a Mid-Currituck Bridge.

   Gap funding is authorized by the North Carolina Current Operations and Capital Improvements Appropriations Act of 2010 (Session Law 2010-31, "SL2010-31"). Pursuant to SL2010-31, an annual appropriation will be allocated from the Highway Trust Fund to the North Carolina Turnpike Authority to be "used to pay debt service or related financing expenses on revenue bonds or notes issued for the construction of the Mid-Currituck Bridge."

   Based on SL2010-31, gap funding cannot be used to fund ER2 for the following reasons. First, the "gap funding" is allocated to NCTA. Pursuant to G.S. § 136-89.183, the NCTA is only authorized to construct certain projects, including, "A bridge of more than two miles in length going from the mainland to a peninsula bordering the State of Virginia, . . . " ER2 does not meet the definition of a bridge and therefore NCTA cannot construct ER2. Second, the "gap funding" can only be used to pay debt service or related financing expenses on revenue bonds or notes issued for the construction of the Mid-Currituck Bridge. Again, ER2 does not qualify as the "Mid-Currituck Bridge." Third, since the NCTA is not authorized to build ER2, if ER2 was to be built, it would have to be built by NCDOT. The gap funding is not available to NCDOT, only NCTA. Even if NCDOT received the same amount as the gap funding, the additional funds would be subject to the equity formula in G.S. § 136-17.2A. Being subject to the equity formula would dilute the effectiveness of the funding.

3. Only the NC 12/US 158 interchange component of ER2 is in the *2009 to 2015 State Transportation Improvement Plan* (STIP).

   The enabling legislation for NCTA (G.S. § 136-89.183(a)2) says "A Turnpike Project selected for construction by the Turnpike Authority shall be included in any applicable locally adopted comprehensive transportation plans and shall be shown in the current State Transportation Improvement Plan prior to the letting of a contract for the Turnpike Project." As discussed below, the NC 12 widening component of ER2 contradicts local plans and local official and public opposition to widening NC 12 is strong.

Further, traditional highway funds are not available to build ER2. The STIP includes no traditional highway funds for R-2576 that could be used to build ER2. In addition, the reallocation of Division 1 funds to pay for ER2 is not a realistic proposal. In the current STIP, Division 1 is anticipated to get approximately $569 million in equity funds over a 7-year period. With an estimated cost in the neighborhood of $500 million, funding ER2 would require delaying or deleting most other projects in Division 1. The replacement of the Bonner Bridge at an anticipated cost of $300 million also is scheduled within this 7-year window. Thus, generating funding from the STIP for ER2 also would require the delay of the Bonner Bridge replacement.

Widening NC 12 Contradicts Local Plans

The North Carolina Coastal Area Management Act (CAMA) requires each of the 20 coastal counties in North Carolina to have a local land use plan that meets guidelines established by the North Carolina Coastal Resources Commission (NCCRC). Further, municipalities within coastal counties may establish land use plans independent from their respective counties. The North Carolina Department of Environment and Natural Resources, Division of Coastal Management (NCDENR-DCM), uses approved plans when making CAMA permit decisions. Proposed development must be consistent with

the local land use plan, or the NCDENR-DCM will not permit a planned development to be implemented.

ER2 would not be consistent with local CAMA plans as follows:

- The Southern Shores long-range plan specifies a Mid-Currituck Bridge as the means for reducing traffic on NC 12 in their town.
- The Division of Coastal Management, in their DEIS response letter, made a provisional consistency determination that ER2 is not consistent with the Town of Duck 2004 Land Use Plan certified by the Coastal Resources Commission (CRC) on April 8, 2005 because that plan calls for NC 12 to remain two lanes except in the downtown area where it is presently three lanes.
- The CAMA land use plan for Currituck County assumes that the bridge will be built as opposed to widening existing roads and indicates that the bridge is needed to alleviate traffic congestion and to assist in hurricane evacuations.

As noted above, only the NC 12/US 158 interchange component of ER2 is in the STIP. The *Dare County Thoroughfare Plan* (NCDOT, 1988) recommended widening the Wright Memorial Bridge to four lanes and improving US 158 from the bridge east to the US 158/NC 12 intersection. These two projects were completed during the 1990s. ER2 therefore represents a further improvement of US 158 beyond the work already completed. From the US 158/NC 12 intersection north to the Currituck County line, the 1988 plan originally recommended widening NC 12 from two lanes to three lanes, with paved shoulders for pedestrians and bicycles. This aspect of the 1988 plan was later dropped except in downtown Duck at the request of local officials.

Local Community Opposition to Widening NC 12 is Strong

A tabulation of comments received from unique individuals during the public review of the DEIS yielded 379 commenters either opposing ER2 or favoring an alternative that included a bridge. (See Handout 21.) Fourteen people favored ER2. While 88 stated that they opposed the Mid-Currituck Bridge, they tended to favor the No-Build Alternative over ER2. Overall in the comments, the stated preferences were more numerous than stated opposition in part because the comment sheet questionnaire emphasized preferences.

Local governments are unanimous in statements either opposing ER2 or favoring MCB4:

- During the DEIS comment period, the Town of Duck indicated they favor MCB4, and believes that ER2 would not meet the purpose and need for the project and would have a negative impact on the town.

- The Town of Nags Head passed a resolution during the DEIS comment period supporting MCB4. One reason given was that it would not require widening of NC 12 in Duck.
- The Town of Southern Shores board of commissioners passed a resolution during the DEIS comment period supporting MCB4 and rejecting the drainage improvements associated with ER2.
- On April 2, 2008, the Albemarle Commission adopted a resolution in support of a Mid-Currituck Bridge.
- In a March 19, 2008 letter, the Town of Duck supported a Mid-Currituck Bridge and indicated that widening of NC 12 through Duck "would be contrary to the efforts we have made to establish and maintain our Town's vision."
- On March 4, 2008, the Town of Southern Shores board of commissioners passed a resolution supporting a Mid-Currituck Bridge, financing the bridge through tolls, and opposing the widening of NC 12 in Southern Shores.
- On March 3, 2008, the Currituck County Commissioners adopted a resolution indicating their strong support of the construction of a Mid-Currituck Bridge.
- On April 9, 2008, the Town of Nags Head Board of Commissioners formed a Board consensus to support the recommendation of the NCTA on the proposed Mid-Currituck Bridge. The letter sent also included opposition to widening NC 12 north of US 158 and strongly encouraged NCTA to study bridge alternatives only.

Meeting the Purpose and Need of the Project is Problematic

All of the detailed study alternatives would meet the project purpose and need to varying degrees. Differences between the alternatives exist in terms of meeting the need for substantially improving traffic flow and substantially reducing travel time presented in Section 1.2 of the DEIS. Table 1 presents those differences for the detailed study alternatives. The percent in parentheses is the percent reduction from that with the No-Build Alternative. For all but two line items in the table, MCB4 achieves more than twice the reduction from the No-Build Alternative as ER2. As also shown in Table 1, MCB2 achieves further reductions but is the alternative with the greatest total environmental impact. It was agreed at the August 2010 TEAC meeting that it is not the Least Environmentally Damaging Practicable Alternative (LEDPA).

In terms of the need for reducing hurricane clearance times, all of the detailed study alternatives would meet this need equally well. ER2 is limited, however, in the approaches available for reducing clearance times. At a meeting of emergency management officials on August 19, 2010, participants indicated that reversing the center turn lane for 27 miles would be logistically unrealistic it terms of the personnel and equipment required to enforce the reversal so that it would operate safely. This also

was stated at earlier meetings with emergency management officials, as noted on page 2-32 of the DEIS. Emergency management officials also had concerns with the option of adding a third outbound lane, including its potential misuse when not needed for hurricane evacuation and its visual impact. ER2 would involve 25 miles of third outbound lane versus 7 miles with MCB4.

Finally, without funding for any of the ER2 components in the foreseeable future (see "It Cannot Be Financed and No Traditional Funding is Available" above), the lack of interest reflected in local plans for widening NC 12 (see "Widening NC 12 Contradicts Local Plans" above), and strong opposition from the community to widening NC 12, particularly in Dare County (see "Local Community Opposition to Widening NC 12 is Strong" above), ER2 could not meet the project's stated purpose and need because it could not be implemented in the foreseeable future, making its selection as the LEDPA equivalent to selecting the No-Build Alternative in terms of the travel service it could provide.

Table 1. Travel Benefits of Detailed Study Alternatives

	No- Build	ER2	MCB2	MCB4
2035 Traffic Flow Benefits				
Congested Annual Millions of Vehicle-Miles Traveled (VMT)				
• Total Congested VMT (millions)	66.1	51.4 (-22%)	31.4 (-52%)	40.2 (-39%)
• VMT with Traffic Demand at or Above Road Capacity (millions)	60.6	44.4 (-27%)	5.3 (-91%)	17.7 (-71%)
• VMT with Traffic Demand 30 Percent or Above Road Capacity (millions)	15.8	8.9 (-44%)	0.0 (-100%)	4.9 (-69%)
Miles of Road Operating with Traffic Demand at or Above Road Capacity				
• Summer Weekday (SWD)	14.7	5.9 (-60%)	0.0 (-100%)	5.7 (-61%)
• Summer Weekend (SWE)	43.5	39.0 (-10%)	4.8 (-89%)	11.7 (-73%)
• Weighted Average of SWD & SWE	22.9	15.4 (-33%)	1.4 (-94%)	7.4 (-68%)
Miles of Road with Traffic Demand 30 Percent or Above Road Capacity				
• Summer Weekday (SWD)	5.7	3.7 (-35%)	0.0 (-100%)	0.8 (-86%)
• Summer Weekend (SWE)	7.9	5.9 (-25%)	0.0 (-100%)	2.0 (-75%)
• Weighted Average of SWD & SWE	6.3	4.3 (-32%)	0.0 (-100%)	1.1 (-83%)
2035 Travel Time Benefit Aydlett Road to Albacore Street (in minutes)				
Summer Travel Time via Wright Memorial Bridge (weighted average of SWD & SWE)	154	125 (-19%)	86 (-44%)	107 (-31%)
Summer Travel Time via Mid-Currituck Bridge (weighted average of SWD & SWE)	N/A	N/A	11	11

NORTH CAROLINA Turnpike Authority

Mid-Currituck Bridge Study

Currituck and Dare Counties

STIP No. R-2576

Mid-Currituck Bridge Stormwater Management Handout 26—September 8, 2010

Key Findings in NCDOT's "Stormwater Runoff from Bridges" Report Related to the Environmental Impact of Stormwater Runoff

In response to Section 25.18 of House Bill 2436, NCDOT established the Bridge Stormwater Project (BSP) multidisciplinary team to assess the effect of runoff from 15 North Carolina bridge decks over waterways on receiving streams. The BSP results were compared to available literature on bridge deck runoff and to the more extensive available literature on highway runoff to determine if, and under what conditions, bridge deck runoff may affect water quality. Upstream and downstream sediment of 30 bridge sites was evaluated for streambed chemistry to identify solids that could potentially enter receiving streams through bridge deck runoff. Bridge decks were also swept to determine the concentrations of various target organic and inorganic constituents that accumulate on bridges. In addition, bioassay samples were collected at 13 bridge sites and biosurveys were conducted at 15 bridge sites to determine the toxicity of bridge deck runoff and the biological health of the receiving waters. Median unit loads and annual loading rates for the 15 BSP bridge deck runoff monitoring sites were also measured and compared to roadway annual pollutant loading rates. A weight-of-evidence (WOE) approach was used to integrate the diverse, complicated, and variable interactions associated with episodic stormwater events and the water quality of receiving streams. The WOE approach uses best professional judgment to determine if the collective results from multiple monitoring methods support or do not support a conclusion of effect.

Study Findings

The bioassay, biosurvey water chemistry, and sediment chemistry data provide multiple lines of evidence that there is no conclusive specific cause of toxicity from bridge deck runoff. However the same data indicate the following:

- Periodic toxicity does occur and may result from ambient rainwater characteristics, the storm-related application of anti-icing or de-icing materials for safety concerns, or other unmeasured toxicants.
- Occasionally, the exceedance of water quality thresholds was not consistently correlated with the expression of toxicity in samples. The identification of several pollutants (dissolved and total copper, zinc, cadmium, lead, iron, manganese, aluminum, and mercury; total suspended solids; bis (2-ethylhexyl) phthalate; and nutrients) with concentrations above established thresholds from human health and aquatic criteria in a few samples indicate a potential for toxic effects from bridge deck runoff.
- As might be expected, the data collected for the BSP do not indicate that bridge deck runoff contributes to organic or nutrient enrichment stresses.
- Biosurveys of benthic communities do not indicate any significant statistical difference upstream and downstream of the bridges; however, downstream benthic habitats often were better quality and more diverse than those found upstream due to hydromodification from concentrated flow.
- Bridge sweeping solids were not found to affect streambed sediment quality, as evidenced by the similarities in sediment chemistry upstream and downstream of bridges. Both inorganic and organic constituents were found to exceed sediment quality benchmarks, including either one or both of threshold effect concentrations (TECs) and probably effect concentrations (PECs). It is difficult to ascribe an effect or no effect concentration to a specific chemical when present in a mixture, and variations in chemical speciation, bioavailability, or the mixture of chemicals present can influence the efficiency of the derived values from these studies.
- The BSP loading study found no compelling evidence that bridge deck runoff loads (event mean concentrations or annual loading rates) in North Carolina are higher in parameters typically associated with stormwater runoff as compared to stormwater runoff loads from other roadways.

In summary, the BSP team concluded that while several parameters-of-concern (POC) from bridge deck runoff did exceed site-specific surface water quality thresholds, the additional analyses and multiple lines of evidence associated with aquatic toxicity, biological assessments, and sediment chemistry data did not indicate long-term adverse impacts from untreated bridge deck discharges.

Linking Bridge Deck Runoff Results to the Mid-Currituck Bridge

While the BSP study results indicate that effects of bridge deck runoff are comparable to highway runoff, application of the BSP study results to the Mid-Currituck Bridge must keep in mind that none of the 15 monitored bridges were over estuarine waters.

Additionally, the species used for bioassays, *Ceriodaphnia dubia*, is a freshwater species common in lakes and larger rivers and is not likely to be found in the often brackish and sometimes seawater strength salinities of Currituck Sound (the species cannot survive salinities greater than 4 parts per thousand). Of the 30 bridges evaluated for streambed chemistry, two were in the Coastal Plain but neither of the two is over estuarine waters. None of the bridges used for biosurveys are in the Coastal Plain. The AADT (average annual daily traffic) volumes on the BSP and Mid-Currituck Bridge are comparable, with an average of 16,117 vehicles per day (vpd) for the BSP study and 12,600 vpd to 22,500 vpd (summer weekend daily traffic) projected for the Mid-Currituck Bridge in 2035. Long bridges in general, and long bridges over estuarine waters in particular, were not included in the main aspects of the study.

The BSP study is comprehensive and provides strong evidence that bridge deck runoff in freshwater systems is less of actual concern than it may be perceived to be. This may also be true of bridges over estuarine waters. However, many characteristics of estuarine aquatic environments are substantially different from freshwater environments. NCDOT is currently conducting additional research associated with bridges in estuarine conditions to supplement the BSP study (personal communication with Kathy Herring, NCDOT PDEA Biological Surveys Group, August 20, 2010).

Currituck Sound Bridge Stormwater Management Strategy

All waters in the project area are designated as "SC" under North Carolina's water quality classifications by the NC Department of Environment and Natural Resources – Division of Water Quality (NCDENR-DWQ). SC waters are defined by DWQ as all tidal salt waters protected for secondary recreation such as fishing, boating, and other activities involving minimal skin contact; fish and noncommercial shellfish consumption; aquatic life propagation and survival; and wildlife. This is the minimal quality standard for saltwaters.

Currituck Sound in the project area is closed to harvesting shellfish for direct marketing purposes or human consumption. There are no water bodies classified as High Quality Waters (HQW), Outstanding Resource Waters (ORW), or Water Supply Watersheds (WS-I, WS-II) within one mile downstream of the Currituck Sound crossing. There are no Primary Nursery Areas (PNA) along the MCB4/C1 crossing of Currituck Sound. No Anadromous Fish Spawning Areas (AFSA) are crossed by the project.

The nearest coastal bridge to the proposed MCB4/C1 crossing of Currituck Sound is the four-lane Wright Memorial Bridge that carries US 158 across the southern end of Currituck Sound as it flows into Albemarle Sound. This bridge has direct discharge of bridge runoff into the receiving waters. Further to the south are the four-lane US 64 bridges over Croatan Sound and Roanoke Sound. These structures also have direct discharge of bridge runoff into receiving waters except over coastal marsh where waters are collected and piped off the bridge instead of direct discharge into these specific

receiving areas. The AADT volumes on the Wright Memorial Bridge in 2008 were approximately 26,000 vpd and on the US 64 bridges were about 18,000 vpd. Summer weekend traffic volumes on the Wright Memorial Bridge increase to around 50,000 vpd. The AADT for the Mid-Currituck Bridge in 2035 is 12,600 vpd. This volume increases to 22,500 vpd in 2035 under summer weekend conditions. The daily traffic volumes for the Mid-Currituck Bridge in the future are substantially lower than the volumes that currently use other coastal bridges in the area. These structures do not have any stormwater management provisions beyond the areas of coastal marsh.

For the proposed two-lane Mid-Currituck Bridge, the preferred stormwater management strategy will generally follow the same approach as other coastal bridges in the area that have higher volumes of traffic and additional travel lanes. Stormwater would be directly discharged into Currituck Sound except over coastal wetlands adjacent to the sound (these are not Coastal Area Management Act wetlands) on the east end of the MCB4/C1 alignment where runoff would be captured and piped off the bridge to an appropriate BMP (Best Management Practice) for treatment rather than being directly discharged into these wetlands. This capture of runoff would apply to the eastern most end of the bridge for approximately 590 feet.

Since this project is being developed as a toll facility and a public-private partnership, there is additional opportunity for bridge stormwater management. The NC Turnpike Authority (NCTA) and the private developer (Currituck Development Group – CDG) have agreed to provide equipment and personnel to clean the bridge deck surface more frequently than routinely done for other coastal bridges. NCDOT cleans bridge decks between two to four times a year. The US 64 Virginia Dare Bridge is cleaned four times a year. NCTA and CDG are strongly committed to a more frequent deck cleaning approach and this commitment would be included into the performance requirements that CDG would be required to meet during the operations period of the public private partnership (estimated to be 50 years). This aggressive cleaning program would include state of the art equipment for pollutant removal and frequency of use to ensure low pollutant discharge levels into Currituck Sound. One of the values of this approach is the collection of potential pollutants before they are suspended in water and can enter the water system.

The bridge deck cleaning equipment proposed for use on the Mid-Currituck Bridge is designed for maximum pollutant removal through the use of a state of the art bridge deck cleaner that uses both mechanical sweeping and vacuum technology in conjunction with water and/or air for the most efficient surface cleaning possible.

Advancement in street cleaning equipment in recent years has vastly improved the efficiency and effectiveness of this stormwater management strategy. Mechanical units are effective at removing large debris but less effective at smaller particles and pollutants. Vacuum units improved the removal of smaller particles and pollutants. Regenerative-air devices combine the mechanical sweeper with air pressure and a vacuum process to further the ability to collect materials and pollutants. Scrubbers and captive hydrology units use water and vacuum technology to further the efficiency of the process. The intent for the Mid-Currituck Bridge is to find the best and most effective technology that meets the needs of the project in removing pollutants from the bridge deck surface.

Research on pavement cleaning has shown that use of modern equipment with technology geared towards removal of a broad spectrum of pollutants has been effective if used frequently. Research has been focused in reducing the stormwater pollutants from roadway surfaces as part of the overall mix of runoff in urban settings. There is little specific research on bridge deck cleaning. Studies have shown urban roadway cleaning frequencies of monthly to bi-weekly as being most effective for pollutant removal. Tests have shown that greater than 90% of on-street pollutants can be removed with the more modern technologies and frequent use. Effectiveness of pavement cleaning on overall pollutant loadings in urban settings is limited because much of the pollutant runoff comes from outside the roadway. This however is not the case for the Mid-Currituck Bridge. Frequent use of appropriate bridge deck cleaning technology could be an effective stormwater management practice for this bridge as all pollutants are associated with the bridge deck and traffic alone. The initial plan is to clean the Mid-Currituck Bridge weekly following the peak summer weekend traffic period. Depending on the results of the cleaning process, the frequency of cleaning may be reduced or increased to achieve a reasonable performance result.

The estimated cost for providing this stormwater management strategy is approximately $1 million for purchase of the deck cleaning equipment and provision of the piping system over the coastal wetlands adjacent to the sound with appropriate BMP. Pipe maintenance on the east end of the bridge would be done adjacent to traffic for maintenance crews. Deck cleaning would be done from the motorized cleaning equipment. Periodic replacement of the deck cleaning equipment would be required approximately every 10 years, depending on the frequency of the cleaning activity.

Replacement equipment would be equivalent or better than the current cleaning unit. Annual operating costs would cover operator salary, fuel, and equipment upkeep/ repairs as well as routine maintenance on the piping system. Disposal of bridge debris would be in an approved landfill in accordance with local laws and regulations. Most manufacturers have alternative fuel vehicles using compressed natural gas, liquid natural gas, or liquid propane gas for the deck cleaning equipment.

Because NCTA would be entering into a legal concession agreement with CDG for operating and maintaining the Mid-Currituck Bridge, a condition of this agreement would be the satisfactory performance of the bridge deck cleaning in accordance with terms of the agreement. CDG would maintain the bridge deck cleaning equipment on-site near the toll facility. Appropriately trained personnel would be on-site to operate the equipment, as required. With the equipment and trained personnel on-site, additional deck cleaning could be done if necessary.

The Mid-Currituck Bridge and this aggressive bridge deck cleaning stormwater management approach would be an excellent opportunity for additional research on the effectiveness of bridge deck cleaning. NCTA, NCDENR-DWQ, and local universities should team to undertake a definitive study of this stormwater management approach for use on other long bridge toll projects.

Other stormwater management considerations were examined for use on the Mid-Currituck Bridge. Section 2.1.7 of the DEIS discusses three such options. The above preferred stormwater management strategy is one of the options (Option 3) but has been enhanced with the addition of frequent bridge deck cleaning. The proposed stormwater management strategy is the preferred option for the following reasons: 1) it is consistent with the findings of the NCDOT/USGS/NCDENR-DWQ study on stormwater runoff from bridges; 2) it complies with environmental requirements; and 3) it is the most cost effective solution. Neither of the other two options (discussed below) is included in this stormwater management strategy because they are not cost effective or practicable in comparison to the proposed wetland stormwater capture and deck cleaning strategy.

The first option considers establishing a central high point over Currituck Sound and draining the first inch of stormwater from the bridge to on-shore treatment facilities on both sides of the bridge. This approach would require an almost 80 foot high bridge, an extensive inlet and piping system, large on-shore treatment facilities, and additional bridge supports to carry the weight of the stormwater system. The construction and operating/maintenance cost for this system makes this approach impracticable and not worth consideration as a stormwater management strategy. Subsurface conditions and water depths in Currituck Sound make it unrealistic to consider constructing a bridge of this magnitude in this location. The cost to build this bridge would be more than double the current planned crossing of Currituck Sound. The practicality and cost of land adjacent to the bridge to accommodate the stormwater treatment facilities is another factor in the unreasonableness of this option. Maintenance activities would either be

through the inlets from the deck surface or through cleanouts under the bridge that would be accessed via a bridge snooper. Either way, maintenance crews would need to be adjacent to traffic to perform maintenance activities. Specialized maintenance equipment would be required for this cleanout process.

The second option considers using inlet based filtering devices on the bridge itself to capture and treat the first inch of runoff from each storm event. There would need to be approximately 275 units on the bridge. Based on the most current construction cost estimate, this approach costs approximately $12 million. The inlets must be cleaned out periodically and filtering devices replaced. Maintenance crews would be working adjacent to traffic to maintain these devices. Again, specialized equipment would be required. Current annual maintenance costs are estimated to be substantially more for this option than the preferred strategy at approximately $1.4 million per year. Additionally, the NCDOT/USGS/NCDENR-DWQ study of bridge runoff indicates that the benefits derived from this option do not justify its implementation and on-going maintenance costs.

Sources:

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NORTH CAROLINA Turnpike Authority

Mid-Currituck Bridge Study

Currituck and Dare Counties

STIP No. R-2576

Construction Methodologies for Mid-Currituck Bridge
Handout 27—September 8, 2010

Three basic bridge construction methods are under consideration for the Mid-Currituck Bridge across Currituck Sound. Methods under consideration include: 1) conventional bridge construction through the use of barges in the water with cranes mounted on the barges; 2) a temporary construction trestle adjacent to the new bridge for use by the contractor in building the bridge; and 3) top down construction where the bridge would be built from itself as it progresses. In reality, no one method would likely be used for the entire crossing of Currituck Sound because of site conditions and duration of construction. Instead, a combination of two or all three methods may be used in the building of the bridge. The extent of the use of the various methods depends on the relationship between construction methods, possible environmental effects, and potential permitting implications. The most economically feasible construction approach is a combination of barge-based and trestle construction with limited dredging along portions of the bridge alignment.

Barge-Based Construction

Conventional bridge construction methods over open water would include the use of barge mounted cranes to install the various bridge elements such as piles, caps, and beams. Given the shallow water depths in Currituck Sound, the use of heavy marine equipment would not be practical. However, lighter weight barges and cranes are a potential solution that could be effective for areas of deeper water (6 feet or greater) in Currituck Sound. Construction from the water allows multiple bridge activities to be progressing at the same time and generally is the fastest means of constructing the bridge.

Barge-based construction would provide the fastest and most economical bridge building solution of the three being considered. Dredging of shallow areas of Currituck

Sound along the bridge alignment is under consideration where submerged aquatic vegetation (SAV) is not present. Should dredging be permitted in Currituck Sound, this construction method could be used for a substantial length of the bridge crossing thereby maximizing the use of this effective bridge construction methodology.

Temporary Construction Trestle

Temporary trestle construction would involve the use of a work bridge that would be constructed parallel to the main bridge being built. This would be an efficient and proven construction method that would allow for multiple construction activities to be conducted concurrently or sequentially along the length of the work trestle. This method of construction would have additional temporary pile and shading impacts compared to top down construction. Temporary trestle construction would be slower than barge-based construction, faster than top down construction, and would eliminate the construction risk of single operations associated with top down construction (as explained on the following page).

Trestle-based construction could be used with either a narrow-width material supply trestle or a full-width construction trestle. The narrow-width material supply trestle would be approximately 16 feet wide. Because of site conditions, shorter spans along the main bridge would result (similar to those with top down construction). A full-width construction trestle would be approximately 34 feet wide. Because of the wider trestle, longer bridge spans would be possible for the main bridge (similar to those with barge-based construction).

Top Down Construction

Top down construction would involve construction of the bridge from itself as it advances across the open water. This is a sequential or assembly line approach to bridge building. Top down construction would reduce the amount of work to be performed from the water and would reduce construction effects in environmentally sensitive (wetlands and submerged aquatic vegetation) and shallow water areas.

This method would be slower and less flexible than more traditional construction methods as the bridge is built from one shore to the other or from the two sides and progresses to the middle. The opportunity for multiple construction activities would be

limited and the bridge elements (piles, caps, beams, deck) would be constructed in a set sequence, a single span at a time, prior to advancing construction operations to the next span. Typically this method would result in shorter spans with more piles in the water than the other methods.

Construction Methods Matrix

Seven possible combinations of construction methods have been considered for the 4.7 mile crossing of Currituck Sound along bridge corridor MCB4/C1. These seven possibilities are described on the matrix following this document and are depicted on the graphics that follow the matrix. The first two methods involve dredging along the bridge alignment on both the east and west sides of Currituck Sound in non-SAV areas. The third method only includes dredging on the west side of Currituck Sound. The remaining four methods involve no dredging. The matrix presents permanent and temporary impacts for each construction method along with the range of total project costs, bridge construction costs, project duration, and potential mitigation costs. A potential construction moratorium period for dredging has been factored into the construction schedule for the methods using dredging.

The first construction method is the most financially feasible, least costly, and fastest to construct. This method involves dredging along portions of the bridge alignment in conjunction with the use of trestle and barge construction. This method has the most construction related impacts (permanent and temporary) and highest mitigation costs of the seven methods evaluated. In contrast, the seventh construction method that uses top down construction for the entire length of the bridge is the most economically infeasible method, has the greatest project/construction costs, and the longest construction duration. The impacts and mitigation costs are nearly the same for construction methods 5, 6, and 7.

Pile Setup

Based on preliminary geotechnical investigations in Currituck Sound along the alignment of the proposed Mid-Currituck Bridge, it appears that pile installation would be relatively easy to achieve with minimal disturbance using steel pipe piles. Direct driving of the piles should be achievable without the aid of mechanisms such as jetting.

The bigger issue for construction (particularly top down construction) would be the time needed for the pile to "setup" before being

placed into use. The subsurface materials under Currituck Sound are such that once the pile is driven, the soils would need to rest to allow for sufficient resistance to develop between the pile and the soil (skin friction). It is this soil/pile resistance that gives the pile the strength to support the weight of the bridge and traffic.

The time for pile setup would vary depending on the location in Currituck Sound and more information will be learned on this matter as additional geotechnical tests are performed and analyzed. However, there are some homogenous characteristics in the nearly five miles across Currituck Sound such that pile setup time will be a substantial factor in the construction process.

In general, a larger pile would ultimately develop greater strength than a smaller pile of equal length in Currituck Sound because of the greater pile surface area for development of skin friction. However, the larger pile would have a longer setup time than a smaller pile because of greater soil resting time. The length of the pile and the soil characteristics surrounding the pile also affect the load carrying capacity of the pile. With additional geotechnical information and engineering analysis in conjunction with construction methodologies, an optimal balance between pile size/length, bridge characteristics such as span-length, and construction duration could be determined.

In areas of Currituck Sound where top down or temporary trestle construction methods might be appropriate (shallow water, SAV areas, and wetland areas), the use of several smaller piles with shorter bridge span lengths would be needed to optimize the construction schedule and economics of the bridge. In areas of Currituck Sound where traditional barge construction methods could be used (deeper water), fewer larger piles in conjunction with longer bridge spans would seem appropriate.

Pile setup times would vary from perhaps as little as two days to as long as 30 days to reach near ultimate pile capacity depending on pile size, type, shape, and location in Currituck Sound. No loads would be added to the pile while this setup process is taking place and testing would be required to analyze the pile load capacity before applying additional loads during construction.

Barge-based construction would be best relative to pile setup times. Pile installation/driving could proceed independently from other bridge construction activities and no temporary piles would be involved.

With temporary trestle construction, pile setup time would have some impact on the schedule primarily associated with the temporary piles for the trestle. However, with the trestle in place, pile driving for the main bridge could proceed while previously driven piles are developing strength. The use of the trestle would allow pile driving to be disconnected from other bridge building tasks. This is particularly true with the full-width construction trestle.

Pile setup times would have the greatest impact on the construction schedule for top down construction. The setup time would cause a delay in this assembly line construction process. Progress on placing bridge elements on the piles would be delayed and construction would be halted while piles develop needed skin friction and undergo testing.

Conclusions

The following conclusions and recommendations have been made based on this data relative to construction methods for building the Mid-Currituck Bridge across Currituck Sound:

- Barge-based construction should be used to the maximum extent practicable because of pile setup issues and to reduce overall construction costs and duration.
- Jetting of piles for installation should not be needed on the project based on currently available geotechnical information.
- Dredging in non-SAV shallow water areas would substantially reduce construction duration and construction costs. Dredging should be part of the construction approach for this bridge and would likely be subject to a time of year moratorium (February 15 to September 30).
- In SAV and wetland areas, temporary trestle construction should be used to reduce construction costs rather than top down construction.
- If dredging is not an acceptable approach for this project, then trestle (shallow water) and barge based (deep water) construction methods should be used (Method 4) to balance impacts, mitigation, duration, and costs.

NON–SAV DREDGING (EAST & WEST SIDE)

Figure # 1

TRESTLE + BARGE

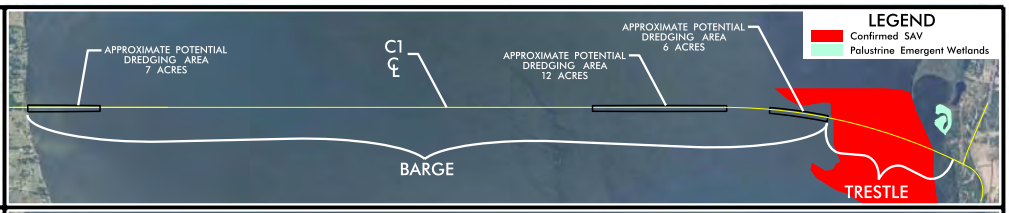
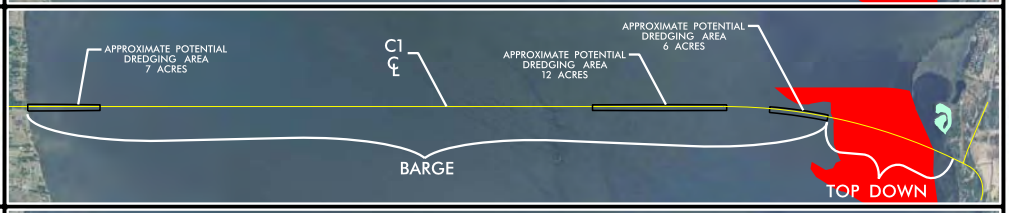


Figure # 2

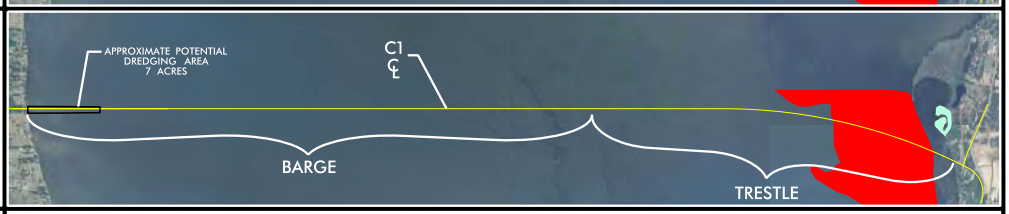
TOP DOWN + BARGE



PARTIAL DREDGING

Figure # 3

TRESTLE + BARGE

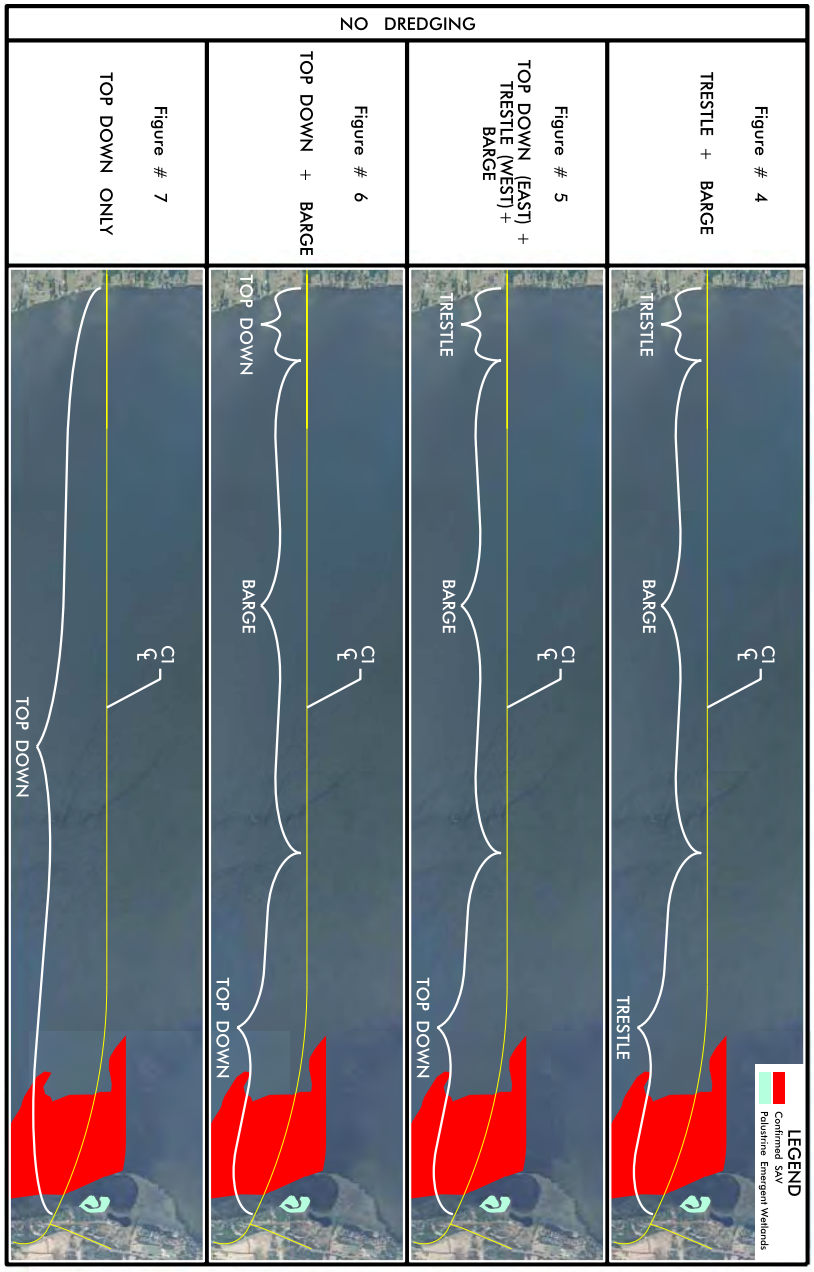


Construction Methods Matrix – Currituck Sound Bridge along MCB4 – Option C1

Construction Method(s)	Non-SAV Dredging (East and West Side)		Partial Dredging (West Side Only)	No Dredging			
	Trestle + Barge	Top Down + Barge	Trestle + Barge	Trestle + Barge	Top Down (East Side) + Trestle (West Side) + Barge	Top Down + Barge	Top Down Only
Figure Number (next sheets)	Figure #1	Figure #2	Figure #3	Figure #4	Figure #5	Figure #6	Figure #7
Conventional Barge Construction Method (bridge length and number of spans)	21,300 feet / 4.03 miles 213 spans (100 feet per span)	21,300 feet / 4.03 miles 213 spans (100 feet per span)	14,700 feet / 2.78 miles 147 spans (100 feet per span)	12,300 feet / 2.33 miles 123 spans (100 feet per span)	12,300 feet / 2.33 miles 123 spans (100 feet per span)	12,300 feet / 2.33 miles 123 spans (100 feet per span)	0 miles
Temporary Trestle Construction Method (bridge length and number of spans)	**East Side:** 3,500 feet / 0.67 miles (SAV = 2,800 feet) (Wetlands = 150 feet) (Shallow water = 550 feet) 71 spans (50 feet per span)	0 miles	**East Side**: 10,150 LF / 1.92 miles (SAV = 2,800 feet) (Wetlands = 150 feet) (Shallow water = 7,200 feet) 203 spans (50 feet per span)	**West Side**: 2,400 feet / 0.45 miles in Shallow water 48 spans (50 feet per span) **East Side**: 10,150 feet / 1.92 miles (SAV = 2,800 feet) (Wetlands = 150 feet) (Shallow water = 7,200 feet) 203 spans (50 feet per span)	**West Side**: 2,400 feet / 0.45 miles in Shallow water 48 spans (50 feet per span)	0 miles	0 miles
Top Down Construction Method (bridge length and number of spans)	0 miles	**East Side:** 3,500 feet / 0.67 miles (SAV = 2,800 feet) (Wetlands = 150 feet) (Shallow water = 550 feet) 71 spans (50 feet per span)	0 miles	0 miles	**East Side**: 10,150 feet / 1.92 miles (SAV = 2,800 feet) (Wetlands = 150 feet) (Shallow water = 7,200 feet) 203 spans (50 feet per span)	**West Side**: 2,400 feet / 0.45 miles in Shallow water 48 spans (50 feet per span) **East Side**: 10,150 feet / 1.92 miles (SAV = 2,800 feet) (Wetlands = 150 feet) (Shallow water = 7,200 feet) 203 spans (50 feet per span)	24,850 feet / 4.7 miles (SAV = 2,800 feet) (Wetlands = 150 feet) (Open water = 21,900 feet) 497 spans (50 feet per span)
SAV Impacts Permanent (piles + shading)	# of piles: 280 / 0.03 acres Shading: 3.05 acres	# of piles: 280 / 0.03 acres Shading: 3.05 acres	# of piles: 280 / 0.03 acres Shading: 3.05 acres	# of piles: 280 / 0.03 acres Shading: 3.05 acres	# of piles: 280 / 0.03 acres Shading: 3.05 acres	# of piles: 280 / 0.03 acres Shading: 3.05 acres	# of piles: 280 / 0.03 acres Shading: 3.05 acres
SAV Impacts Temporary (piles + shading)	# of piles: 336 / 0.04 acres Shading: 2.19 acres / 5-8 months	0 acres	# of piles: 336 / 0.04 acres Shading: 2.19 acres / 5-8 months	# of piles: 336 / 0.04 acres Shading: 2.19 acres / 5-8 months	0 acres	0 acres	0 acres
Wetland Impacts Permanent (piles + shading)	# of piles: 15 / 0.002 acres Shading: 0.16 acres	# of piles: 15 / 0.002 acres Shading: 0.16 acres	# of piles: 15 / 0.002 acres Shading: 0.16 acres	# of piles: 15 / 0.002 acres Shading: 0.16 acres	# of piles: 15 / 0.002 acres Shading: 0.16 acres	# of piles: 15 / 0.002 acres Shading: 0.16 acres	# of piles: 15 / 0.002 acres Shading: 0.16 acres
Wetland Impacts Temporary (piles + shading)	# of piles: 18 / 0.002 acres Shading: 0.12 acres	0 acres	# of piles: 18 / 0.002 acres Shading: 0.12 acres	# of piles: 18 / 0.002 acres Shading: 0.12 acres	0 acres	0 acres	0 acres
Non Wetland and Non SAV Impacts (piles only)	# of piles: 907 / 0.25 acres	# of piles: 907 / 0.25 acres	# of piles: 1,308 / 0.25 acres	# of piles: 1,452 / 0.25 acres	# of piles: 1,452 / 0.25 acres	# of piles: 1,452 / 0.25 acres	# of piles: 2,190/ 0.25 acres
Non Wetland and Non SAV Impacts (dredging)	7,100 feet 29 acres 53,000 cubic yards	7,100 feet 29 acres 53,000 cubic yards	2,000 feet 11 acres 30,000 cubic yards	0	0	0	0
Total Project Cost Range for MCB4/C1 (millions)[1]	$611 to $754	$641 to $784	$651 to $794	$651 to $794	$691 to $834	$691 to $834	$741 to $884
Cost of the bridge over Currituck Sound (millions)	~$290	~$320	~$330	~$330	~$370	~$370	~$420
Potential Currituck Sound Mitigation Costs (millions)	$16.0	$15.0	$9.0	$3.5	$2.5	$2.5	$2.5
Project Duration	50 months	52 months[2] (assumes <2 days per pile for setup)	61 months	64 months	79 months	78 months	84 months
Potential Dredging Moratorium (February 15 to September 30)	Included	Included	Included	Not Applicable	Not Applicable	Not Applicable	Not Applicable

1 – Available project funding is between $600 and $700 million (Black). Project options that combine to more than the available resources are financially infeasible (Red). For most construction methods there are project options that are financially feasible (Black).

2 – Project duration and cost are directly related to the length of time required for pile setup. The assumed two days is likely the shortest setup time. Longer pile setup times will extend the project duration and increase the project cost.



NORTH CAROLINA Turnpike Authority

Mid-Currituck Bridge Study

Currituck and Dare Counties

STIP No. R-2576

Assessment of Maple Swamp Groundwater System
Handout 28—November 2, 2010

Summary

Professional groundwater hydrologists reviewed available data regarding the groundwater system of Maple Swamp in Currituck County, North Carolina. Because of the very flat topography within the swamp, existing groundwater levels likely show only minimal elevation changes, and groundwater flows consequently are quite small. Assuming that the proposed Mid-Currituck Bridge Project is designed and constructed with appropriately sized culverts and/or bridges to adequately maintain surface water hydrology in Maple Swamp, existing groundwater flows and levels in the swamp essentially should be unaffected by fill in Maple Swamp.

Background

At the western (mainland) extents of the project, the proposed Mid-Currituck Bridge approach would cross a wetland area called Maple Swamp. One project alternative—Option B— assessed in the Draft Environmental Impact Statement would involve placing embankment fill in Maple Swamp to support the roadway, which extends from US 158 on the west across Maple Swamp to another topographic ridge in the east, near the community of Aydlett. Attached Figure 1 depicts the location of the proposed project across Maple Swamp, as well as the approximate limits of Maple Swamp.

As part of the environmental considerations for the project, questions have been raised by environmental resource and regulatory agencies regarding the potential effects of fill in Maple Swamp on existing groundwater hydrology within Maple Swamp. To address this issue, this handout presents a conceptualization of the Maple Swamp groundwater system, and an assessment of the likelihood for impacts on groundwater hydrology by new fill and other recent anthropogenic activities.

Maple Swamp Groundwater Hydrology

Site Topography

The project area is at the eastern limit of the Coastal Plain Physiographic/Geologic Province of North Carolina (CDG, 2009). The area generally consists of subdued topographic features (i.e., north-south oriented paleo-shoreline beach ridges) and relatively flat, low-lying terrain. This general topography can be seen in Figure 2, which depicts ground surface elevations in the area of the project west of Currituck Sound, including the relatively flat Maple Swamp bordered on either side by ridges.

As seen in Figure 2, the area of Maple Swamp to be crossed by the proposed project is very flat between the two flanking ridges, with a nearly constant ground elevation of approximately 2 feet above mean sea level (feet msl) for the entire east-west width of the swamp. The elevation in the middle of the swamp may be slightly lower than at the edges, but this potential difference appears to be at most on the order of inches. In a north-south direction, Maple Swamp very gradually slopes from the south (at approximate elevation 6 feet msl, near Macedonia Church Road) to the north (at approximate elevation 0 feet msl, adjacent to Currituck Sound). The ground surface topography of Maple Swamp and surrounding areas has a significant influence on the shallow groundwater flow system, as described below.

Regional Geological Setting

The regional geological setting near the proposed project has been described in various studies (e.g., Smith, 2003; Mallinson et al., 2005; Parham et al., 2007; CDG, 2009). In general, the uppermost geological units beneath the Maple Swamp area include the shallow aquifer system, the Yorktown confining unit, and the Yorktown aquifer. These aquifer layers are sedimentary in nature, deposited and eroded in generally horizontal strata over previous geologic ages through the action of stream flow, sea-level fluctuation, and other geological processes.

The shallow aquifer system is generally unconfined, and the water table forms the effective top of the aquifer. This shallow aquifer, which is comprised mainly of fine to medium-grained sands interbedded with layers of clays and silts, extends from ground surface to a maximum depth of approximately -95 feet msl at the project location across Maple Swamp (CDG, 2009). A thin layer of organic peat, ranging from approximately 0.5 to 2-feet thick, is present throughout most of Maple Swamp at ground surface above the surficial sands. According to the Phase 1A preliminary geotechnical investigation for the project (CDG, 2009), multiple borings along the proposed Maple Swamp crossing location showed a 10 to 20-foot-thick, possibly continuous clay layer between elevations of approximately -50 and -70 feet msl. This semi-confining feature may tend to isolate the upper 50 feet or so of shallow soils, confining the denser sands below and perhaps creating upper and lower flow zones in the shallow aquifer system.

Beneath these shallower interbedded sand and clay soils lies the Yorktown confining unit, which is described as a series of coalescing clay layers at or near the top of the Yorktown Formation (Smith, 2003). At the project location near Maple Swamp, the various references reviewed indicate that the Yorktown confining unit may be about 50-feet thick, extending from approximately elevation -95 feet msl down to -145 feet msl. Locally, this layer will provide good confinement between the shallow aquifer system and the deeper Yorktown aquifer. On a regional scale, the Yorktown confining unit is somewhat leaky and can allow vertical flow between these two aquifer systems (Smith, 2003).

The Yorktown aquifer is composed of the predominantly sandy deposits of the Yorktown Formation. The thickness of the Yorktown aquifer varies, but is approximately 100 to 200-feet thick in Currituck County. On a regional scale, the Yorktown aquifer generally thickens toward the east. Also, the top of the Yorktown Formation tends to be higher in the north than in the south, ranging from approximately -60 to -80 feet msl near Virginia Beach, to approximately -95 feet msl near the project site, and down to approximately -170 feet msl further south near Albemarle Sound (Smith, 2003; CDG, 2009).

Conceptualization of Maple Swamp Groundwater Flow System

The shallow, unconfined aquifer underlying Maple Swamp is the most critical aquifer with regard to wetland function and water levels. The deeper Yorktown aquifer is a more regional-scale feature, and because it is confined has less direct bearing on water levels in the swamp.

In general, groundwater flow patterns in the shallow aquifer of Currituck County are a reflection of surface topography. Toth (1963) defined local, intermediate, and regional groundwater flow patterns resulting from undulating topography as follows (see Figure 3):

- Regional flow patterns are defined by deep, long concentric paths from the watershed divides to the farthest extent of the discharge areas
- Local patterns are shallow, short concentric paths at the nearest edge of the discharge areas
- Intermediate flow patterns are the concentric paths between

The above description should apply well to groundwater flow patterns in the area of the project. The shallow aquifer near Maple Swamp is recharged by local precipitation. The higher-elevation sand ridge features allow precipitation to infiltrate readily, and groundwater percolates downward to the water table. The water table tends to mound beneath the sand ridges, and the mound forces freshwater to flow downward and outward toward the nearest surface water feature (e.g., river, discharging wetland, or sound).

The groundwater in the shallow aquifer is fresh (i.e., non-saline) beneath the higher recharge areas, until it discharges into and mixes with brackish water in the low-lying tidal rivers, bays, and sounds. According to data reported by Caldwell (2001), salinity measurements in Currituck Sound and its tributaries tend to vary over about one order of magnitude, but typically average approximately 2 parts per thousand, or about 5 percent of the salinity of seawater. Under normal conditions, it is expected that the majority of groundwater in Maple Swamp—particularly in the upper/southern portion of the swamp—is likely to be fresh as a result of the inflow of recharge from the surrounding ridges. Groundwater in the extreme northern end of the swamp closer to Currituck Sound might be somewhat brackish due to mixing, tidal influences, or periodic storm surges.

A conceptual model of groundwater hydrology in Maple Swamp was developed based on review of currently available information. The Toth conceptualization (Figure 3) provides a reasonable representation of regional and local groundwater flow patterns in the Coastal Plain province. More specifically at the location of Maple Swamp, conceptual hydrogeological sections were developed to depict graphically the conceptualization of typical groundwater levels and flow patterns in the swamp.

In profile view, two conceptual hydrogeological sections were prepared: one in a general east-west direction across Maple Swamp along the proposed project alignment (Figure 4); and another oriented approximately north-south, covering the roughly 6-mile length of the swamp from Macedonia Church Road in the south to Currituck Sound in the north (Figure 5). The approximate locations of these two sections are shown in plan view on Figure 1.

As seen in Figure 4, the water table of the shallow aquifer system near the project is expected to be highest beneath the two ridge features flanking Maple Swamp. The ridge to the west carrying US 158 is sometimes referred to as the Land of Promise Ridge, and the one to the east is called Powell's Ridge or Currituck Bluff (CDG, 2009). At this location within Maple Swamp, water table normally is present just slightly below ground surface at the east and west edges of the swamp, and often intersects ground surface in most of the middle area of the swamp. This likely results in periodic standing water in the center areas of the swamp and subsequent surface water discharge from the swamp via sheet flow northward into Currituck Sound.

For the east-west section (Figure 4), shallow aquifer groundwater flow is generally downward beneath the ridge mounds, then outward from the mounds in a horizontal direction, then finally upward into surface discharge areas, including the North River, Great Swamp, Maple Swamp, and Currituck Sound. Depending on the level of confinement provided by the shallow clay layer and the deeper Yorktown confining unit, groundwater flow in the deeper aquifer units may either conform to the above general description of concentric flow in the shallower soils, or may take a more regional

west-to-east flow direction toward Currituck Sound and the Atlantic Ocean (as suggested by the flow arrows in the figure).

In the north-south section (Figure 5), typical groundwater levels in the swamp will closely follow the natural shape of land surface, gradually sloping from south to north. As shown in the figure, water levels in the upper (southern) reaches of the swamp are likely to be a small depth below ground surface, while groundwater levels in the lower (northern) reaches of the swamp are expected typically to intersect ground surface. The flow gradient is oriented from south to north, but is quite small.

It is important to note that groundwater levels fluctuate based on precipitation amount, season of the year, and other factors. Water table levels tend to be higher during the wet season and following significant precipitation events, and lower during extended periods of dry weather. The water table elevations depicted in Figure 4 and Figure 5 represent one conceptualization of typical groundwater levels. Actual absolute water levels during the year could be higher or lower than those shown; however, the relative elevations shown in the sections are believed to be reasonably representative.

In summary, based on the above conceptualization, it is expected that groundwater primarily will flow into the swamp from the adjacent ridges on the east and west, and then slowly flow out of the swamp from south to north into Currituck Sound. Direct rainfall onto the swamp may contribute some additional inflow to groundwater, but this is expected to be a very small volume due to the organic surface soils, high water table (i.e., if water table is at land surface, rainfall cannot infiltrate and must run off), sheet flow discharges, and evapotranspiration.

Estimated Groundwater Flux through Maple Swamp

To complete an assessment of the potential for impact to Maple Swamp groundwater hydrology, it is useful to have an idea of the magnitude of existing groundwater flow through the swamp. A rough calculation can be made using Darcy's law in one-dimension (Bear, 1972):

$$Q = K A (h_1 - h_2) / L$$

where Q = volumetric flow rate [L^3T^{-1}]
K = hydraulic conductivity [L^1T^{-1}]
A = aquifer cross-sectional area [L^2]
$(h_1-h_2)/L$ = flow gradient, or head difference divided by aquifer length [L^1L^{-1}]

In the case of Maple Swamp, it can be assumed that approximately the upper 50 feet of the shallow aquifer system above the semi-confining clay comprises the effective subsurface groundwater flow system affecting swamp hydrology. Horizontal hydraulic conductivity values ranging from 1 to 50 feet per day are typical for fine to medium sands, while silts and clays (which are interbedded in the shallow aquifer) have much

lower hydraulic conductivities. For this calculation, a typical average hydraulic conductivity value of 20 feet per day is assumed based on the results of various aquifer tests and groundwater flow model calibrations completed in the shallow aquifer in this general region (Smith, 2003). In addition, an approximate cross-sectional area of 250,000 feet^2 (50-feet thick X 5000-feet wide) and flow gradient of 0.000125 (4 feet water table decline over 32,000-foot-long swamp) are assumed for Maple Swamp.

Using these assumed values, an estimate of the typical groundwater flux through Maple Swamp is computed as 625 feet^3/day, or 0.007 cubic feet per second (cfs). This estimate provides an indication of the relative scale of bulk groundwater movement through Maple Swamp. This approximate groundwater flow rate is orders of magnitude smaller than surface water flow rates expected in the swamp due to rainfall events, storm surges, and even sheet flow from the water table intersecting land surface.

Assessment of Groundwater Impact Potential

The above conceptual understanding of the groundwater flow system in Maple Swamp was used to complete an assessment of the expected likelihood of impacts because of the proposed project. The assessment is presented below as a series of questions of concern, followed by answers based on the conceptual modeling.

1. ***What likely effect may the proposed Mid-Currituck Bridge fill crossing (Option B) have on the groundwater hydrology of the swamp?***

A conceptual profile of the proposed fill crossing is depicted in attached Figure 6. As seen in the figure, the proposed design would include embankment fill placed in Maple Swamp between the two adjacent sand ridges. As currently proposed, construction also would include the undercutting and removal of approximately 0.5 to 2 feet of soft top soils, to be replaced by compacted granular fill. To allow for the passage of wildlife, two bridged overpasses and three culverts also are proposed for this option.

From a hydrologic perspective, the primary area of possible impact of the proposed project would be to the surface water flow system in the swamp from the proposed fill rather than to groundwater flows. However, impacts to the surface water flow system also are not expected to be substantial with proper design of the bridges and/or culverts (including culverts or pipes beyond those identified for wildlife passage) that will be included in the design across the swamp. If the proposed fill section were to be extended entirely, or mostly, across the swamp, it could act as a dam and potentially restrict surface water flows in the north-south direction. But proper design will mitigate this impact to a satisfactory level and allow surface water flows past the embankment fill. Assuming that the constructed project adequately maintains surface water hydrology in the swamp, groundwater flows and levels in Maple Swamp essentially should be unaffected.

As evidenced by the estimate of typical flux, groundwater flow rates through the swamp likely are much smaller than surface water flow rates and therefore less significant. Furthermore, groundwater flow through the swamp is primarily from south to north via the roughly 50 feet of shallow aquifer soils beneath ground surface. The placement of fill above this aquifer layer should not impede the normal flow of groundwater through the swamp. A very small portion of native soils at the proposed fill would be removed and replaced with granular soils. The hydraulic conductivity of these emplaced soils is not expected to differ greatly from the native soils (if anything, conductivity of the fill material could be greater than the organic peat and fine-grained materials near the surface), and these new fill soils would only influence a very small top portion of the groundwater aquifer cross-sectional area. As a result, the potential for this fill material to affect north-south groundwater flow is felt to be negligible.

One possible effect of the proposed fill could be to create a situation where the emplaced soils act as a French drain, allowing groundwater to flow from the east and west fringes toward the center of the swamp. This would be most likely to occur if the swamp was particularly valley-shaped and the fill material was highly conductive. Because existing ground surface is so flat across the entire east-west extent of Maple Swamp at the project location, it is felt that the potential for this effect is small. Even so, this minor possibility of increased groundwater drainage toward the center of the swamp as a result of wicking action of the granular fill material could readily be prevented, if the design team felt it necessary, through the inclusion of seepage blocks in the proposed embankment design.

With regard to groundwater levels, the only aspect of the proposed project that is expected to have the potential for significant impact would be if the existing normal daily surface water hydrology in the swamp was significantly altered. As long as the proposed design satisfactorily maintains existing daily surface water hydrology in the swamp, groundwater levels should also be effectively unchanged.

2. ***Could the new proposed fill crossing create a situation where the groundwater movement would change enough for part of the swamp to dry up and no longer be a wetland and/or no longer support its normal condition as a forested swamp?***

As described in the answer to Question 1 above, this is expected to be highly unlikely, as long as the design properly maintains surface water hydrology in the swamp.

3. ***What is the likely effect that an existing road in the forested Maple Swamp (Aydlett Road, located several hundred feet to the south of the new proposed fill) has had on the groundwater hydrology of the swamp?***

Not knowing the specific design and construction details of Aydlett Road, it is more difficult to develop an opinion on this issue; however, the same considerations described for the proposed Option B fill through the swamp also apply to Aydlett Road. From

available surface topography data (Figure 2), it appears that the original ground surface across the full width of Maple Swamp at the location of Aydlett Road was very flat, at a constant elevation of approximately 2 feet msl. As long as culverts beneath this existing road were designed and constructed to maintain satisfactorily surface water hydrology through the swamp, it is expected that Aydlett Road has had negligible effects on groundwater flows and levels in Maple Swamp. NCTA has commissioned a field verification program at Aydlett Road. Piezometers will be used to determine if the gradient across the road varies from the background gradient. Substantial differences would indicate the road is impeding groundwater flow.

4. ***What is the likely effect that extensive recent logging (taking into consideration the area logged and the condition in which it was left) has had on groundwater hydrology of the swamp? What might the recent logging have done to affect the swamp's status as a wetland, including water levels?***

Historically, Maple Swamp was entirely covered by forest. More recently, several areas of the swamp have been de-forested by private landowners for timber (see Figure 7). Our understanding is that the logging operations involved low-impact access methods to minimize rutting and minimize damage to the native soils. The main change in the swamp as a result of logging appears to be the removal of trees across large areas, and the presence of debris remaining on the ground in the logged areas.

Trees can have deep root systems and tend to transpire large volumes of groundwater. The most likely effect of extensive logging would be a potential reduction in total evapotranspiration from the swamp. Although new vegetation would grow in the de-forested areas, this likely would be dominated by smaller plant species with shallower root systems, which would not be able to reach as deeply into the surface soils to obtain water. As a result, some net reduction in evapotranspiration would still occur, modifying the water budget of the swamp and tending to increase groundwater levels in the logged areas.

As seen in Figure 7, most of the logged areas are in the northern, lower-elevation portion of Maple Swamp. Higher groundwater levels is this portion of the swamp likely mean some increase in the amount of surface water outflow from the swamp via sheet flow, because water table in the northern portion of the swamp is already near or at ground surface much of the time.

Overall, therefore, it is hypothesized that surface water outflows from the swamp may have increased slightly as a result of logging, and that groundwater flows and levels may have been very minimally affected. As the net effect of de-forestation is most likely a slight increase in groundwater levels and/or surface water outflows, the swamp's status as a wetland is not expected to have been reduced because of logging activities (i.e., water levels probably have not declined).

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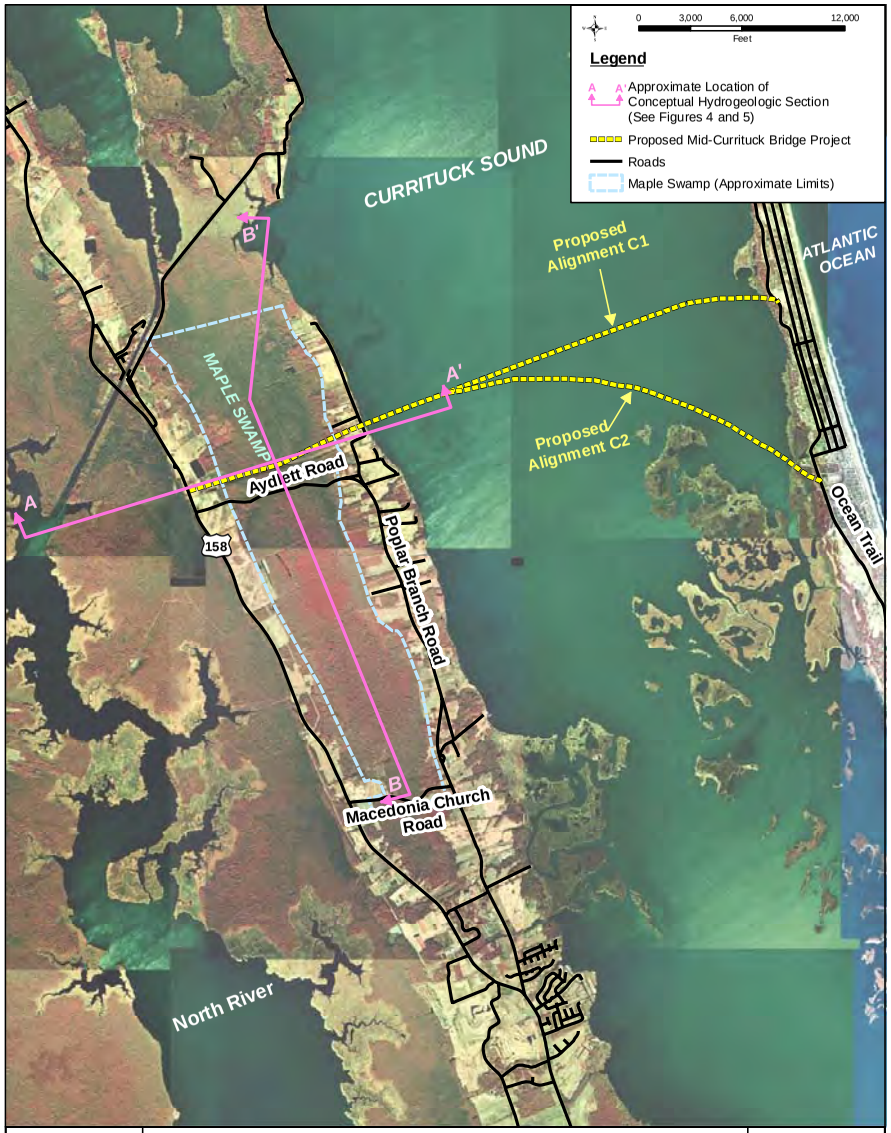
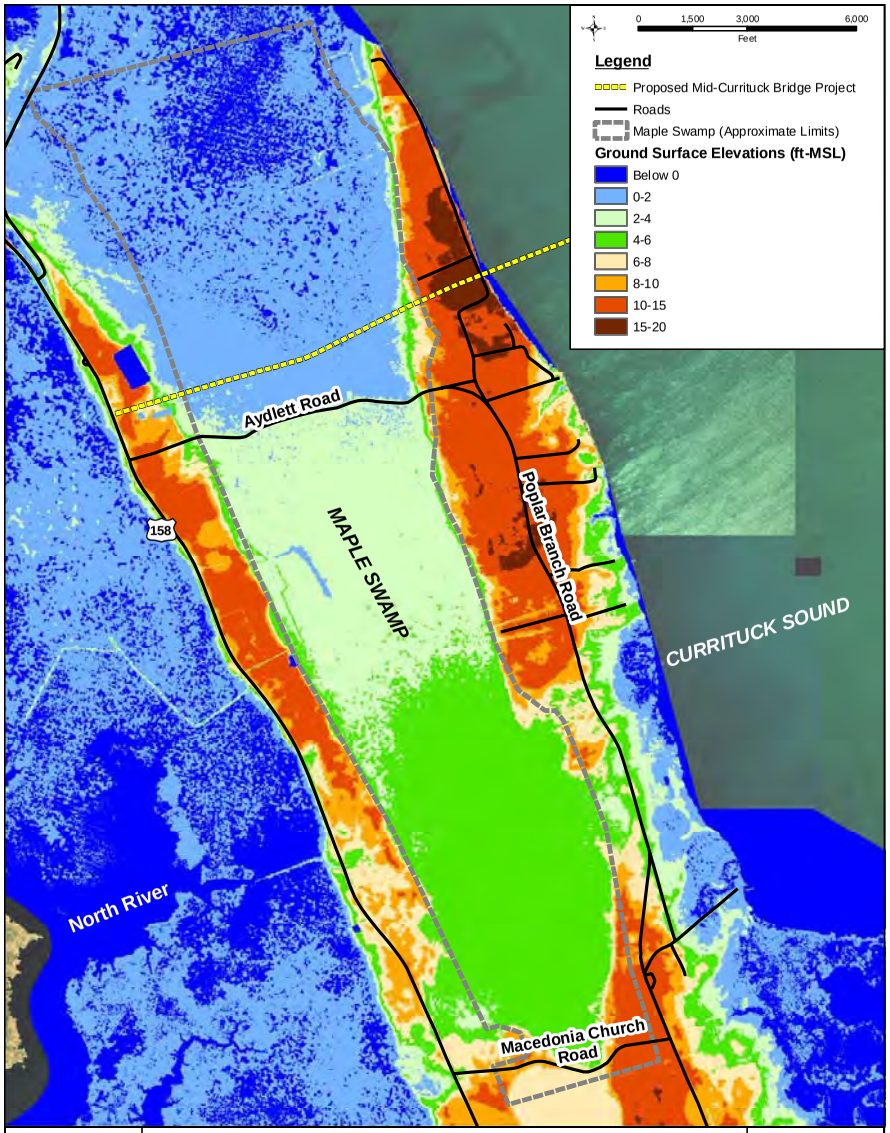
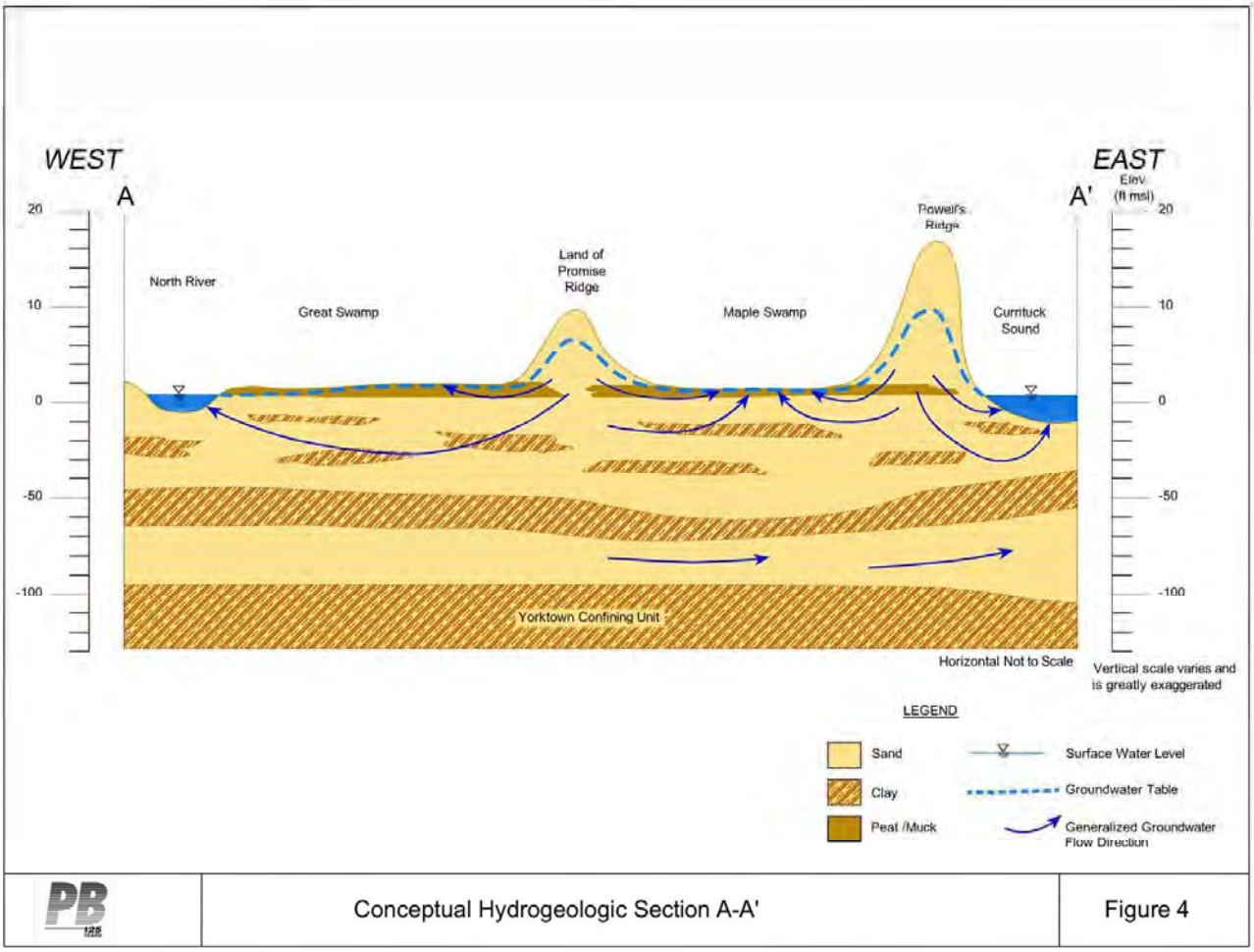


PB	Mid-Currituck Bridge Project Area Map and Location of Conceptual Hydrgeologic Sections	Figure 1



PB	Mid-Currituck Bridge Project Surface Topography Map	Figure 2



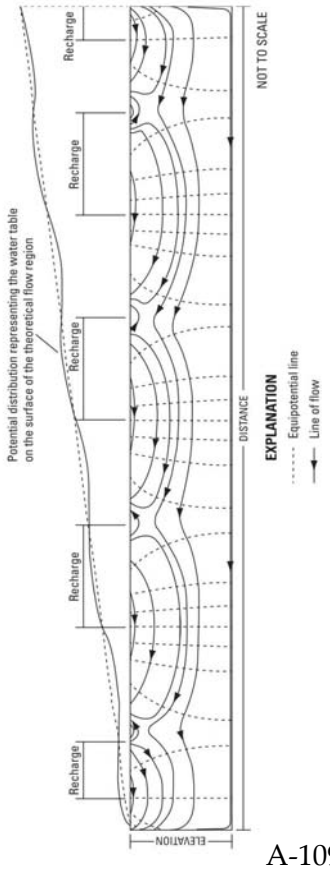
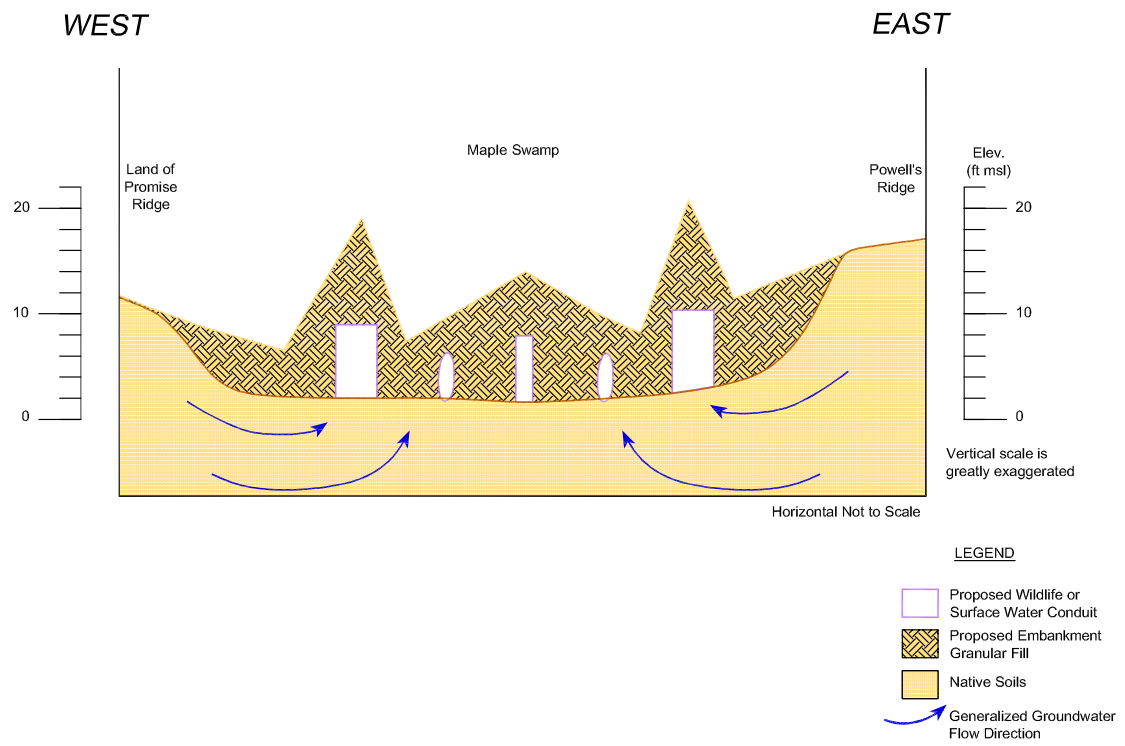
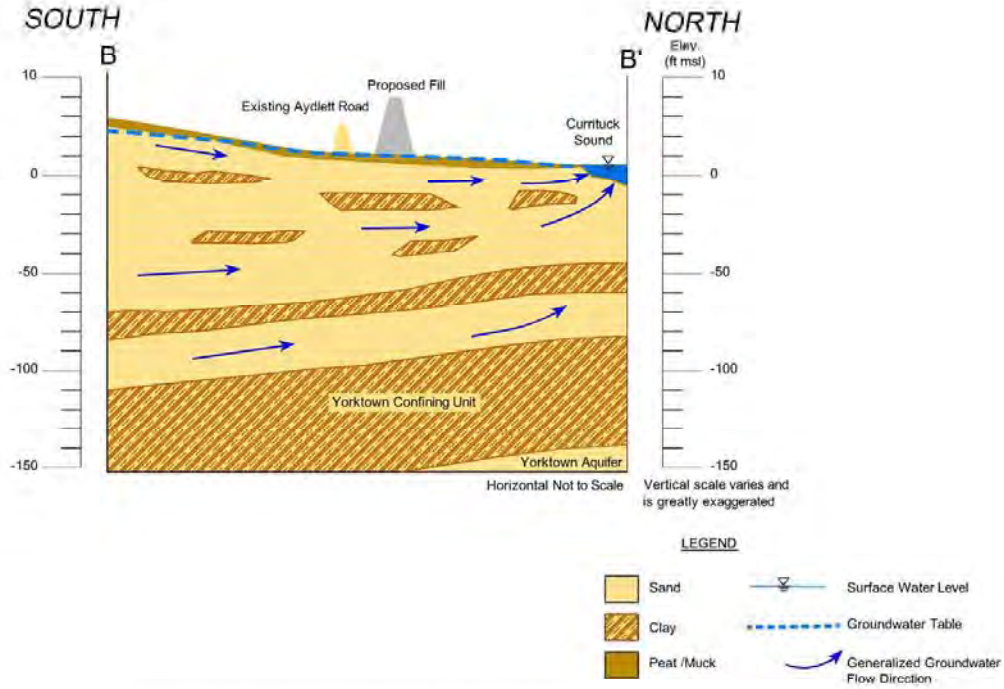


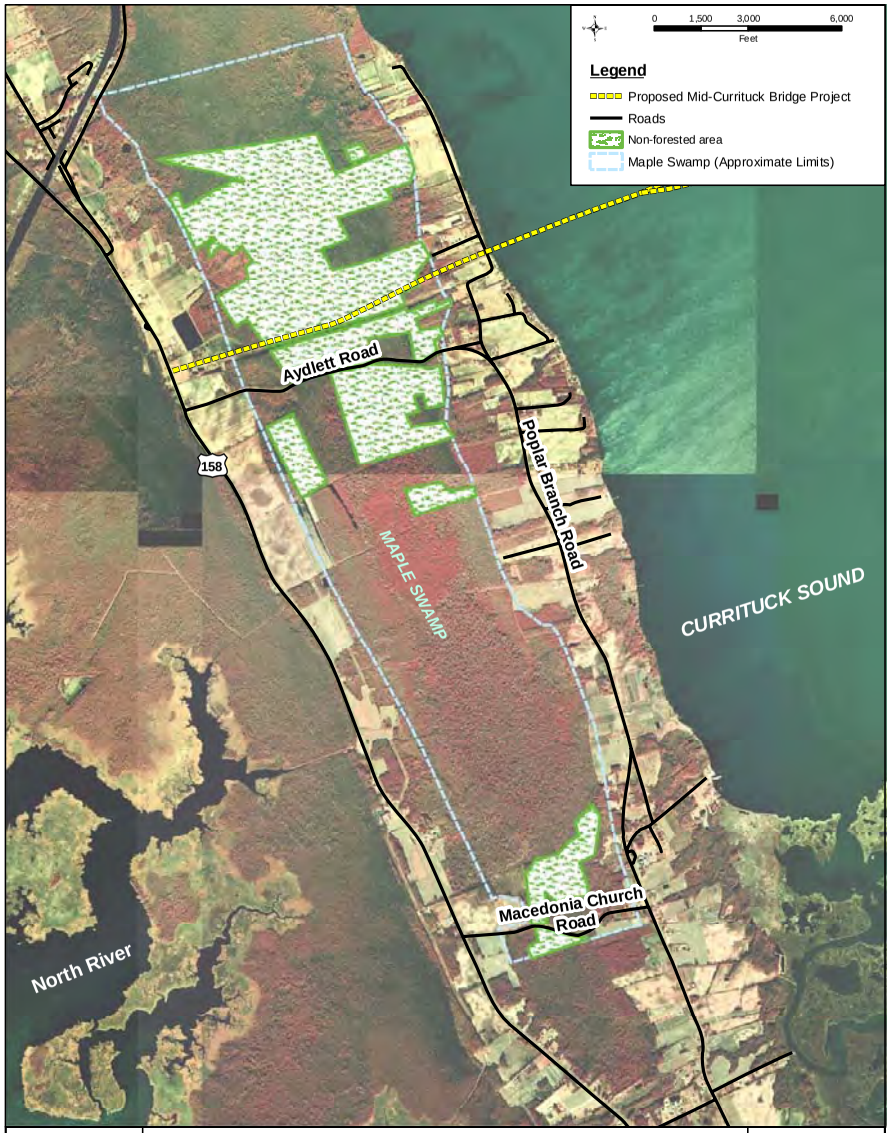
Figure 3. Toth's Theoretical Groundwater Flow Patterns Effected by Topography (Taken from Sanford, 2002)



Conceptual Profile of Proposed Roadway Fill (Option B) | Figure 6



Conceptual Hydrogeologic Section B-B' | Figure 5



PB

Mid-Currituck Bridge Project
Non-Forested Areas of Maple Swamp

Figure 7

NORTH CAROLINA Turnpike Authority

Mid-Currituck Bridge Study

Currituck and Dare Counties
STIP No. R-2576

Supplemental Assessment of Mid-Currituck Bridge Impacts to Flood Elevations in Maple Swamp
Handout 29—November 2, 2010

Introduction

Initial hydraulic analyses were conducted in 2009 to determine whether proposed study alternatives would affect 100-year flood elevations. Two options were considered at that time: Option A and Option B. With Option A, the mainland approach road to the bridge over Currituck Sound would include approximately 1.5 miles of bridge over Maple Swamp. No significant impacts to flood flows or elevations were presumed for Option A because the bridge would be built above the base flood elevations mapped by the Federal Emergency Management Agency (FEMA). Therefore, it was concluded that detailed hydraulic modeling was not necessary for Option A. With Option B, the approach to the bridge over Currituck Sound would be a road placed on fill within Maple Swamp with five wildlife crossing structures and Aydlett Road would be removed and the roadbed restored as a wetland. Because the fill in Maple Swamp associated with Option B could potentially alter flood flows and elevations, the impacts of placing this fill on the 100-year Flood Elevations caused by tidal storm surge were analyzed. Hydraulic modeling results in 2009 showed an approximate 0.2-foot increase and 0.75-foot decrease in maximum water surface elevations north and south of the proposed fill, respectively, as compared to existing 100-year tidal storm surge elevations.

The North Carolina Turnpike Authority (NCTA) requested additional hydraulic studies in Maple Swamp to address agency comments on the Draft Environmental Impact Statement (DEIS). Consequently, the following major components were considered and are described in this supplemental assessment:

- More detailed August 2010 location survey for the Mid-Currituck Bridge project area. The 2010 survey included more data than the survey used for the 2009 hydraulics modeling, including more transects and cross-sections at critical areas in Maple Swamp, such as along Aydlett Road and the timbering access road;

- Recent logging within Maple Swamp;
- Hydraulic modeling of Option A's bridge across Maple Swamp; and
- Minimizing hydraulic impacts to flood elevations associated with placing fill within Maple Swamp.

Hydraulic Model

Consistent with the 2009 hydraulic studies, the US Army Corps of Engineers' (USACE) Unsteady Network Program (UNET) (Hydraulic Engineering Center-River Analysis System [HEC-RAS]), one-dimensional, unsteady flow model was used to simulate storm surge events for the 100-year storm for existing and proposed conditions. The 100-year storm surge hydrograph developed as the downstream boundary condition where the surge enters Maple Swamp near Coinjock for the previous hydraulic studies was also applied to the updated models described in this report. Storm surge hydrology was developed based on a peak stillwater elevation of 6 feet North American Vertical Datum of 1988 (NAVD88) for the 100-year storm in conjunction with guidance provided in Hydraulic Engineering Circular (HEC) 25 (Douglass and Krolak, 2008), *Tidal Hydrology, Hydraulics and Scour at Bridges*. The downstream end of Maple Swamp, where the tidal storm surge enters the swamp, is mapped as Zone AE with a 100-year base flood elevation of 6 feet NAVD88 according to the area's Digital Flood Insurance Rate Map (DFIRM). Based on the mapped FEMA base flood elevations, a peak storm surge elevation of 6 feet NAVD88 was used to develop the 100-year storm surge hydrograph for the downstream boundary condition.

Model Updates for New Survey and Logging within Maple Swamp

As discussed previously, a location survey was completed in August 2010 for the project area, including critical areas in Maple Swamp near US 158, Aydlett Road, and the proposed bridge/fill alignment across the swamp. The same cross-section locations from the 2009 hydraulic studies were used but updated to reflect this new survey. The updated cross-section information was applied to existing and proposed condition models.

Historically, almost all of Maple Swamp was covered by forest. Recent logging operations by private landowners, however, have de-forested considerable portions of the swamp. Approximately 1,232 acres of the 3,887-acres (32 percent) of the swamp (excluding only the marshland at the north end of the swamp) have been logged, and approximately 66 percent of the project corridor was recently logged. Most of the logging has occurred in the north-central portion of the swamp; some de-forestation is present at the southern end in the vicinity of Macedonia Church Road. Previous hydraulic models for existing and Option B conditions were updated to reflect the most current surface characteristics and account for any corresponding changes in flood flows

and elevations as a result of logging operations. Changes to the swamp surface characteristics as a result of logging were represented by adjustments to roughness coefficients (i.e., Manning's n values) within logged areas. Manning's n values were selected based on guidance provided in USACE's Hydraulic Reference Manual for HEC-RAS for floodplain areas with tree cover and cleared land. Previously, Manning's n values of 0.15 and 0.08 were used to represent the overbank and main channel areas within the swamp, respectively. Cleared land has less surface roughness and resistance to flow as compared to forested floodplains. Therefore, Manning's n values within the logged areas of the swamp were reduced to 0.08 and 0.06 for the overbank and main channel areas, respectively.

Changes in Existing Conditions as a Result of Logging Operations

A comparison of pre- and post-logging maximum water surface elevations for the 100-year storm was conducted for the purposes of assessing the impacts of recent logging operations to existing conditions. The existing conditions model was updated to reflect the corresponding changes to and most recent surface characteristics within Maple Swamp. Therefore, additional hydraulic studies of project alternatives and corresponding impacts were evaluated and are presented based on the updated (post-logging) existing conditions model.

For existing conditions, post-logging hydraulic modeling results show an approximate 0.2-foot increase in the maximum water surface elevation for the 100-year storm starting from the downstream (north) face of Aydlett Road as a result of logging operations. The 0.2-foot increase tapers to zero change in maximum water surface elevation for the 100-year storm at a point approximately 4,900 feet north of Aydlett Road. Results also show an approximate 0.10-foot decrease in the maximum water surface elevation for the 100-year storm from the downstream (north) face of the logging road located near Young Road. (The logging road is approximately 6,100 feet north of Aydlett Road.) The 0.1-foot decrease tapers to zero change in maximum water surface elevation for the 100-year storm at a point approximately 5,500 feet north of the logging road. These results are listed in Table 1.

Table 1. Comparison of Pre- and Post-Logging Maximum Water Surface Elevation for the 100-year Storm for Existing Conditions

	Change in 100-year Maximum Water Surface Elevation (Post-Pre Logging)	Distance of Change in Maximum Water Surface Elevation
Downstream (north) of Aydlett Road	+0.2 feet	4,900 feet
Downstream (north) of Logging Road	-0.1 feet	5,500 feet
Upstream (south) of Aydlett Road	N/A	N/A

Updated Comparison between Existing and Option B Conditions

Option B results from the updated model show a 0.2-foot increase in maximum water surface elevation from the north face of the proposed fill as compared to existing 100-year tidal storm surge elevations; this increase would taper to zero change at a point approximately 5,600 feet north of the proposed fill. Post-logging results for Option B show a slightly greater decrease of 1.3-feet in maximum water surface elevation south of the proposed fill as compared to existing conditions. This decrease would become negligible at a point approximately 5,500 feet south of the proposed fill. These results are listed in Table 2.

Table 2. Updated Comparison of Existing and Option B Maximum Water Surface Elevations for the 100-year Storm

	Change in 100-year Maximum Water Surface Elevation (Option B minus Existing)	Distance of Change in Maximum Water Surface Elevation
Downstream (north) of proposed fill	+0.2 feet	5,600 feet
Upstream (south) of proposed fill	-1.3 feet	5,500 feet

Additional hydraulic studies were conducted for additional Maple Swamp crossing scenarios. They also reflect new survey and logging operations information.

Hydraulic Impacts to Floodplain (100-year Event)

Option A's bridge across Maple Swamp was modeled to confirm whether there were no significant impacts to flood elevations under this scenario. The Option A bridge includes approximately 7,700 feet of bridge across Maple Swamp. Based on design drawings and documents, the Option A bridge across Maple Swamp includes 59, 2.5-foot wide piers spaced 130 feet apart and an approximate 7-foot thick bridge deck. Hydraulic modeling results affirmed no impacts to 100-year maximum water surface elevations as a result of Option A.

Several additional combinations of bridge and fill also were modeled to determine the minimum length of bridge that must be built across Maple Swamp in order to have no impacts to 100-year maximum water surface elevations. Hydraulic modeling results show that a minimum 2,500-foot wide bridge opening across the central and eastern portion of the swamp (i.e., the portion of the swamp with the lowest elevation) is required to have no effect on 100-year maximum water surface elevations. The same bridge pier assumptions used in the Option A modeling were used.

NORTH CAROLINA Turnpike Authority

Mid-Currituck Bridge Study

Currituck and Dare Counties

STIP No. R-2576

Response to Written Comments on the October 2010 Preferred Alternative Report
Handout 30—January 20, 2011

US Army Corps of Engineers—October 29, 2010

1. **Comment:** According to the Coordination Plan, agencies will not be asked to concur with this report, but asked to submit any significant objections in writing to FHWA and NCTA. We are somewhat confused with this approach as we have been asked to concur with the preferred alternative, but based on the Coordination Plan; the NCTA/FHWA will formally identify its preferred alternative separately after considering all comments received from Participating Agencies, including both written comments and comments received in the TEAC meetings.

   Response: *You are correct in your understanding of the Coordination Plan. NCTA and FHWA will identify their Preferred Alternative separately after considering all comments received from Participating Agencies.*

2. **Comment:** Typically, when an NCDOT project is developed through the Merger 01 Process, actual estimated environmental and human impacts are identified according to preliminary design standards and decisions regarding the selection of the Least Environmentally Damaging Practicable Alternative (LEDPA) are made using that data. This was considered a critical decision point on larger TIP projects where impacts and costs could be accurately compared across alternatives prior to selection of a preferred alternative or LEDP A. This project is not using the Merger Process and to date there are still not definite impact numbers for NCTA's preferred alternative (MCB4) because the decision to bridge Maple Swamp has not been made. Additionally, as we identified in our June 7, 2010 letter, construction techniques that involve dredging in Currituck Sound are a major concern of ours and the resource agencies and, typically, permits for this type of activity have been difficult to obtain. As these two issues remain unresolved at this time, and after considering the funding and project location constraints that have been placed upon the NCTA by

the NC State Legislature, we have no choice but to make a determination that either alternative ER 2 or MCB4/A/C1 may represent the LEDPA for the project.

Response: *NCTA, after considering agency comments, has revised its recommended Preferred Alternative from that presented in the October 2010 Preferred Alternative Report. The recommended Preferred Alternative, MCB4/C1, now includes Option A, bridging Maple Swamp, rather than Option C. The January 2011 Preferred Alternative Report reflects this change. Regarding dredging, NCTA will continue to work with the resource agencies as the project progresses to see if an acceptable approach to dredging can be developed. NCTA has considered the comments on dredging made at the November 2, 2010 TEAC meeting, as well as the comments made on the October 2010 Preferred Alternative Report, and has modified its proposed dredging strategy based on those comments. See the response to USEPA comment 1 and the January 2011 Preferred Alternative Report.*

3. **Comment:** The issue of whether ER 2 is practicable due to funding and tolling constraints placed upon it by the NC State legislature is more problematic. As you are aware, the Corps is obligated to insure that projects have an appropriate level of analysis for evaluating compliance with the Section 404(b)(1) Guidelines (Guidelines). In order to accomplish this, the Corps must assess a reasonable number of alternatives that appear to meet the purpose and need for the project and that each is practicable considering cost, logistics, and existing technology. We remain extremely concerned that state law has potentially limited the range of alternatives that may be available to the NCTA but that may otherwise be practicable under our 404(b)(1) Guidelines. We cannot allow a state legislature to define a project's location thus circumventing our requirements under the National Environmental Policy Act or the 404 (b)(l) Guidelines. For example, pursuant to SL2010-31, an annual appropriation will be allocated from the Highway Trust Fund to the North Carolina Turnpike Authority to be used to pay debt service or related financing expenses on revenue bonds of notes issued for the construction of the Mid-Currituck Bridge. Based on the same law, gap funding cannot be used to fund ER 2, for a variety of reasons. One of those is that gap funding allocated to NCTA, pursuant to G.S.136-89.183, only authorizes the NCTA to construct certain projects, including, "a bridge of more than two miles in length going from the mainland to a peninsula bordering the State of Virginia." We believe a state law which so severely restricts funding sources to a defined project at a defined location is not a valid constraint to the building of one alternative over another pursuant to the Guidelines.

Response: *The USACE's position is acknowledged.*

4. **Comment:** On page 3 of the document titled "Reasons for a Determination that ER 2 is Not a Practicable Alternative to a Bridge Across Currituck Sound" (Handout 25) it is stated that tolls cannot be used on local roads logistically or according to state law. This section continues with the statement that "the only location on the road

network where tolls logistically could be conceivably charged would be for trips across the Wright Memorial Bridge." Are there any other compelling reasons beyond those given in the document that relate to the NCTA's enabling legislation that would preclude tolling ER 2?

Response: *There are no other reasons in the enabling legislation that would preclude tolling ER2 beyond those presented on pages 3 and 4 of Handout 25 as follows:*

a. *Tolls cannot be used according to state law unless an alternative non-toll route exists and the toll authority is prohibited from converting parts of the non-tolled highway system to toll facilities. (G.S. § 136-89.197 and G.S. § 136-89.187)*
b. *State appropriations can only be spent by NCTA for a Mid-Currituck Bridge. (G.S. § 136-89.183)*
c. *Toll projects must be in the State Transportation Improvement Plan (STIP) and a NC 12/US 158 interchange is in the only part of ER2 included in the current STIP. (G.S. § 136-89.183(a)2)*

Also, as indicated in Handout 25 and noted in this comment, NC 12 cannot be tolled logistically from an operational perspective, irrespective of state or federal law. As noted in this comment, the Wright Memorial Bridge could be tolled logistically from an operational perspective, but cannot be tolled under current state law, as indicated by item "a" above.

Title 23 United States Code (23 USC) Section 129 allows FHWA to reach an agreement with states to allow free (i.e., non-tolled) bridges, in the context of their reconstruction or replacement, to be converted to toll facilities. However, the toll agreement must require that all toll revenues are first used for any of the following: debt service, reasonable return on private investment, and operation and maintenance, including work for reconstructing, resurfacing, restoring, and rehabilitating. The agreement may also include a provision regarding toll revenues in excess of those needed for the required uses outlined above. This provision allows excess revenues to be used for highway and transit purposes authorized under Title 23 if the state certifies annually that the toll facility is being adequately maintained.

Although not related to the issue of the enabling legislation and tolling, Section 136-89.183A(a) of NCTA's enabling legislation specifies:

- *A Currituck Sound Bridge is needed;*
- *It is to be a toll bridge;*
- *It should be implemented in an environmentally sensitive manner; and*
- *The character of the existing road system is to be preserved.*

5. **Comment:** In accordance with the Guidelines, the Corps can authorize only the LEDPA. Based on the information contained in the Draft Environmental Impact Statement (DEIS) and the associated handouts that have been provided to date, the Corps believes that either ER2 or MCB4/A/C1 with modifications (smaller footprint of the proposed US 158 interchange and a reduction of the amount of four-lane widening along NC 12 from 4.2 miles to 1 mile), coupled with significant reductions in the proposed dredging impacts, as explained in the October 2010 Preferred Alternative Report could be the LEDPA for this project. As you are aware, Option A of alternative MCB4 bridges Maple Swamp and therefore reduces wetland impacts considerably, making those impacts comparable to those of ER2.

   Response: *NCTA agrees that MCB4/A/C1 could be the LEDPA. As indicated at the November 2, 2010 TEAC meeting, MCB4/A/C1 (with reversing lanes on US 158 for hurricane evacuation) as presented in the DEIS in Table 3-9 would fill 10.6 acres of wetland (wetland within the slope-stake line plus 25 feet) versus 8.6 acres for ER2. However, design changes associated with NC 12 reduce the MCB4 impacts by approximately 4 acres, while the additional safety feature (median acceleration lane) at Waterlily Road increases the MCB4 impacts by approximately 0.5 acre. The net result is a reduction of approximately 3.5 acres, which would bring the MCB4/A/C1 (with reversing lanes on US 158 for hurricane evacuation) impacts down to approximately 7.1 acres of wetland filled, which is less than ER2. Based on comments from the agencies, MCB4/A/C1 is now proposed as the Preferred Alternative. These numbers represent an estimate that will be confirmed when the revised preliminary engineering is completed in January.*

6. **Comment:** As stated in our June 7, 2010 letter, "it will be incumbent upon you to demonstrate that using non-toll financing is infeasible if during the process for identifying the Preferred Alternative NCT A wishes to select an alternative that involves tolling based on the mere fact that non-tolling alternatives cannot be financed or funded in the short or long term." We have determined that State Legislation/Law is not an adequate reason to consider ER2 an alternative that is not practicable.

   Response: *NCTA acknowledges your position related to state laws. However, although the fact that non-tolled alternatives cannot be financed or funded in the short- or long-term is an important part of NCTA's position on the practicability of ER2, it is not the only reason for NCTA's position. Handout 25 listed four reasons why ER2 is not practicable from NCTA's perspective, as follows:*

   a. Widening NC 12 contradicts local plans.
   b. Local community opposition to widening NC 12 is strong.
   c. Meeting the purpose and need of the project is problematic. Problematic is defined in the following ways:

   – *MCB4 achieves more than twice the reduction in congestion and travel time benefit of that for ER.*
   – *Hurricane evacuation benefits can be achieved with ER2 only by adding a third outbound lane for 25 miles of US 158.*
   – *Because of items "a" to "c" above, it is highly unlikely ER2 could be implemented in the foreseeable future, so its selection would be the equivalent of selecting the No-Build Alternative.*

   d. It cannot be financed and no traditional funding is available.

   NCTA would like to bring your attention to reasons "a" to "c" and the logistical issues from an operational perspective related to reason "d."

US Environmental Protection Agency—November 30, 2010

1. **Comment:** All dredging in Currituck Sound should be avoided by using a 'top-down' construction method.

   Response: *NCTA will continue to work with the resource agencies in developing acceptable approaches for building the Mid-Currituck Bridge. Based on NCTA's review of updated bathymetric data and alignment refinements to C1 (straight bridge), NCTA envisions building the bridge with barges over a longer length than proposed in the October 2010 Preferred Alternative Report. The barge use limits are currently envisioned for the westernmost 3.8 miles of the bridge. Trestle would be used for 0.8 mile. In the area of SAVs, NCTA would use a trestle.*

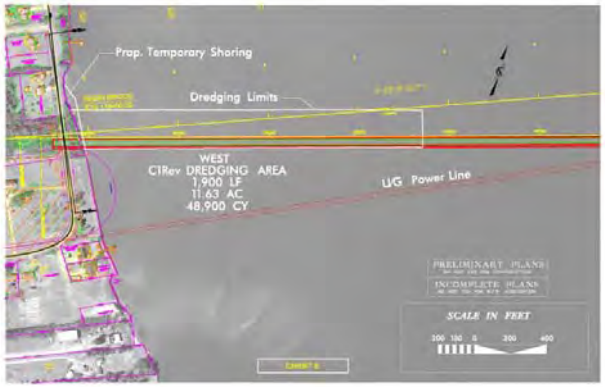
   On the west side of the sound, NCTA envisions dredging only in the areas identified in the drawing included at the end of this response.

   After consideration of additional options for bringing supplies to the bridge and barges, the west side supply dock noted in the October 2010 Preferred Alternative Report is no longer proposed. As an alternative, temporary shoring could be built that extends the existing north/south seawall/bulkhead from just south of the new bridge to just north of the new bridge. With the temporary shoring in place to stabilize the shoreline, a crane could be parked along the shoreline and used to load material on to waiting barges. If desired, this shoring could be left in place after construction is completed.

   The dredging quantities for this approach would be:

   Dredging Length: 1,900 feet
   Dredging Area: 11.63 acres
   Dredging Volume: 48,900 cubic yards

   Again, NCTA will continue to coordinate with the resource agencies in developing acceptable solutions for building the bridge.



2. **Comment:** Maple Swamp should be bridged to avoid and minimize jurisdictional impacts to high quality wetlands.

   Response: *NCTA, after considering agency comments, has revised its recommended Preferred Alternative from that presented in the October 2010 Preferred Alternative Report. The recommended Preferred Alternative, MCB4/C1, now also includes Option A, bridging Maple Swamp, rather than Option C. The January 2011 Preferred Alternative Report reflects this change.*

3. **Comment:** Floodplain encroachment needs to be completely addressed and potential impacts avoided and minimized.

   Response: *Based on agency comments, MCB4/A/C1 is now recommended as the Preferred Alternative. This alternative would not affect 100-year flood elevations. The only DEIS design scenario that would have caused a change in existing flood elevations was Option B across Maple Swamp; however, Option B is not proposed as a part of the Preferred Alternative. As discussed in the DEIS, the Option A interchange would place fill in 10.4 acres of floodplain. However, this use would not change the area's flood elevations. As indicated in Section 3.4.7 of the DEIS and Section 6.0 of the Other Physical Features Technical Report, the floodplains in the project area do not serve the same function as floodplains in non-coastal areas (fluvial or river/stream floodplains with associated stormwater runoff) because water levels in the project area are not dependent on floodplain storage capacity. Unlike upland riverine floodplains, the flood levels in the project area are primarily dependent on barometric pressure and the correlated storm surge height. The only reason Option B would affect flood elevations is because it would block a substantial part of the storm surge's route southward in Maple Swamp.*

   Although Option A (bridging Maple Swamp) is now part of the recommended Preferred Alternative, it should be noted that recent studies found that a bridge span in Maple Swamp of a minimum of 2,500 feet would be enough to ensure flood elevations in Maple Swamp would not be affected.

4. **Comment:** Storm water runoff from the new bridge needs to be collected and treated. Alternative methods of keeping the bridge free from the build-up of sediment and pollutants have not been adequately demonstrated. While some 'sweeping' and 'vacuuming' may be environmentally acceptable in lieu of total collection and treatment of storm water, the current plans as proposed are not believed to be adequate and are not presented as formal environmental commitments.

   Response: *Further refinements in the proposed bridge deck cleaning program are expected, developed in association with NCDENR-DWQ. NCDOT and NCTA will comply with NC Session Law 2008-211 (An Act to Provide for Improvements in the Management of Stormwater in the Coastal Counties in Order to Protect Water Quality) to the maximum extent practicable for the additional impervious surface area created by this project. This will include pollutant source control through regular bridge deck cleaning (sweeping/vacuuming) on both the bridge over Currituck Sound and the bridge over Maple Swamp. In addition, the merits of stormwater capture will be investigated for the ends of the bridges (approximately 600 feet) where geometrically feasible irrespective of the presence of wetlands. Infiltration strips or basins will be used for treatment of stormwater from paved surfaces. Pervious pavements will be considered for parking areas and multi-use paths. Finally, acquisition of land parcels identified in Currituck County as having a potential to improve water quality through land conservation and restoration will be investigated. Potential parcels are identified in the November 2006 report for Currituck County by the North Carolina Coastal Land Trust: Countywide Land Parcel Prioritization Strategy for Water Quality Enhancement.*

   In the FEIS, NCTA will formally commit to working with NCDENR-DWQ and other resource agencies during the permit process to finalize a stormwater management plan.

5. **Comment:** Based upon comments received following the issuance of the DEIS, EPA's concerns for indirect and cumulative impacts resulting from the new bridge are further heightened. Potential measures to avoid and minimize these impacts, including formal environmental commitments from other parties, have not been addressed.

   Response: *Comments received related to the DEIS's indirect and cumulative impact assessment will be addressed in the FEIS. Opportunities to avoid and minimize these impacts exist in local land use plans, development regulations, and regulatory powers. These will be noted in the final indirect and cumulative impact assessment in the FEIS.*

6. **Comment:** The issue concerning the control of invasive exotic plant species has not been fully explored.

   Response: *EPA made a similar comment related to invasive plant species in its DEIS comments. This concern will be addressed in the FEIS. The control of invasive species during construction of the proposed project, while important, is not directly relevant to the selection of a Preferred Alternative. NCTA does not consider the risk of introducing invasive plant species during construction to be a factor that would lead one to conclude that nothing should be built or that one alternative should be built over the other.*

7. **Comment:** Compensatory mitigation for unavoidable impacts to jurisdictional wetlands has not been fully addressed or proposed. As previously requested, EPA believes that compensatory mitigation should be 'in-kind' and within the same hydrologic catalog unit.

   Response: *Compensatory mitigation for unavoidable wetland impacts was discussed in Section 3.3.6.4 of the DEIS. The focus in identifying a Preferred Alternative is on avoidance and minimization. As per the project's Section 6002 Coordination Plan, compensatory mitigation will be finalized after the selection of a Preferred Alternative.*

NCDENR-Division of Coastal Management—December 7, 2010

1. **Comment:** Based upon comments made by state and federal agencies to date, it appears as though a determination may be made that the proposed dredging of Currituck Sound will have a significant adverse effect on wildlife or fresh water, estuarine or marine fisheries. The N.C. Dredge and Fill Law [113-229(e)] requires that: "…The Department may deny an application for a dredge or fill permit upon finding: (1) that there will be significant adverse effect of the proposed dredging and filling on the use of the water by the public; or (2) that there will be significant adverse effect on the value and enjoyment of the property of any riparian owners; or (3) that there will be significant adverse effect on public health, safety, and welfare; or (4) that there will be significant adverse effect on the conservation of public and private water supplies; or (5) that there will be significant adverse effect on wildlife or fresh water, estuarine or marine fisheries."

   Response: *After its selection of a Preferred Alternative, NCTA will continue to work with the resource agencies as the project progresses to see if an acceptable approach to dredging that minimizes adverse impacts can be developed. NCTA has considered the comments on dredging made at the November 2, 2010 TEAC meeting, as well as the comments made on the October 2010 Preferred Alternative Report, and has modified its proposed dredging strategy based on those comments. See the response to USEPA comment 1 and the January 2011 Preferred Alternative Report.*

2. **Comment:** As I stated at the 11/2/10 NCTA TEAC meeting, the dredging access channels, and the dredging for the construction staging area, are subject to the requirements of 15A NCAC 07H .0208(b)(1), which states as follows: "Navigation channels, canals, and boat basins shall be aligned or located so as to avoid primary nursery areas, shellfish beds, beds of submerged aquatic vegetation as defined by the MFC, or areas of coastal wetlands except as otherwise allowed within this Subchapter." Please continue to coordinate with the N.C. Division of Marine Fisheries regarding implementation of the requirement to avoid beds of submerged aquatic vegetation as defined by the MFC.

   Response: *NCTA will continue to coordinate with NCDENR-DMF regarding dredging. No dredging is currently proposed in primary nursery areas, shellfish beds, beds of submerged aquatic vegetation, or areas of coastal wetlands.*

3. **Comment:** As stated on page 3, item 8, of the 6/4/10 DCM DEIS comments, and as I mentioned at the 11/2/10 NCTA TEAC meeting, the N.C. Administrative Code [15A NCAC 07H .0208(a)(2)(H)] requires that development shall not impede navigation or create undue interference with access to, or use of, public trust areas or estuarine waters. The N.C. Turnpike Authority should continue to coordinate with DCM to ensure that the navigational clearance of the mid-Currituck Bridge complies with this requirement. DCM is currently considering whether the proposed 16-foot clearance for the mid-Currituck Bridge, and the proposed 35-foot clearance for the navigation span, will be adequate to meet the requirements of 15A NCAC 07H .0208(a)(2)(H).

   Response: *NCTA acknowledges that NCDENR-DCM is considering whether the bridge would jeopardize the use of waters in Currituck Sound, including estuarine waters, for navigation or for other public trust rights in public trust areas. However, the Administrative Code does not indicate the criteria NCDENR-DCM uses in making their determination. On December 15, 2010, NCTA asked NCDENR-DCM to provide these criteria*

NCDENR-Division of Marine Fisheries—November 22, 2010

1. **Comment:** Construction- As stated in the NCDMF's May 14, 2010 comments regarding the DEIS the NCDMF would request that top-down construction be used to complete all construction in Currituck Sound. Currituck Sound is a pathway for migrating anadromous fish into anadromous fish spawning areas (AFSA). It has been well documented that dredging has negative adverse impacts on spawning migrations and larval development therefore the NCDMF would object to dredging during the construction process. The NCDMF appreciates the commitment by the Turnpike Authority (TA) to adhere to a February 15 through September 30 dredging moratorium if the project is permitted. During the November 2, 2010 meeting members of the Turnpike Authority stated that the barges needed would have a 1

foot draft and 3-4 foot draft loaded. The NCDMF understands the need for a little extra depth for weather conditions, but would recommend transporting smaller loads on the barge in these areas (less draft required) with a "staging" boat nearby in deeper waters or construct using top-down methods in the "dredging" sections. These two alternatives may reduce the need for dredging in Currituck Sound. Will construction start on both sides of Currituck Sound and meet in the middle?

Response: *NCTA will continue to work with the resource agencies in developing acceptable approaches for building the Mid-Currituck Bridge. NCTA's current thoughts are summarized in the response to USEPA comment 1. The potential dredging moratorium and schedule constraints result in the need for multiple construction locations simultaneously. It is anticipated that construction would occur on both sides of Currituck Sound concurrently.*

2. **Comment:** Supply Dock- The NCDMF is concerned with the location of the supply dock and its adverse impacts to SAV and Essential Fish Habitat. How far out will the dock extend? Will dredging be required if used? Will the supply dock be removed once the bridge is constructed? If permitted, avoid impacts to SAV and site where dredging will not be necessary. What are the dimensions of the dock (height, width, and length)? Please supply a map with location of dock, including the water depths and location of SAV.

Response: *NCTA will continue to coordinate with the resource agencies in developing acceptable solutions for building the Mid-Currituck Bridge. As indicated in the response to USEPA comment 1, after consideration of additional options for bringing supplies to the bridge and barges, the west side supply dock noted in the October 2010 Preferred Alternative Report is no longer proposed. As an alternative, temporary shoring could be built that extends the existing north/south seawall/bulkhead from just south of the new bridge to just north of the new bridge. With the temporary shoring in place to stabilize the shoreline, a crane could be parked along the shoreline and used to load material on to waiting barges. If desired, this shoring could be left in place after construction is completed.*

3. **Comment:** Hydrology- The TA has suggested a ½ mile bridged section as an alternative to fill for the part of the bridge crossing Maple Swamp with openings to allow for surface water flows to continue past the new bridge. At this time the specific design specifications (size, height, and distance apart) of these openings are not final so it is difficult to make a determination if this will be adequate to allow flows to continue along other parts of the fill/bridge. If it is determined that a new bridge is necessary, the alternative that removes the existing Aydlett Road and constructs a new bridge over the swamp to allow water to flow unimpaired through Maple Swamp is recommended by NCDMF. This option would reduce the amount of fill and reduce the amount of shading throughout the entire swamp.

Response: *Option A, which bridges Maple Swamp for approximately 7,740 feet, is now a part of NCTA's recommended Preferred Alternative. The 7,740-foot length is slightly less than the 7,913 feet presented in the October 2010 Preferred Alternative Report for Option A because an alignment adjustment on the mainland (that resulted from the straighter Mid-Currituck bridge) put approximately 173 feet of Maple Swamp bridge over upland, which allowed the bridge length to be reduced. NCDENR-DMF's recommendation on Aydlett Road is noted; however, the removal of Aydlett Road was found during the DEIS public and agency comment period to be an unacceptable community impact by both the residents of Aydlett and Currituck County officials. Those impacts are discussed in Section 3.1.2 of the DEIS beginning on page 3-9.*

4. **Comment:** SAV- As defined by the Marine Fisheries Commission, SAV habitat is submerged land that is vegetated with submerged aquatic vegetation or has been occupied by one or more submerged aquatic species within the past 10 continuous growing seasons and meets the average growing conditions needed. According to this definition (15A NCAC 03I .0101), the NCDOT needs to consider documented occurrences and maps of SAV in Currituck Sound since 2000 to determine SAV habitat and the impacts to SAV habitat. In addition to DOT and USACE imagery, mapping of this area was done in 1994, 2004, and 2007 by NOAA, Elizabeth City State University, and DENR. The NCDMF requests that SAV impacts be avoided and minimized for the Mid-Currituck Bridge. ER2 as previously described avoids all impacts to SAV (approximately 17 acres in original DEIS) and in the NCDMF's opinion is a way to avoid all SAV impacts. Are there plans for SAV mitigation? The NCDMF is also concerned with the adverse impacts of the dredging on the eastern side of Currituck Sound. This area is located adjacent to SAV beds which will be adversely impacted by dredging (elevated turbidity levels) and it is potential SAV habitat. At this time the NCDMF would object to the dredging in the eastern portion of Currituck Sound. The NCDMF is also concerned with the driving of piles in SAV areas and will request a February 15 through September 30 piling moratorium in the SAV areas to prevent adverse impacts to the SAV and the associated fauna in these specific areas. This moratorium will minimize impacts to both SAV during the peak biological activity and the anadromous fish that use SAV as refuge and feeding grounds. The elevated noise and turbidity levels have been known to have adverse impacts on aquatic fauna (Street et al. 2005). Working outside of this period will ensure that the environmental integrity of the area is protected during the peak of biological activity.

Response: *NCTA is currently gathering information on SAV trends in the project area over the last 10 growing seasons. Trestle construction would be used in areas of existing SAV on the east side of the sound. No dredging would be conducted within the existing SAV beds. With pile driving, there would be minimal disturbance to SAV. The area of this disturbance would be approximately equal to the circumference of the tip of the pile. NCTA anticipates that pile driving activities would take place during the whole year.*

Special care would be taken in the areas of existing SAV during pile driving operations to minimize/contain turbidity. Turbidity curtains would be used during specified periods of the year as agreed to with the resource agencies. NCTA also is open to other construction impact mitigation suggestions.

In terms of mitigating potential long-term impacts to SAV, the following options would be considered in coordination with the resource agencies:

a. *NCTA could coordinate its efforts with the Currituck Sound Environmental Restoration project being led by the USACE Wilmington District. One of the three work groups for this study is responsible for SAV. These work groups are composed of a variety of scientists and engineers from several state and federal agencies and organizations. Elizabeth City State University (ECSU) has been responsible for SAV portions of the study and has been working on some restoration tasks, each of which could represent an opportunity for this project to contribute to SAV research, including:*

   – *Producing digital polygon maps of potential SAV restoration sites in Currituck Sound;*

   – *Completing some experimental SAV plantings to assess plant survival, vigor, and feasibility of SAV restoration efforts in Currituck Sound (ECSU has conducted some experimental plantings);*

   – *Calibration of light attenuation models (an important factor affecting SAV survival and distribution);*

   – *Producing GIS data layers of the bathymetry of Currituck Sound and Back Bay (ECSU has already completed this but might need assistance [financial or personnel] in updating images or producing other layers such as extensive mapping of locations of SAV); and*

   – *Hosting a workshop to communicate SAV restoration techniques.*

b. *SAV restoration or enhancement is an option. Information exists to support that SAV restoration or enhancement is possible in North Carolina. The 2010 Draft Coastal Habitat Protection Plan (CHPP) has a comprehensive summary of SAV in North Carolina, including the status of SAV restoration and enhancement, and references to techniques and success criteria for SAV restoration. The plan recommends first targeting areas of historically abundant SAV that are now reduced or absent. Models could also be developed to pick the sites with the highest probabilities of success based on site conditions and other parameters. There were 12 SAV restoration projects (total of 1.95 acres of bottom habitat restored) in Carteret and Onslow counties between 1978 and 1991. Since then, there have been four more NCDOT projects with SAV impacts (1 to 2 acres each), but mitigation was almost*

always out-of-kind. A permit, with compensatory SAV mitigation of 6+ in-kind acres, was issued for impacts associated with approximately 4 acres of primarily freshwater/brackish SAV in Chowan County. According to the CHPP, a study near the project area (Corolla) to monitor the restoration of a dredged channel that had eliminated the SAV in the area has documented natural re-establishment of SAV in the restored area.

c. *The 2010 Currituck Sound Feasibility Scoping Meeting Report (CSFSMR) indicates that some portions of the sound may benefit from the restoration of marsh islands currently being eroded (or completely gone) as a result of wind/wave action and lack of over-wash from the beach front because of beach development. Another cause might be wakes from boats and/or jet skis eroding the island. CSFSMR suggests that construction of some islands may create waters protected from wave energy and thereby enhance/create/restore favorable environments for supporting SAV and fringing marsh communities. NCTA could also explore methods to protect existing islands in danger of being lost.*

d. *Both the CHPP and CSFSMR identify restoring/enhancing/preserving aquatic and terrestrial wetland and upland habitats adjacent to the Currituck Sound, which function as buffers that help to filter pollutants (e.g., nutrients, chemicals, sediment) from runoff before entering the sound, as an option to mitigating potential long-term impacts to SAV. This would help to create a more favorable environment for SAV communities.*

e. *The CHPP suggests that hard clam restoration would enhance water quality and may promote SAV growth. The CHPP reported that SAV had been observed to be expanding near clam aquaculture facilities in Virginia and North Carolina.*

5. **Comment:** Storm water- According to the EMC Coastal Stormwater Rules the first 1½ inches of rainfall needs to be collected and treated. The NCDMF understands the design challenges associated with a project of this size, but the NCDMF requests that as much runoff as possible be captured and treated. The TA has proposed using a street sweeper to reduce pollutants from entering Currituck Sound and Maple Swamp. The TA has proposed cleaning the bridge weekly after the peak summer season. Will there be monitoring to ensure that the street sweeping equipment is working as designed? The results from the NCDOT study are promising, but they focus primarily on completely freshwater systems. If the sweepers are not effectively removing pollutants is there a back-up plan? Can the bridge be modified to add in other means of treating stormwater? In handout 26, it states that this practice will be used for the 50 years of the public private partnership, are there plan for after the 50 years? Where will the waste be disposed? The NCDMF requests that no stormwater from the bridge be directly discharged into SAV habitat where the concentrated water may increase the energy and have an adverse impact on SAV and the habitat. The NCDMF also requests that no stormwater from the bridge over

Maple Swamp be directly discharged into the wetlands. Will there be some measures taken to offset not being able to meet the stormwater rules?

Response: *Further refinements in the proposed bridge deck cleaning program are expected, developed in association with NCDENR-DWQ. NCDOT and NCTA will comply with NC Session Law 2008-211 (An Act to Provide for Improvements in the Management of Stormwater in the Coastal Counties in Order to Protect Water Quality) to the maximum extent practicable for the additional impervious surface area created by this project. This will include pollutant source control through regular bridge deck cleaning (sweeping/vacuuming) on both the bridge over Currituck Sound and the bridge over Maple Swamp. In addition, the merits of stormwater capture will be investigated for the ends of the bridges (approximately 600 feet) where geometrically feasible irrespective of the presence of wetlands. Infiltration strips or basins will be used for treatment of stormwater from paved surfaces. Pervious pavements will be considered for parking areas and multi-use paths. Finally, acquisition of land parcels identified in Currituck County as having a potential to improve water quality through land conservation and restoration will be investigated. Potential parcels are identified in the November 2006 report for Currituck County by the North Carolina Coastal Land Trust: Countywide Land Parcel Prioritization Strategy for Water Quality Enhancement.*

With respect to a backup plan for deck cleaning, NCTA will prepare and implement a maintenance and monitoring plan, which will include provisions for appropriate spare parts and equipment. With respect to waste disposal, it will be in a suitable landfill. Measures to dissipate the flow of stormwater coming from bridge scuppers over Currituck Sound and Maple Swamp will be incorporated into the project where needed to minimize potential disturbance of the sound bottom or erosion in the swamp potentially caused by any water free fall.

6. **Comment:** Alternatives- As described in previous comments, the NCDMF's preferred and least environmentally damaging alternative is ER2. ER2 would avoid impacts to SAV, wetlands, and other critical habitat and not violate the coastal stormwater rules while still meeting the TA's purpose of improving traffic flow, reducing travel times, and reducing hurricane evacuation times. The topic of funding continues to arise in discussion of the alternatives, but at one time, was public funding made available for this type of project? Is it possible to obtain funding for improving portions of the existing roads until the project is complete? Is it possible to put tolls on improved roads until the construction costs have been paid off?

Response: *In general, public funding has not been available for this project except for planning. Several years ago, a small amount was allocated for right-of-way acquisition; however, public funding of the full cost of the project has never been proposed. Legislation providing for the tolling of a Mid-Currituck Bridge was first approved in 1993, well before the creation of NCTA in 2002. As indicated in Handout 25, traditional*

highway funds are not available to improve existing roads. The STIP includes no traditional highway funds for R-2576 that could be used to build or improve existing roads. In addition, the reallocation of Division 1 funds to pay for improving existing roads is not a realistic proposal. In the current STIP, Division 1 is anticipated to get approximately $569 million in traditional funds over a 7-year period. With an estimated cost in the neighborhood of $500 million, funding ER2, for example, would require delaying or deleting most other projects in Division 1. The replacement of the Bonner Bridge at an anticipated cost of $300 million also is scheduled within this 7-year window.

It is not possible to put tolls on improved roads for reasons noted in Handout 25 and in the response to USACE comment 4. In addition, as indicated in Handout 25 and the response to USACE comment 6, meeting the purpose and need of the project by improving existing roads is problematic for several reasons. Finally, as indicated in Handout 25, NCDENR-DCM made a provisional determination that ER2 is inconsistent with the Town of Duck's Coastal Area Management Act land use plan.

NCDENR-Division of Water Quality—November 29, 2010

1. **Comment:** Subsequent to this handout being distributed, the NCTA and the DWQ had a meeting to discuss potential stormwater treatment and issues regarding this project. The DWQ is not certain how applicable the NCDOT stormwater study is to this project. This is due in part, as is stated in the handout:

   – only two of the 30 sites studied were located in the Coastal Plain;

   – Neither of those two sites were located over estuarine waters; and

   – Estuarine waters exhibit different characteristics than freshwater with respect to chemical interactions.

   As has been stated by the DWQ several times, the stormwater rules have changed since the Wright Memorial Bridge, the US 64 bridges over Roanoke Sound and Croatan Sound here [sic] designed and built. The regulations have become more stringent, requiring the first 1.5 inches of stormwater to be captured and treated and do not allow for direct discharge of stormwater any longer. The DWQ understands the constraints of the project with respect to stormwater capture and treatment and financial feasibility. However, the DWQ must still require the NCTA to capture and treat stormwater to the best extent practicable. During the meeting, the DWQ presented the NCTA with some other potential possibilities for getting credit without having to capture and treat the first 1.5 inches of stormwater from the entire length of the bridge.

   As was also discussed during the meeting, submerged aquatic vegetation (SAV) is present in the project corridor. This is a very sensitive and fragile resource that the DWQ believes should be protected. As such, the effects of stormwater on SAV have

not been sufficiently researched and documented according to a National Marine Fisheries SAV biologist.

The DWQ believes that sweeping the bridge as discussed in the handout is a good first step: however, it is not the only action that will be required to meet current stormwater regulations. The DWQ will continue its effort to work with the NCTA to assure that adequate stormwater measures are implemented to satisfactorily meet the coastal stormwater rules based on the understood constraints of the project.

Response: *Further refinements in the proposed bridge deck cleaning program are expected, developed in association with NCDENR-DWQ. NCDOT and NCTA will comply with NC Session Law 2008-211 (An Act to Provide for Improvements in the Management of Stormwater in the Coastal Counties in Order to Protect Water Quality) to the maximum extent practicable for the additional impervious surface area created by this project. This will include pollutant source control through regular bridge deck cleaning (sweeping/vacuuming) on both the bridge over Currituck Sound and the bridge over Maple Swamp. In addition, the merits of stormwater capture will be investigated for the ends of the bridges (approximately 600 feet) where geometrically feasible irrespective of the presence of wetlands. Infiltration strips or basins will be used for treatment of stormwater from paved surfaces. Pervious pavements will be considered for parking areas and multi-use paths. Finally, acquisition of land parcels identified in Currituck County as having a potential to improve water quality through land conservation and restoration will be investigated. Potential parcels are identified in the November 2006 report for Currituck County by the North Carolina Coastal Land Trust: Countywide Land Parcel Prioritization Strategy for Water Quality Enhancement.*

2. **Comment:** A table is included which includes a row for "Project Duration" in which the estimated duration of the project, based on the various combinations of construction methods, is estimated. In the "Pile Setup" section of the document, it is stated that piles will need to set up for anywhere from two to thirty days. It is understood that more geotechnical data regarding substrate/pile installation will need to be conducted. However, it is unclear what duration of pile setting days was used to estimate the project length. Additionally, on this project, "time is money" and it is unclear how deviations from the estimation used to calculate the project duration would affect both the project duration as well as the overall cost of the project. Suppose a worst case scenario, and it is determined that piles will need to set up for 30 days, how much would this add to the overall cost of the project versus a two day time that could be required?

Response: *NCTA schedule durations reflect pile set-up time to be between two and five days and already reflect this time-frame. The 30 days was a worst-case scenario for a large closed-end pile. The piles anticipated for use on this project are open-ended and should not require set-up times that exceed seven days. More information on set-up*

times will be known once additional geotechnical investigations are completed during final design of the bridge.

3. **Comment:** The DWQ's preferred bridge construction method would entail a combination of no dredging and top-down construction over the SAV beds. Such scenarios are presented in Figures 5, 6, and 7. However, the DWQ realizes that a construction method that strictly involves top down construction (Figure 7) is probably impracticable from a project duration and cost aspect. A temporary trestle or work bridge over the SAV beds, even though temporary (estimated to be five to eight months), would have additional impacts to SAV beds that would need to be considered. If permanent vegetation loss is associated with such a structure, the impact may be considered a permanent impact and additional mitigation may be required. An example might be shading effects of the temporary structure; which is estimated to be 2.19 acres. It is also believed that installing/removing the necessary piles for a temporary structure would increase turbidity in the SAV bed area(s) and would be an adverse affect. Therefore, the DWQ does not support a construction combination that includes a temporary structure over SAV areas.

Response: *NCTA will continue to coordinate with the resource agencies in developing acceptable solutions for building the Mid-Currituck Bridge. See the response to USEPA comment 1, which includes a revised proposal for how the Mid-Currituck Bridge would be built. Also see the response to NCDENR-DMF comment 4, which discusses approaches to minimizing SAV impact during construction and options for mitigating long-term SAV impact. In addition, NCTA could use, if preferred by the resource agencies, an open trestle with either open grating or beams only to support the crane. This should allow greater light penetration with minimal shading over SAVs (see photo example).*

NCTA envisions shading to be minimally invasive in SAV beds; less than 0.7 acre. NCTA will coordinate with NCDENR-DWQ on any necessary mitigation offsets for theoretical SAV shading.

4. **Comment:** It is stated in the response to question 1 that "...impacts to the surface water flow system also are not expected to be substantial with proper design of the bridges and/or culverts…" The text makes a reference to impacts not being "substantial", however does not define what would be considered substantial (or non-substantial). In that same discussion, it is also stated that "…proper design will mitigate this impact [to surface water flows] to a satisfactory level…" Again, it is

unclear what would be considered "satisfactory." Both "substantial" and "satisfactory" should be defined as they relate to the discussion.

Response: *In the statement "…impacts to the surface water flow system also are not expected to be substantial with proper design of the bridges and/or culverts…", the phrase "not…substantial" is intended to mean "insignificant," "essentially zero," or "immeasurable" under typical climatic conditions. Additionally, the term "satisfactory" is intended to mean "complying with North Carolina design requirements for the permitting of engineered stormwater systems."*

5. **Comment:** It is stated on page 7 that with Option C Aydlett Road would be left in place. It is still the DWQ's preference to have the road removed and the area restored with potential mitigation credits available.

Response: *NCDENR-DWQ's position is noted; however, the removal of Aydlett Road was found during the public and agency comment period to be an unacceptable community impact by both the residents of Aydlett and Currituck County officials. Those impacts are discussed in Section 3.1.2 on page 3-9 of the DEIS. NCTA also has now minimized the impact to Maple Swamp by including Option A in its recommended Preferred Alternative. Option A would retain Aydlett Road.*

6. **Comment:** With respect to the proposed stormwater management plan of bridge sweeping, should a bridge be constructed, there is a commitment to monitor water quality to determine the effectiveness of the sweeping program. While no monitoring plan has been developed at this time, the plan should include a pre-construction monitoring component so background levels of targeted pollutants can be determined and compared to post-construction conditions. This will better allow those concerned to determine program effectiveness and set targets. Additionally, the plan should allow for some oversight and allow resource agencies to review the water quality monitoring data as necessary to ensure sweeping and other measures are effective.

Response: *NCTA will prepare and implement a maintenance and monitoring plan for bridge operations. In addition, pre-construction and post-construction monitoring programs will be developed in the context of the permitting process.*

7. **Comment:** The "Costs and Design Considerations" section states that "With MCB4, hurricane evacuation improvements would only be needed for the 5 miles between the Mid-Currituck Bridge and NC 168, plus for 1,600 feet west of US 158/NC 12 intersection, instead of the 25 miles with ER2, reducing costs and environmental impacts." The DWQ must consider the project from a holistic view; hurricane evacuation as discussed here is just a single component. While this idea is true for hurricane evacuation, when considering the whole project, ER2 has less overall

environmental impacts and the overall cost ($416.1 to $523.4 million) is considerably less than that of MCB4/C1 ($600.7 to $816.2 million).

Response: *NCDENR-DWQ's position is noted. NCTA agrees that while individual benefits are important to note, a "holistic" view also must be considered.*

8. **Comment:** The "Travel Benefits Considerations" section indicates that an interchange at the US 158/NC 12 intersection would not be needed because enough traffic would be diverted to the Mid-Currituck Bridge that improvements would not be needed. The DWQ has not seen any studies indicating that a future interchange would not be needed. To our knowledge, the project is still listed in the STIP as R-4457.

Response: *The referenced section of the Preferred Alternative Report does not say that the interchange at US 158/NC 12 would not be needed. It says: "With the Mid-Currituck Bridge included in MCB4, a future interchange at NC 12 and US 158 would not carry as much traffic (some traffic would divert to the Mid-Currituck Bridge), and the interchange configuration would result in fewer community and access impacts than without a Mid-Currituck Bridge (ER2)." An interchange is needed but a smaller interchange with less impact.*

9. **Comment:** It is stated on Page 11 that "The construction approach described for MCB4/C1 seeks to minimize construction related impacts to Currituck Sound as practicable." It is discussed earlier in the document that dredging would be a part of this construction technique for this alternative. Based on financial projections presented in Handout 27 ("Construction Methodologies for Mid-Currituck Bridge"), all construction methods, with exception of the top-down only method are at least partially in the black, indicating that they are conceivably feasible financially. Furthermore, since all methods have been shown to be effective bridge construction techniques which are widely used, all should be practicable from a constructability stand point. Therefore, the DWQ does not agree that the method proposed to construct the MCB4/C1 alternative is one that minimizes construction related impacts to Currituck Sound as it includes a dredging component, which is very destructive to the Sound bottom, while other practicable methods which do not involve dredging are seemingly practicable.

Response: *Although a particular construction approach is "partially in the black," as the cost of the project increases (whether because of project design features or the construction methods used), so does the risk that higher than expected construction costs or bond interest rates could increase project costs beyond what is affordable. Therefore, regarding dredging, NCTA will continue to work with the resource agencies as the project progresses to see if an acceptable approach to dredging can be developed. NCTA has considered the comments on dredging made at the November 2, 2010 TEAC meeting, as well as the comments made on the October 2010 Preferred Alternative Report, and has*

modified its proposed dredging strategy based on those comments. See the response to USEPA comment 1 and the January 2011 Preferred Alternative Report.

10. **Comment:** The DWQ commends the NCTA for efforts taken thus far to avoid and minimize impacts to the natural and human environment, including the realignment of the C1 corridor on the outer banks and using lane-reversal on US 158 for hurricane evacuation. However, the NCTA is respectfully reminded that they should continue to look for ways to avoid and minimize impacts to the natural and human environment throughout the planning and design process of the project, as is required by 15A NCAC 2H .0506(b) and 15A NCAC 2H .0506(c).

    Response: *NCTA will continue to look for ways to avoid and minimize impacts to the natural and human environments throughout the planning and design process for the proposed project.*

11. **Comment:** It has been well documented in literature that SAV are a very important yet sensitive resource. The NCTA should ensure that every possible measure is taken to avoid and reduce impacts to SAV through bridge design and during construction, should a bridge be built.

    Response: *Minimizing impacts to SAV is important to NCTA. This is evidenced in part by the fact that NCTA has never proposed dredging in existing SAV beds, as well as by its responses in this handout to other SAV-related comments.*

12. **Comment:** In general, the DWQ supports the United States Army Corps of Engineer's (USACE) letter dated October 29, 2010. The DWQ especially supports item number two in the letter. First, there are certain aspects of the project, such as the bridging of Maple Swamp and bridge construction techniques that have not been fully decided at this time. Because of this, the impacts from the potential construction of the bridge have not been established. Furthermore, based on information presented thus far, the DWQ also agrees with the USACE that that either ER2 or MCB4/A/C1 (with the modifications to the bridge landing as presented at the November 2, 2010 TEAC meeting) and a construction method that does not involve dredging represent the LEDPA at this time.

    Response: *NCTA, after considering agency comments, has revised its recommended Preferred Alternative from that presented in the October 2010 Preferred Alternative Report. The recommended Preferred Alternative, MCB4/C1, now also includes Option A, bridging Maple Swamp, rather than Option C. The January 2011 Preferred Alternative Report reflects this change. Regarding dredging, as previously stated, NCTA will continue to work with the resource agencies as the project progresses to see if an acceptable approach to dredging can be developed. See the response to USEPA comment 1 and the January 2011 Preferred Alternative Report.*

NCDENR-Wildlife Resources Commission—December 3, 2010

1. **Comment:** NCWRC supports the proposal to perform routine sweeping on the bridge over Currituck Sound; however it is not evident that this practice alone will provide sufficient treatment. If this methodology is adopted at a minimum NCTA should utilized this opportunity to collect the appropriate data needed to supplement the findings in NCDOT's "Stormwater Runoff from Bridges". Furthermore, we recommend not discharging directly over SAV areas or shallow water habitat. Directly discharging over these areas may result in vegetation damage, erosion during low wind tide events, as well as a localized increase in turbidity levels.

    Response: *NCTA will prepare and implement a maintenance and monitoring plan and will collect appropriate data indicating its stormwater management plan's effectiveness so that it can be refined, as needed. Measures to dissipate the flow of stormwater coming from bridge scuppers over Currituck Sound and Maple Swamp will be incorporated into the project where needed to minimize potential disturbance of the sound bottom or erosion in the swamp potentially caused by any water free fall.*

2. **Comment:** In reviewing the construction methodologies for the bridge over Currituck Sound, Page 4 of handout 27 states "…with additional geotechnical information and engineering analysis in conjunction with construction methodologies, an optimal balance between pile size/length, bridge characteristics such as span-length and construction duration could be determined" this is essential information needed to make a definitive determination of practicable construction methods. Until more detailed geotechnical information and engineering analysis is conducted it is unclear how accurate the current estimated construction duration and pile count is. Furthermore WRC does not support the dredging of high quality habitat such as that found in the shallow water areas of Currituck Sound. More specifically, dredging to the edge of SAV coverage as is currently shown would likely still result in loss of habitat due to turbidity as well as channel sloughing. We support the NCTA commitment to observe an in water work moratorium of February 15 to September 30 for all approved dredging activities; however WRC also recommends this moratorium extend to all bottom disturbing activities in SAV areas. SAV areas provide an important function for aquatic species in the form of foraging, refuge, and nursery habitat, disturbance to these areas during this timeframe could result in adverse impacts to aquatic species.

    Response: *NCTA used best approach and worst-case scenarios for the estimated number and length of piles in developing its construction scenarios. NCTA will refine its schedule as the project progresses. See the response to USEPA comment 1, which includes a revised proposal for how the Mid-Currituck Bridge would be built. Also see the response to NCDENR-DMF comment 4, which discusses both approaches to minimizing SAV impact during construction and options for mitigating long-term SAV*

impact, as well as the response to NCDENR-DWQ comment 3 regarding SAV shading during construction.

3. **Comment:** Maple Swamp is designated a Significant Natural Heritage Area (SNHA) of state significance. Consisting of non-riverine swamp forest, non-riverine wet hardwood forest, and one of the largest loblolly bay forests in the state, this area provides exemplary habitat for a multitude of species. Fragmentation of this area would have significant adverse impacts on the quality of this habitat and its use by wildlife. Hydrologic alteration in these non-riverine wetland systems can result in permanent changes in the vegetative community. Handout 28 concludes that surface water hydrology is the dominant hydrologic factor for Maple Swamp and the proposed crossing of Maple Swamp would not have a significant effect on this area if "the design properly maintains surface water hydrology." For that reason bridging the entire crossing of Maple Swamp would preserve both surface and subsurface hydrology through this area resulting in the least environmentally damaging effect to Maple Swamp.

   Response: *NCTA, after considering resource agency comments, has revised its recommended Preferred Alternative from that presented in the October 2010 Preferred Alternative Report. The recommended Preferred Alternative, MCB4/C1, now includes Option A, bridging Maple Swamp, rather than Option C. Surface water and groundwater hydrology, however, also could have been maintained with Option C.*

4. **Comment:** It is essential to ensure that the implementation of this project does not contribute to the continued decline of the Currituck Sound ecosystem.

   Response: *NCTA understands NCWRC's position.*

STATE OF NORTH CAROLINA
TURNPIKE AUTHORITY

BEVERLY E. PERDUE
GOVERNOR

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DAVID W. JOYNER
EXECUTIVE DIRECTOR

July 6, 2010

(Sent via electronic mail)

Mr. Miles M. Croom
Assistant Regional Administrator
Habitat Conservation District
National Marine Fisheries Service
Southeast Regional Office
263 13th Avenue South
St. Petersburg, FL 33701-5505

RE: Mid-Currituck Bridge Study
Draft Environmental Impact Statement

Dear Mr. Croom:

This letter represents the North Carolina Turnpike Authority's (NCTA) interim response to the Essential Fish Habitat (EFH) recommendations contained in your letter of June 4, 2010 (received at NCTA on June 7), which commented on the Mid-Currituck Bridge Study Draft Environmental Impact Statement (DEIS), as per Section 305(b)(4)(B) of the Magnuson-Stevens Act and its implementing regulations at 50 CFR 600.920(k).

In your letter the National Marine Fisheries Service (NMFS) offered four EFH conservation recommendations. NCTA's interim response follows each recommendation:

1. The Final EIS shall provide additional justification as to why alternatives based on the ER2 strategy are not sufficient for meeting the project's purpose and need. The DEIS focuses on economic arguments to dismiss ER2, and given the low cost of this alternative the economic arguments seem addressable via changes in NCTA policy or priorities.

   Interim Response: As indicated on page 2-34 of the DEIS, ER2 would meet the purpose and need for the project (although to a lesser degree than MCB2 and MCB4). ER2, however, has no component that could be funded by tolls, as indicated on page 2-37, and traditional tax-based funding is not available for the project. In the course of working with state and federal resource and regulatory agencies, including representatives from NMFS, under Section 6002 of SAFETEA-LU (23 U.S.C. § 139) to identify a Least Environmentally Damaging Practicable Alternative (LEDPA), NCTA will provide additional information on why this economic argument cannot be addressed via changes in North Carolina Department

NORTH CAROLINA TURNPIKE AUTHORITY
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of Transportation policy or priorities. This information also will be included in the Final EIS.

2. The plan selected in the Final EIS shall use bridges, rather than fill, to cross Maple Swamp.

   Interim Response: NCTA will take this recommendation under consideration when working to identify a LEDPA with state and federal resource and regulatory agencies under Section 6002 of SAFETEA-LU. In light of the full range of public and agency comment and the need to discuss LEDPA selection in the context of Section 6002, NCTA is not prepared to commit to a bridge across Maple Swamp in this interim response.

3. A plan for compensatory mitigation shall be provided that offsets all permanent and temporary impacts to EFH, including impacts from shading and from bottom disturbances from the construction process. The plan for the compensatory mitigation shall include a functional assessment that demonstrates the amounts of mitigation proposed would fully offset the impacts expected. Given the difficulty of forecasting shading impacts to SAV and recovery rates of benthic communities, the plan also shall include a monitoring program that will assess whether forecasted impacts are in line with actual impacts and whether additional compensatory mitigation is necessary if impacts prove larger than expected or mitigation proves less effective than expected. NMFS is likely to look favorably upon mitigation plans that include preservation of Maple Swamp for impacts to forested wetlands and treatment of existing stormwater runoff into Currituck Sound for impacts to estuarine habitats. The mitigation plans shall be provided to NMFS for review and approval before the project is authorized.

   Interim Response: NCTA will take these recommendations under consideration when developing a compensatory mitigation plan for permanent and temporary impacts to EFH. In addition to providing mitigation plans for NMFS for review and approval before the project is authorized, NCTA intends to discuss mitigation opportunities and strategies within the context of Section 6002 coordination.

4. Authorization of the project shall be held in abeyance until the additional information required by NMFS to complete the EFH consultation is provided and reviewed. Please note that based on review of the requested information, NMFS may be obligated to provide additional EFH conservation recommendations, which may include recommendation for a seasonal moratorium for in-water work.

   Interim Response: NMFS's position is understood.

Please contact me at (919) 571-3004 or jennifer.harris@ncturnpike.org if you have any questions. We are looking forward to continuing to work with your representatives as the project progresses.

Sincerely,

Jennifer Harris

Jennifer H. Harris, PE
Director of Planning and Environmental Studies

cc (via electronic mail)

John Sullivan, FHWA – john.sullivan@fhwa.dot.gov
George Hoops, FHWA – george.hoops@fhwa.dot.gov
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Mid-Currituck Bridge Study

STIP No. R-2576

AGENDA

July 16, 2010 – 11:00 AM
Post-Public Hearing Meeting with Currituck County
Historic Currituck County Courthouse – Room 205

1. Introductions and Purpose of Meeting—Jennifer Harris

2. Issues Raised to be Addressed in the Final EIS and Response to Comments—John Page

   a. Fill in Maple Swamp—Natural resource and hydrologic issues.
   b. C1 Ending—U-turn opportunities for Ocean Forest Court, providing access to a public street for the proposed development at the north end of North Harbor View, and provisions for pedestrians crossing NC 12 at North Harbor View.
   c. C2 Ending—Commercial displacement and eliminating left turns from the secondary driveway at TimBuck II Shopping Center.
   d. Infiltration strips on NC 12 to provide for drainage.
   e. Provisions for left turns at Waterlily Road with a toll plaza at US 158 (Option A).

3. Other concerns or preferences the County would like considered in the selection of a Preferred Alternative—Jennifer Harris

   Preferences previously expressed by the County are: support for a bridge, opposition to a design option that closes Aydlett Road and places the toll plaza in Aydlett, and opposition to precluding left turns at Waterlily Road.

4. Status of toll financing study—Jennifer Harris

5. Information needed from Currituck County to aid in addressing comments—John Page (with Dan Marcucci on items c to f)

   a. County preferences for the placement of multi-use paths along NC 12.
   b. Input on the location of designated pedestrian crossings along NC 12, including one at North Harbor View with C1.
   c. If the bridge were to encourage a substantial number of day trips, what problems would they anticipate and how would they be addressed by Currituck County. This is was of particular concern to the public as it relates to driving on the beach.

   d. The nature and extent of beach driving by persons not renting homes in the non-road accessible area, particularly day visitors and any past consideration of limiting beach driving by Currituck County, including why it has not been pursued to date.
   e. The history behind the approval of development of Audubon Society land and its compatibility with Currituck County's CAMA Land Use Plan. Identification of any pending zoning changes or subdivision requests and whether they are compatible with Currituck County's CAMA Land Use Plan. It is important to the indirect impact assessment that it can be affirmed that Currituck County has a solid track record of implementing their CAMA Land Use Plan and not regularly approving exceptions to that plan. Additional information to support that position also would be helpful.
   f. Ability of Currituck County mainland to accommodate growth trends from 2025 to 2035.
   g. Currituck County's farmland preservation policies.
   h. Recommendations on coordination with land owners at the C1 and C2 endpoints.
   i. Details on the type and size of water pipe the County could want on the bridge.

6. Conversations on a preferred hurricane evacuation improvement alternative will take place at a separate meeting—Jennifer Harris

HNTB

Subject: Mid-Currituck Bridge Project

Meeting Date: July 16, 2010 at 11:30am

Meeting Location: Historic Currituck County Courthouse – Room 205

Present:

Dan Scanlon	Currituck County
Ben Woody	Currituck County
Jennifer Harris	North Carolina Turnpike Authority
Bob Capehart	North Carolina Department of Transportation
Tracy Roberts	HNTB
John Page	PB
Dan Marcucci	East Carolina University
Jose' Luque	Currituck Development Group (CDG) – ACS Infrastructure

Purpose of Meeting
To coordinate with Currituck County on several issues raised during agency and public comment on the Draft Environmental Impact Statement (EIS).

The following summarizes the key discussion points:

Issues Raised to be Addressed in the Final EIS:

John Page provided an overview of several issues raised by the agencies and public on the Draft EIS:

- Fill in Maple Swamp – Additional natural resource and hydrologic studies will be completed to address comments on timbering, wildlife passages, floodplains, and hydrology. Currituck County is opposed to the removal of Aydlett Road and the toll plaza location under Option B. Currituck County has no preference of whether Maple Swamp is crossed by a bridge or fill.
- C1 terminus at Outer Banks – Issues to be addressed include provisions for a U-turn at Ocean Forest Court, providing access to a public street for the undeveloped parcel (infrastructure has been installed and lots have been platted; however, house construction has not occurred) at the northern end of North Harbor View, and provisions for pedestrian crossings along the proposed four-lane NC 12 in Monterey Shores. Ben Woody provided a map showing potential pedestrian crossings. The map is a draft that was developed as part of the Currituck County Comprehensive Transportation Plan and is not final. The environmental regulatory and resource agencies prefer C1 but there was no clear preference among the public. Dan Scanlon felt the real issue for the Outer Banks stakeholders is the widening of NC 12 to four lanes and not the bridge terminus. C1 is a quiet, residential area versus the commercial area at C2. Jennifer Harris explained that NCTA is evaluating the use of roundabouts and other strategies to minimize widening of NC 12.
- C2 terminus at TimBuck II Shopping Center – NCTA is evaluating revisions to the bridge alignment to avoid and minimize impacts to existing businesses, including the pier associated

with Corolla WaterSports. Left-turns would be restricted at Crown Point and Orion's Way with either C1 or C2 terminus. Jose' Luque explained that design year traffic congestion would be less under C1 than C2 due to the existing degree of congestion in the commercial area of TimBuck II. Dan Scanlon felt that the left-turn restrictions shouldn't be a major issue since the traffic signal at Albacore Street would remain and continue to allow full movement.
- Infiltration strips along NC 12 – Preliminary designs assumes infiltration strips to accommodate drainage. John Page stated that many of the concerns with the strips could be addressed by clearing up misunderstandings of how they would be sized and function.
- Left-turns at Waterlily Road (Option A) - NCTA is investigating options to address congestion and safety concerns while allowing full movement at US 158.
- Stormwater Runoff – NCTA is evaluating options to manage bridge runoff. Due to cost, efficacy and maintenance concerns, it is unlikely that a full containment system on the bridge would be provided. Other more affordable and effective options could include frequent bridge sweeping, rumble strips at toll plazas that would break loose pollutants before vehicles cross the bridge, different pavement types that reduce undercarriage splash and an off-site stormwater projects. A recent draft study by the North Carolina Department of Transportation (NCDOT), United States Geological Survey, North Carolina Division of Water Quality, North Carolina State University and others indicates that bridge runoff is not toxic to aquatic resources and that NCDOT's existing stormwater Best Management Practices are adequate in protecting surface waters.

Currituck County Preferences for a Preferred Alternative:

- NCTA understands Currituck County's strong opposition to the removal of Aydlett Road and the toll plaza location under Option B. NCTA also understands the County's preference for retaining all turning movements at Waterlily Road.
- The County supports a new bridge across Currituck Sound.
- The County has no additional concerns or recommendations relative to selection of a Preferred Alternative.
- The County is not considering any additional resolutions supporting or opposing any aspects of the project.

Public Access Accommodations at the Sound for a Potential Boat Ramp

- Dan Scanlon said that the North Carolina Wildlife Resources Commission, through a Memorandum of Agreement (MOA) with NCDOT dated October 30, 2009, has a program to plan, develop and fund new public access boat ramps at the termini of new bridges. This could be applicable on the Outer Banks terminus of the Mid-Currituck Bridge. Here, the bridge approach road could offer a new opportunity for the public to reach the sound with watercraft. Dan Scanlon provided NCTA a copy of the MOA (attached) with information about the program and NCTA agreed to investigate its applicability to the bridge project.

Toll Financing Studies:

- Jennifer Harris explained that a detailed traffic and revenue study is underway. As part of this effort, NCTA will consider possibilities for discounted tolls for local residents and other users. Dan Scanlon felt that local users would try to avoid paying tolls as contrasted with those from out-of-state who would be more accepting of tolls.

Pedestrian Access:

- Ben Woody provided a map showing existing and proposed multi-use paths and pedestrian crossings along NC 12. The map is a draft and is part of the development of the Currituck County Comprehensive Transportation Plan that is scheduled to be completed in one year. Ben agreed to provide the backup and assumptions that went into indentifying the pedestrian crossings. New multi-use paths should be placed on the west side of NC 12. John Page explained that the NC 12 preliminary designs provide a 10-foot wide space for installation of multi-use paths.

Beach Driving and Day Trippers:

- John Page and Dan Marcucci explained that the Draft EIS deduced no substantial increase in day trippers due to the bridge. Dan Scanlon agreed with this finding based on the unique experience of beach driving offered in the four wheel drive area and the limited opportunities available to do so outside of this area; the demand to drive on the beach will exist whether a bridge is built or not.
- It was noted that the strong reactions about beach traffic expressed in the public hearings drew from the already existing heavy summer traffic. Dan Scanlon and Ben Woody confirmed the high use of the area in summer months.
- Carova residents have advocated in the past a permit system to limit beach driving. The county does have the power to do that and could do so in the future if the county sees a need. A permit would have to be given to every property owner. Ben Woody agreed to provide the law that allows the county to regulate beach traffic.
- The county does designate the driving route on the beach as being on the hard sand close to the ocean rather than the soft sand further from the shore. It must be kept in mind that the beach is the only access for property owners and renters. The state must continue to provide that access. Currently 600 lots in Carova have been developed and there are an additional 2,700 vacant platted lots. There are no official traffic counts. Citizens did one count of 1,300 vehicles in a single day (Memorial Day 2010).
- Dan Marcucci explained the beach driving permitting program at Freeman Park in Carolina Beach.
- John Page explained the comments received from the public regarding inadequate facilities (parking, bathrooms, etc.) on the Outer Banks for day trippers.

Audubon Society Property and Land Use Plan Consistency

- Dan Scanlon indicated that the Audubon Society property is designated for full service development in the county land use plan. Its zoning classification allows for commercial development, such as the use proposed. However, this classification was assigned to the property accidently as the result of a mapping error. Currituck County re-adopted its zoning map in 2007 and any errors at that time, including this one, became official legal classifications. The land in question is a 13 acre parcel next to a hotel. The owner asked for a Special Use Permit to develop the land with a hotel and other development. All development on the Currituck County Outer Banks is done via a Special Use Permit. Typical Planned Unit Developments (PUD) include 10 percent commercial, 35 percent open space, and the remaining 55 percent residential. The county issued the Special Use Permit. In doing so they were not deviating from the land use plan or current zoning. The County Commissioners continue to be tough on development proposed in areas designated as conservation in the land use plan. The Special Use permit is being challenged by an adjoining land owner. Dan also noted that originally the Audubon Society owned land east of NC 12 and a private land owner owned the land and marsh islands west of NC 12. They swapped land many years ago since the beach front was more valuable for development and the land west of NC 12 was more valuable for preservation. Apparently the Audubon Society retained this tract east of NC 12. Ben Woody agreed to provide NCTA county records on this issue.

Future Growth Assumptions and the Land Use Plan's Ability to Accommodate

- John Page noted that the 2035 population forecast and the densities provided for in the 2030 county land use plan would result in land designated in the plan for agriculture preservation being needed for development after 2030. Dan Scanlon and Ben Woody indicated that if this were to occur, it would likely be close to the North Carolina/Virginia border. Also, population forecasts and densities would be revisited in the next land use plan and population forecasts may drop and densities could increase. John Page noted that this possibility was consistent with what was said in the cumulative impact assessment. At John's request, Ben agreed to review the indirect and cumulative impact section of the DEIS to look for any points of disagreement.

Farmland Preservation Policies

- Dan Scanlon indicated that the county does have a farmland preservation trust program that is 10 to 12 years old. Currently, it has no participants, primarily because participation in the program is irrevocable. The county also has a conservation subdivision program where people agree to preserve a part of their property as farmland in exchange for another part to be developed at higher densities. There is one participant in this program. The county has sought permission to create a transfer of development rights program but it has not been approved in

the state legislature. Ben Woody agreed to provide NCTA information on the county's farmland preservation programs.

Landowner Coordination at the C1 and C2 Termini at NC 12

- Dan Scanlon said that it was up to NCTA when they wanted to next contact land owners at the Outer Banks termini.

Water Line on the Bridge

- Dan Scanlon indicated that the purpose of the water line would be to give the county the flexibility to provide water from the mainland for use on the Currituck County Outer Banks during emergency or drought conditions. This would also allow the county the flexibility to assume ownership of several existing private water suppliers on the Currituck County Outer Banks if there was a desire to do so. The Currituck County Outer Banks reverse osmosis plant, however, has the capacity to provide for existing and forecast water needs on the Currituck County Outer Banks. The county has already provided the information they have on this concept to NCTA.

Land Dedicated to Currituck County North of Cruz Bay Lane

- The land owned by the county is planned as a park (anticipated to feature parking, public access to the sound, bathrooms and the existing Welcome Center at Ocean Club Center may be relocated here). The land is north of Cruz Bay Lane and would therefore be outside the area of effect of C1.

Hurricane Evacuation

- It was noted that NCTA was in the process of setting up a meeting with various emergency management officials to discuss the best preferred hurricane evacuation alternative. *(Update: A meeting was held between NCTA and local emergency management officials on August 19. Minutes of the meeting are being prepared.)*

Action Items

- Ben Woody agreed to provide Tracy Roberts the following items:
  - Reasoning behind proposed pedestrian crossing locations on NC 12 *(Update: Ben Woody provided this information to Tracy Roberts on August 2.)*
  - Local legislation allowing Currituck County to regulate activities in the non-road accessible area of NC 12 *(Update: Ben Woody provided this information to Tracy Roberts on August 12.)*
  - Recently approved legislation restricting validity of permits issued for property that used state tax credits (relates to the Audubon Society property) *(Update: Ben Woody provided this information to Tracy Roberts on July 30.)*
  - Staff memorandum and findings of fact relating to Currituck County's approval of a special use permit for the Audubon Society property. *(Update: Ben Woody provided this information to Tracy Roberts on July 19.)*

  - Currituck County's plans for increasing parking and beach access in Corolla *(Update: Ben Woody provided this information to Tracy Roberts on July 30.)*
  - Information on Currituck County's Farmland Preservation Program and Conservation Subdivision Program *(Update: Ben Woody provided this information to Tracy Roberts on July 30.)*
  - Comments on the Indirect and Cumulative Effects discussion in Section 3.6 (beginning on page 3-81) of the Draft EIS.

The meeting ended at 2:00 pm.

Attachments

1. MOA Between NCDOT and NCWRC
2. Pedestrian Crossings along NC 12
3. Legislation Allowing Currituck County to Regulate Beach Driving
4. HB 1829 Regarding Donation of Property for Conservation Purposes (see page 5)
5. Special Use Permit and Case Analysis for 'Audubon' Property
6. Development Concepts (2) for Corolla Public Use Facility
7. Farmland Preservation and Conservation Subdivision Information for Currituck County

MEMORANDUM OF AGREEMENT

BETWEEN

THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

AND

THE NORTH CAROLINA WILDLIFE RESOURCES COMMISSION

THIS AGREEMENT is made and entered into this the 30th day of October, 2009, between the NORTH CAROLINA DEPARTMENT OF TRANSPORTATION, an agency of the State of North Carolina, herein referred to as NCDOT, and the NORTH CAROLINA WILDLIFE RESOURCES COMMISSION of the North Carolina Department of Environment and Natural Resources, an agency of the State of North Carolina, herein referred to as WRC.

WITNESSETH:

WHEREAS, the NCDOT owns and maintains certain rights of way surrounding bridges in North Carolina (hereinafter, "the Property"); and,

WHEREAS, the WRC has been given the mission to fund, provide, and manage public recreational access; and,

WHEREAS, Session Law 2007-485 directs the WRC and NCDOT to work together to address public access to coastal waters along the roadways, bridges, and other transportation infrastructure owned or maintained by NCDOT; and,

WHEREAS, it is necessary for the NCDOT and the WRC to coordinate planning and development processes that coincide on the Property; and,

WHEREAS, the WRC and the NCDOT may enter into cooperative agreements with the approval of the North Carolina Department of Administration, pursuant to N.C.G.S. § 143B-24.

NOW, THEREFORE, the parties hereto, each in consideration of the promises and undertakings of the other as herein provided, do hereby covenant and agree, each with the other, to formalize a framework for cooperation between the NCDOT and the WRC for the planning and development of public recreational access on or adjacent to Right of Way owned by the NCDOT.

1. The parties agree to cooperate in accordance with Attachments A and B which are incorporated as part of this agreement and to participate in joint planning and/or development of transportation projects and recreational access facilities as appropriate.

2. If, pursuant to Attachments A and B, the parties agree to pursue a recreational access facility, a project specific agreement will be signed by both parties.

3. Both parties agree that the property for the development of public recreational access on or adjacent to the Right of Way owned by the NCDOT, considered in its entirety, is not significant for consideration under Section 4(f) of the US Department of Transportation Act of 1966 and its implementing regulations (23 CFR Part 774) and further agree that it is not the intent of this agreement to interfere with future transportation improvements that may be needed at or near a bridge or stream crossing. Both parties also agree to insert this acknowledgment into each project specific agreement. To that end, recreational access facilities will be considered interim uses of NCDOT Property, encroachments onto NCDOT property, or interim uses of property adjacent to the Right of Way owned by the NCDOT, as further described in Attachment A.

4. Amendments to this Agreement may be made by mutual agreement and must be in writing and signed by both parties.

IN WITNESS WHEREOF, this Agreement has been executed, in duplicate, the day and year heretofore set out, on the part of the NCDOT and the WRC by authority duly given.

NORTH CAROLINA WILDLIFE RESOURCES COMMISSION

By: _____ August 26, 2009
Gordon Myers, Executive Director — Date

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

By: _____ 9/3/09
Eugene A. Conti, Jr., Secretary — Date

By: _____ 9/6/09
J. Douglas Galyon, Chairman, NC Board of Transportation — Date

NORTH CAROLINA DEPARTMENT OF ADMINISTRATION

By: _____ 10.30.09
W. Britt Cobb, Jr, Secretary — Date

ATTACHMENT A

Attachment A serves as a framework for cooperation between the NCDOT and the WRC for planning and development of public recreational access on NCDOT's bridge replacement and new bridge construction projects.

Project Selection

The NCDOT and WRC will work cooperatively to identify feasible public recreational access on projects listed in the NCDOT's Transportation Improvement Program (TIP). Project selection will be determined by the following guidelines:

1. The NCDOT Project Development and Environmental Analysis Branch (PDEA) Bridge Unit agrees to furnish the NCDOT's TIP bridge project list in electronic format to the WRC Engineering Services, Design Services Section Chief. The NCDOT PDEA Bridge Unit will provide TIP updates following Board of Transportation approval of each new TIP.
2. The WRC, at no expense to NCDOT, shall perform site investigations, assess development feasibility, and prepare finding reports for each of the TIP projects. The WRC will provide the NCDOT a listing of projects recommended for development of public recreational access prior to NCDOT's project scoping meeting.
3. NCDOT's PDEA Bridge Unit will coordinate with the appropriate NCDOT Division Engineer for each recommended project to establish NCDOT's acceptance of each recommended project as appropriate for joint development.
4. The NCDOT PDEA Bridge Unit Project Planning Engineer shall contact the WRC Project Engineer upon planning and design commencement of the TIP project recommended for public recreational access to initiate the design

integration process, if the criteria contained in NCDOT's "Guidelines For Recreational Access At Creeks And Rivers," attached hereto as Attachment B, are met.

Planning and Design Integration

The NCDOT and the WRC will work cooperatively to accommodate the WRC's public recreational access needs within the NCDOT's TIP project planning and design process in accordance with the following guidelines:

1. The NCDOT PDEA Bridge Unit Project Planning Engineer will invite the WRC Project Engineer to the Field Scoping Meeting.
2. The NCDOT Roadway Design Project Engineer will provide the WRC Project Engineer with preliminary designs of alignment alternatives for the TIP bridge projects once designs are complete (approximately four (4) months after the Field Scoping Meeting).
3. The WRC will attend the Field Scoping Meeting and will provide the NCDOT with input regarding public recreational access development for the project site.
4. If feasible and practical, the NCDOT will accommodate the WRC's public recreational access needs within the TIP project design.
5. On TIP Projects with anticipated public recreational access accommodations, the WRC Project Engineer will be invited by the NCDOT Roadway Design Project Engineer to attend the Combined Field Inspection meeting.
6. For projects constructed entirely or in part by the NCDOT contractor, the NCDOT and WRC will coordinate payment and bid item details nine (9) months prior to TIP project letting. WRC will reimburse NCDOT for all expenses of project construction.

7. NCDOT must keep bridge replacement projects on schedule. If project issues or circumstances dictate, NCDOT reserves the right to proceed with the bridge replacement project and have WRC complete the access project at a later date.

Ancillary Property Acquisition

The integration of public recreational access with bridge replacement or construction of a new bridge may require the purchase of ancillary property in addition to the property required for the bridge project. Ancillary property required for the construction of public recreational access will be acquired according to the following guidelines:

1. The WRC will provide to the NCDOT ancillary property delineation to meet requirements of desired public recreational access.
2. NCDOT agrees to clearly identify and label on the TIP Project's Final Right of Way plans the ancillary property needed for the public recreational access. The property shall be labeled on the plans as "Public Recreational Property (By others)".
3. The NCDOT Right of Way Branch will perform appraisals for the ancillary property. The WRC will reimburse the NCDOT for the expense of the appraisal.
4. The NCDOT Right of Way Branch Agents will negotiate for the NCDOT project property required for the highway project. The Department of Administration, State Property Office, will negotiate for the WRC public recreational access property. The NCDOT Right of Way Agent and the State Property Office Agent will coordinate the initial negotiation meeting with the property owner.
5. Ownership transfer of the NCDOT right of way and the ancillary property will be completed separately through the acquisition processes established by each agency. At the completion of the acquisition process, NCDOT will own the right of way needed for the bridge project construction and the WRC will own the

additional property needed for the public recreational access. The WRC may also elect to donate the additional property needed for the public recreational access to the NCDOT. In this case, subject to the terms of a NCDOT encroachment agreement, the WRC will be allowed to encroach upon the additional property for the purposes of managing, maintaining, and operating the public recreational access. If there is a need for the NCDOT to demand abandonment of the encroachment, then NCDOT will provide written notification to WRC. In the case where NCDOT demands abandonment of the encroachment, NCDOT will perform the appraisal and will reimburse the WRC for the appraised value of the donated property.

NCDOT will certify that any property acquired by others and donated to NCDOT meets all applicable Federal and NCDOT acquisition requirements prior to being incorporated into any Federal-aid project.

6. Alternatively, the NCDOT Right of Way Branch may elect to perform appraisals and negotiate for both the NCDOT project property and the public recreational access property or a portion of the public access property. In this case, title to the public recreational access property will be held by the NCDOT and the property will be leased to the WRC on terms agreeable to both parties.

Environmental Documents and Permitting

Primary environmental regulatory agencies have provided the following guidance for permitting cooperative projects:

1. United States Army Corps of Engineers:
   A. Public recreational access projects which will be constructed and completed by the WRC or its agents within one year of the completion of the NCDOT's bridge

project should be permitted as one project in combination with the NCDOT's project.

   B. Public recreational access projects which will be constructed and completed by NCDOT or its agents within one year of the completion of the NCDOT's bridge project should be permitted as one project in combination with the NCDOT's project.
   C. For public recreational access projects constructed and completed by the WRC or its agents one year or more after the completion of the NCDOT's bridge project, the regulatory agency requests notification of the pending project.
2. Division of Coastal Management
   A. The Division of Coastal Management prefers application for regulatory approval of cooperative projects within the Division of Coastal Management's jurisdiction be submitted separately to maintain agency accountability.
   B. On a case by case basis, the Division of Coastal Management will consider permitting cooperative bridge replacement and public recreational access projects under a single application if it is deemed beneficial to the NCDOT and the WRC for an individual cooperative project.

General Permitting and Construction

1. The WRC, at no expense to the NCDOT, shall prepare, apply for and obtain the necessary environmental documents, mitigation and all permits needed to develop the public recreational access.
2. The WRC shall obtain an executed encroachment agreement from the NCDOT prior to the start of construction of the public recreational access.
3. The WRC shall be responsible for the development, design and construction of the public recreational access, including landscape plans, at no expense to the NCDOT.

4. The WRC, and/or its agent, shall construct, or cause to be constructed, at no cost to the NCDOT, the access roads, parking area, and any other structures for the public recreational access; any necessary site preparations or improvements including, but not limited to, landscaping, relocation of control access fencing, lighting, sidewalks, handicap accessibility structures; and any necessary roadway improvements including, but not limited to, turn lanes, signalization, pavement markings, or signs. All work shall be done in accordance with the approved project plans and in accordance with the NCDOT standards and specifications.
5. The WRC and/or its agent(s) agrees to comply with all federal, state and local laws and rules in the construction of the site and to prevent soil erosion; silting or pollution of rivers, streams, lakes, wetlands, reservoirs, other water impoundments, ground surfaces, or other property; or pollution of the air.
6. The WRC agrees to the following conditions during construction of the public recreational access:
   A. Letting of the contract for construction and purchase of materials, supplies, and equipment shall comply with North Carolina General Statute 143-129.
   B. The NCDOT reserves the right to inspect any portion of the work being performed by the WRC and/or its agent, to ensure compliance with the provisions of this Agreement.
   C. Any changes in the plans and site preparations shall be approved by the Division Engineer or his designated representative prior to the work being performed.
   D. All materials incorporated into the public recreational access and workmanship performed by the WRC and/or its agent, shall be in accordance with the standards and specifications used by the NCDOT.

   E. The WRC, and/or its agent, shall be responsible for ensuring that the contractor complies with all of the terms of the approved plans and specifications.
   F. During the construction of the public recreational access, the WRC, and/or its agent, shall provide and maintain adequate barricades, signs, and any other warning devices necessary for the protection and safety of its employees, agents and the traveling public in accordance with the latest edition of the Manual on Uniform Traffic Control Devices for Streets and Highways.
   G. The WRC, at no expense or liability to the NCDOT, shall adjust and/or relocate all utilities in conflict with the public recreational access.

Maintenance and Operations

1. The NCDOT reserves the right to inspect the public recreational access to ensure that the public recreational access is being maintained in a manner that is in conformity with its intended use.
2. The WRC, at no expense to the NCDOT, shall assume all management, security and liability responsibilities for the public recreational access in accordance with all applicable laws and regulations. The WRC shall perform routine safety and condition inspections of the public recreational access and maintain written documentation for said inspections.
3. The WRC shall not install any underground tanks or associated underground piping for the storage of any product on the recreational access without the express written consent of the NCDOT.
4. The WRC shall not dispose of wastes of any kind, whether hazardous or not, on the public recreational access and shall not conduct any activity which may or does require a hazardous waste treatment, storage or disposal facility permit from

either the federal or state agencies. Septic systems installed to provide public restrooms are exempted from this condition provided express written consent is obtained from the Division Engineer or his designated representative.

5. The WRC agrees to exercise every reasonable precaution to maintain the public recreational access in a manner that prevents soil erosion; silting or pollution of rivers, streams, lakes, wetlands, reservoirs, other water impoundments, ground surfaces, or other property, or pollution of the air.
6. If hazardous or any other unauthorized material is discovered to have been illegally discarded since the acquisition of the property, the WRC shall be solely responsible and hold the NCDOT harmless for all costs associated with the removal of the material and any damages caused by the existence of said material.
7. If, in the future and upon completion of the public recreational access, the WRC desires to structurally alter the public recreational access or a portion thereof, notification must be submitted to the Division Engineer prior to any work being performed. If said alterations exceed the original boundaries of the public recreational access, or change the access for vehicles utilizing the public recreational access or have an adverse safety impact on highway traffic, the plan for the alterations shall be submitted to the Division Engineer for final approval and shall be approved by the Division Engineer or his designated representative prior to the start of any work.
8. Upon completion of the public recreational access by the WRC, the WRC shall have total jurisdiction and responsibility for the maintenance of the public recreational access including, but not limited to litter and garbage removal, parking and site maintenance, resurfacing, mowing, structural maintenance, painting, etc. Maintenance of the lighting shall include but not be limited to the

repair and replacement of foundations, poles and fixtures. The WRC shall also be responsible for providing electrical service and for all bills for the public recreational access, at no expense to the NCDOT. The WRC shall assume all liability and maintenance responsibility for these improvements.

General Conditions

1. WRC shall indemnify and hold harmless the NCDOT and its officers, agents, and employees from all suits, actions, or claims of any character brought for any injury or damages received or sustained by any person, persons, or property by reason of any act of the WRC, its contractors, agents or employees, in the design, construction, operation, or maintenance of the public recreational access. The WRC shall be responsible for acquiring necessary insurance for the public recreational access in the event of vandalism and/or acts of nature that damage the public recreational access, at no expense to the NCDOT.
2. If it is necessary for the WRC to enter into agreements with third parties for the construction or maintenance of the public recreational access, the WRC shall enter into such agreements at its sole cost and expense. Such agreements shall not affect the terms or obligations of the parties to this Agreement.
3. The NCDOT and WRC reserve the right to terminate this Agreement at any time and for any reason. Each party shall give the other party thirty (30) days notice of termination.
4. At the NCDOT's discretion, the NCDOT may immediately control, limit or close said public recreational access from any public use in the event of an emergency, if the NCDOT deems the Property is otherwise unsafe or the Property presents a safety hazard to highway traffic.

5. Upon completion of the public recreational access, the WRC shall add the public recreational access to their inventory. Furthermore, the WRC shall be responsible for addressing all concerns and/or complaints from adjoining property owners that might arise due to the public recreational access. If said concerns are not addressed satisfactorily the NCDOT reserves the right to limit and/or close the public recreational access from all public use.
6. The NCDOT shall retain all rights of ownership of said Property for the purpose of bridge or highway maintenance, bridge replacement, and/or bridge expansion and/or roadway expansion. Both parties agree that the property for the development of public recreational access on or adjacent to the Right of Way owned by the NCDOT, considered in its entirety, is not significant for consideration under Section 4(f) of the US Department of Transportation Act of 1966 and its implementing regulations (23 CFR Part 774) and further agree that it is not the intent of this agreement to interfere with future transportation improvements that may be needed at or near a bridge or stream crossing. To that end, recreational access facilities will be considered interim uses of NCDOT property, encroachments onto NCDOT property, or interim uses of property adjacent to the Right of Way owned by the NCDOT. The NCDOT may take any action it deems necessary, at any time, in order to maintain, repair, or improve its bridges or roadways regardless of the effect such action may have on the public recreational access. The NCDOT may require the public recreational access to alter its operations or to temporarily or permanently close to facilitate such maintenance, repair or improvement. In the event of a permanent closure of a particular public recreation access site, the WRC shall, at its own expense and within 6 months, remove any improvements affixed to the Property which in the

opinion of the NCDOT can be removed without material injury to the Property, and restore the Property to the maximum extent practicable to a condition existing prior to the to the construction of the public recreational access. If WRC relocates or replaces the public recreational access, or if the NCDOT, for any reason, is required to relocate or replace the public recreational access, WRC will be solely responsible for finding a new site for the public recreational access and for all costs associated with said relocation or replacement.
7. To the extent allowed by Law, each party shall be responsible for its respective actions under the terms of this agreement and for any claims arising as a result of such actions under the terms of this Agreement.

ATTACHMENT B

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
GUIDELINES FOR RECREATIONAL ACCESS AT CREEKS AND RIVERS

Public interest in recreational access along various creeks and rivers in North Carolina has been increasing in recent years. The North Carolina Department of Transportation (NCDOT) fully acknowledges the value of recreational access but has not been given the mission to fund, provide, or manage such facilities. The Department will lend support (as legal, design, and funding constraints allow) by coordinating with other agencies that have been charged with such a mission.

In order to delineate more clearly how NCDOT will participate in providing recreational access, NCDOT has developed the guidelines to direct the decision making process. These guidelines should be used during the planning process. The decision regarding whether an access will be provided should be made before the final planning document is completed so the access can be addressed within the document.

If there is an existing publicly owned formal facility managed for recreational access (fishing, canoeing, or otherwise), the Department will replace the facility as part of the project construction. This is in accordance with the Federal Highway Administration's (FHWA) Section 4(f) procedures.

If there is an existing privately owned formal facility managed for recreational access (fishing, canoeing, or otherwise) NCDOT will address any project impacts to the facility through the right of way acquisition process. NCDOT will not, however, replace impacted parts of the facility as part of the project construction.

If formal access is desired where there is an informal recreational access (no formal facilities but site is used to access fishing, canoeing, and otherwise) or no existing access at all, NCDOT will include new access as part of the project construction under either of the following two conditions:

1) If, in the judgement of NCDOT, there is a strong transportation safety related need to include an access then NCDOT will improve the location as appropriate to resolve the safety concern. NCDOT will coordinate with local agencies on the long term management of the site. A separate government agency must agree to provide the long term maintenance and management of the site.

2) If all of the following five criteria is met, then NCDOT will as part of planning, design and construction, include a recreational access facility:

- If there is a separate funding source outside of the North Carolina Department of Transportation
- If there is a partnering government agency willing to maintain, fund, and manage the site
- If there is a willing seller or provider of land needed for the facility
- If there are not unacceptable impacts associated with developing the new recreational access facility (wetland impacts for example)
- If the adjacent property owners and the majority of the public comments favor the addition of the recreational access facility

Any project constructed by NCDOT will be consistent with the Americans with Disabilities Act (ADA). Any exceptions to the guidelines will require the approval of the NCDOT State Highway Administrator and the FHWA Division Administrator.

Roberts, Tracy

From: Ben Woody [bwoody@co.currituck.nc.us]
Sent: Monday, August 02, 2010 12:02 PM
To: Roberts, Tracy
Subject: FW: Pedestrian Crossings
Attachments: Corolla Sidewalk Inventory.pdf

FYI...information related to the pedestrian crossing locations proposed for our Comprehensive Transportation Plan.

Ben E. Woody, AICP
Planning Director
Currituck County
PO Box 70
Currituck, North Carolina 27929
(252) 232.6029
www.currituckgovernment.com

From: Steven Lambert [mailto:slambert@albemarlecommission.org]
Sent: Monday, August 02, 2010 11:30 AM
To: Ben Woody
Cc: Kerry Morrow
Subject: RE: Pedestrian Crossings

Ben,

See attached Map for reference.

We have not made full decisions on what type of upgrades we are suggestion but I will be able to get that soon. Some of the upgraded facilities could be as minimal as signs, road markers, and other visual devices.

I hope this helps.

1.	NC-12	Corolla Village Rd	Construct pedestrian crossing facilities	At Corolla Village Rd there is a very popular Beach Access point, so my suggestions are to upgrade the facilities here
2.	NC-12	N. of Shad Dr.	Construct pedestrian crossing facilities	On NC-12, just north of Shad St., there is a pedestrian crossing already thru the PUD but it is not very safely marked for drivers to notice it and my suggestions are to upgrade the facilities
3.	NC-12	N. of Bonita Rd.	Construct pedestrian crossing facilities	Here is another spot where there is a Pedestrian crossing with no markers, there is not even a striped path for pedestrians here, so for safety of pedestrian, it needs to be upgraded or taken out
4.	NC-12	Albacore St	Construct pedestrian crossing facilities	Albecore Street is a Beach access point and is also a highly congested pedestrian area because of Tim-Buck 2, the food lion plaza and the different PUDs.....This should be a major pedestrian facility upgrade here
5.	NC-12	Orion Way	Construct pedestrian crossing facilities	Orion Way is the entrance to Buck Island and Tim Buck @ and is the same as Albecore St
6.	NC-12	Currituck Clubhouse Rd	Construct pedestrian crossing facilities	This is the intersection to get into the Harris Teeter area This is another area where it needs un upgrade to pedestrian facilities
7.	NC-12	Hunt Club Rd	Construct pedestrian crossing facilities	This is the intersection of Hunt Club Rd and Yuapon Rd. This is another Beach Access Point area where there are bathrooms, parking and other facilities, Also across the street is a major commercial district and people park over there and walk to the beach
8.	NC-12	Audubon Dr.	Construct pedestrian crossing facilities	This is another intersection where the hotel and the Audobon Sanctuary meet and need a pedestrian upgrade
9.	NC-12	County Border to End	Construct Multi-use path that parallels NC-12	

Steven A. Lambert
Planning Director
Albemarle Commission

512 S. Church St.
Hertford, NC 27944
252-426-5753 ext. 230
www.albemarlecommission.org

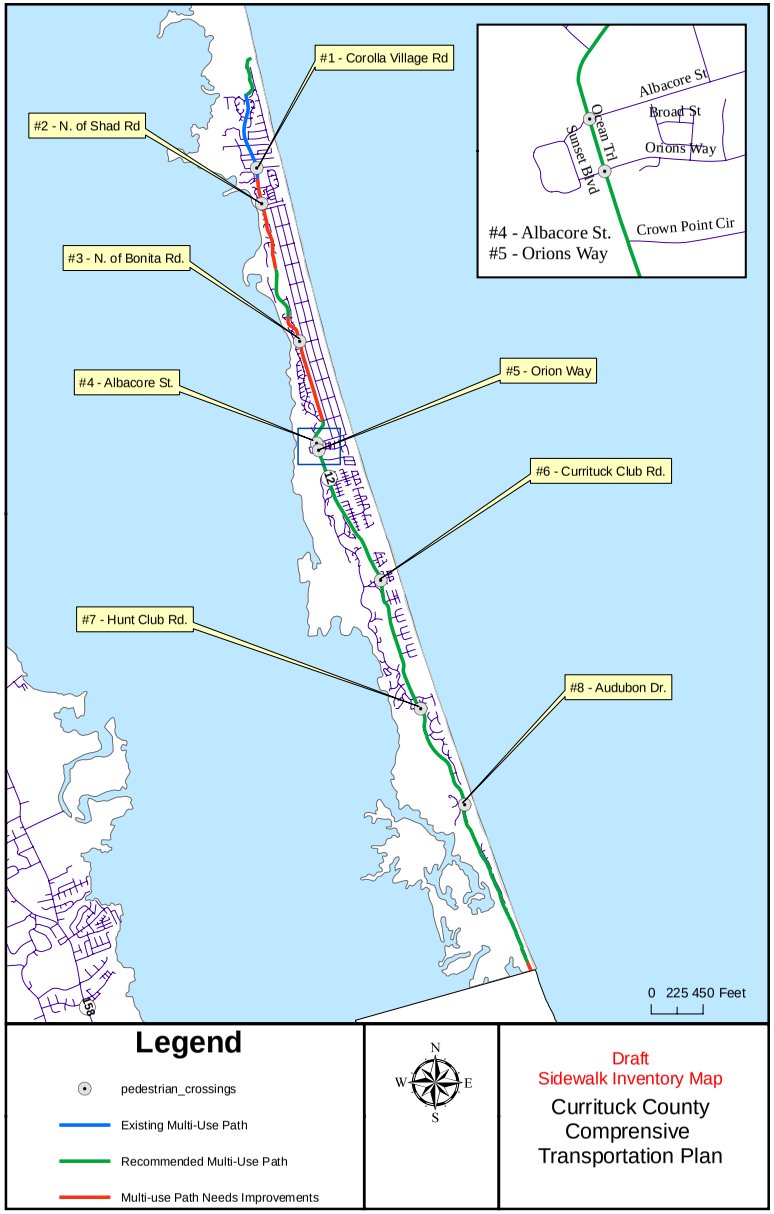
From: Ben Woody [mailto:bwoody@co.currituck.nc.us]
Sent: Friday, July 30, 2010 2:23 PM
To: Steven Lambert
Subject: Pedestrian Crossings

I shared your draft list of NC12 pedestrian crossings with the Turnpike Authority at a recent meeting. They asked what the reasoning was for the pedestrian crossing locations.

Could please send me a short email outlining some of your observations and reasons for selecting the crossing locations?

Thanks,

Ben E. Woody, AICP
Planning Director
Currituck County
PO Box 70
Currituck, North Carolina 27929
(252) 232.6029
www.currituckgovernment.com



GENERAL ASSEMBLY OF NORTH CAROLINA
1985 SESSION

CHAPTER 875
SENATE BILL 941

AN ACT TO PERMIT THE COUNTY OF CURRITUCK TO REGULATE MOTOR VEHICLES OPERATION ON PUBLIC BEACHES.

The General Assembly of North Carolina enacts:

Section 1. Chapter 153A of the General Statutes is amended by adding a new section to read:

"**§ 153A-139.1. Regulation of motor vehicles at beaches.**–(a) A county may by ordinance regulate, restrict, and prohibit the use of dune or beach buggies, jeeps, motorcycles, cars, trucks, or any other form of power-driven vehicle specified by the governing body of the county on the foreshore, beach strand, and the barrier dune system. Violation of any ordinance adopted by the governing body pursuant to this section is a misdemeanor, punishable by a fine of not more than fifty dollars ($50.00), or by imprisonment for not more than 30 days, or both in the discretion of the court.

(b) A county shall not prohibit the use of the specified vehicles from the foreshore, beach strand, and the barrier dune system by commercial fishermen for commercial activities. Commercial fishermen, however, shall abide by all other regulations or restrictions duly enacted by counties pursuant to this section.

(c) Notwithstanding G.S. 153A-122, a city may not take any action to limit the applicability of any ordinance adopted pursuant to this section on land within the county that is also within the city limits."

Sec. 2. This act applies to Currituck County only.

Sec. 3. This act is effective upon ratification.

In the General Assembly read three times and ratified, this the 3rd day of July, 1986.

GENERAL ASSEMBLY OF NORTH CAROLINA
SESSION 2009

HOUSE BILL 1829
RATIFIED BILL

AN ACT TO PROMOTE THE USE OF RENEWABLE ENERGY BY EXTENDING THE CREDIT FOR CONSTRUCTING RENEWABLE FUEL FACILITIES AND THE CREDIT FOR BIODIESEL PRODUCERS, REVISING THE TAX CREDIT FOR INVESTING IN RENEWABLE ENERGY PROPERTY, REINSTATING AND EXPANDING THE TAX CREDIT FOR A RENEWABLE ENERGY PROPERTY FACILITY, CLARIFYING THE AUTHORITY OF LOCAL GOVERNMENTS TO FINANCE ENERGY PROGRAMS, CLARIFYING THAT REAL PROPERTY DONATED FOR A CONSERVATION PURPOSE CAN BE USED ONLY FOR THAT PURPOSE, AND TO DESIGNATE THE APPROPRIATE PERSON TO PROVIDE A WRITTEN ALLOCATION OF THE FEDERAL §179D TAX DEDUCTION FOR ENERGY EFFICIENT COMMERCIAL BUILDINGS OWNED BY A GOVERNMENTAL ENTITY.

The General Assembly of North Carolina enacts:

TO EXTEND THE CREDIT FOR CONSTRUCTING RENEWABLE FUEL FACILITIES AND THE CREDIT FOR BIODIESEL PRODUCERS

SECTION 1.(a) G.S. 105-129.16D(d) reads as rewritten:

"**§ 105-129.16D. Credit for constructing renewable fuel facilities.**

…

(d) Sunset. – This section is repealed effective for facilities placed in service on or after January 1, ~~2011.~~2013."

SECTION 1.(b) G.S. 105-129.16F(b) reads as rewritten:

"**§ 105-129.16F. Credit for biodiesel producers.**

…

(b) Sunset. – This section is repealed for taxable years beginning on or after January 1, ~~2010.~~2013."

CHANGES TO CREDIT FOR INVESTING IN RENEWABLE ENERGY PROPERTY

SECTION 2.(a) G.S. 105-129.15 reads as rewritten:

"**§ 105-129.15. Definitions.**

The following definitions apply in this Article:

…

(2) Cost. – In the case of property owned by the taxpayer, cost is determined pursuant to regulations adopted under section 1012 of the Code, subject to the limitation on cost provided in section 179 of the Code. In the case of property the taxpayer leases from another, cost is value as determined pursuant to ~~G.S. 105-130.4(j)(2).~~G.S. 105-130.4(j)(2), unless the property is renewable energy property for which the taxpayer claims either a federal energy credit under section 48 of the Code or a federal grant in lieu of that credit and makes a lease pass-through election under the Code. In this circumstance, the cost of the leased renewable energy property is the cost determined under the Code.

…

(4b) Installation of renewable energy property. – Renewable energy property that, standing alone or in combination with other machinery, equipment, or real property, is able to produce usable energy on its own.

…

(7) Renewable energy property. – Any of the following machinery and equipment or real property:

a. Biomass equipment that uses renewable biomass resources for biofuel production of ethanol, methanol, and biodiesel; anaerobic biogas production of methane utilizing agricultural and animal waste or garbage; or commercial thermal or electrical generation. The term also includes related devices for converting, conditioning, and storing the liquid fuels, gas, and electricity produced with biomass equipment.

b. Combined heat and power system property. – Defined in section 48 of the Code.

c. Geothermal equipment that meets either of the following descriptions:

1. It is a heat pump that uses the ground or groundwater as a thermal energy source to heat a structure or as a thermal energy sink to cool a structure.

2. It uses the internal heat of the earth as a substitute for traditional energy for water heating or active space heating or cooling.

~~b.~~d. Hydroelectric generators located at existing dams or in free-flowing waterways, and related devices for water supply and control, and converting, conditioning, and storing the electricity generated.

~~c.~~e. Solar energy equipment that uses solar radiation as a substitute for traditional energy for water heating, active space heating and cooling, passive heating, daylighting, generating electricity, distillation, desalination, detoxification, or the production of industrial or commercial process heat. The term also includes related devices necessary for collecting, storing, exchanging, conditioning, or converting solar energy to other useful forms of energy.

~~d.~~f. Wind equipment required to capture and convert wind energy into electricity or mechanical power, and related devices for converting, conditioning, and storing the electricity ~~produced.~~produced or relaying the electricity by cable from the turbine motor to the power grid.

~~e. Geothermal heat pumps that use the ground or groundwater as a thermal energy source to heat a structure or as a thermal energy sink to cool a structure.~~

~~f. Geothermal equipment that uses the internal heat of the earth as a substitute for traditional energy for water heating or active space heating and cooling.~~"

SECTION 2.(b) G.S. 105-129.16A reads as rewritten:

"**§ 105-129.16A. Credit for investing in renewable energy property.**

(a) Credit. – If a taxpayer that has constructed, purchased, or leased renewable energy property places it in service in this State during the taxable year, the taxpayer is allowed a credit equal to thirty-five percent (35%) of the cost of the property. In the case of renewable energy property that serves a ~~single-family dwelling,~~nonbusiness purpose, the credit must be taken for the taxable year in which the property is placed in service. For all other renewable energy property, the entire credit may not be taken for the taxable year in which the property is placed in service but must be taken in five equal installments beginning with the taxable year in which the property is placed in service. Upon request of a taxpayer that leases renewable energy property, the lessor of the property must give the taxpayer a statement that describes the renewable energy property and states the cost of the property.

(b) Expiration. – If, in one of the years in which the installment of a credit accrues, the renewable energy property with respect to which the credit was claimed is disposed of, taken out of service, or moved out of State, the credit expires and the taxpayer may not take any remaining installment of the credit. The taxpayer may, however, take the portion of an installment that accrued in a previous year and was carried forward to the extent permitted under G.S. 105-129.17. No credit is allowed under this section to the extent the cost of the renewable energy property was provided by public funds.

(c) Ceilings. – The credit allowed by this section may not exceed the applicable ceilings provided in this subsection.

(1) ~~Nonresidential Property.~~ Business. – A ceiling of two million five hundred thousand dollars ($2,500,000) ~~per installation~~ applies to each installation of renewable energy property placed in service for ~~any purpose other than residential.~~ a business purpose. Renewable energy property is placed in service for a business purpose if the useful energy generated by the property is offered for sale or is used on-site for a purpose other than providing energy to a residence.

(2) ~~Residential Property.~~Nonbusiness. – The following ceilings apply to renewable energy property placed in service for ~~residential purposes:~~ a nonbusiness purpose:

a. One thousand four hundred dollars ($1,400) per dwelling unit for solar energy equipment for domestic water heating, including pool heating.

b. Three thousand five hundred dollars ($3,500) per dwelling unit for solar energy equipment for active space heating, combined active space and domestic hot water systems, and passive space heating.

c. ~~Ten thousand five hundred dollars ($10,500) per installation for any other renewable energy property for residential purposes.~~Eight thousand four hundred dollars ($8,400) for each installation of geothermal equipment.

d. ~~Eight thousand four hundred dollars ($8,400) per installation for a geothermal heat pump or geothermal equipment.~~Ten thousand five hundred dollars ($10,500) for each installation of any other renewable energy property.

(d) No Double Credit. – A taxpayer that claims any other credit allowed under this Chapter with respect to renewable energy property may not take the credit allowed in this section with respect to the same property. A taxpayer may not take the credit allowed in this section for renewable energy property the taxpayer leases from another unless the taxpayer obtains the lessor's written certification that the lessor will not claim a credit under this Chapter with respect to the property.

(e) Sunset. – This section is repealed effective for renewable energy property placed into service on or after January 1, 2016."

SECTION 2.(c) G.S. 105-259(b) is amended by adding the following new subdivision to read:

"(40) To furnish to a taxpayer claiming a credit under G.S. 105-129.16A information used by the Secretary to adjust the amount of the credit claimed by the taxpayer."

SECTION 2.(d) This section is effective for taxable years beginning on or after January 1, 2010.

REINSTATE AND EXPAND CREDIT FOR A RENEWABLE ENERGY PROPERTY FACILITY

SECTION 3.(a) Article 3B of Chapter 105 of the General Statutes is amended by adding a new section to read:

"**§ 105-129.16I. Credit for a renewable energy property facility.**

(a) Credit. – A taxpayer that places in service in this State a commercial facility for the manufacture of renewable energy property or a major component subassembly for a solar array or a wind turbine is allowed a credit. A taxpayer places a facility in service if it constructs the facility or converts its existing manufacturing facility to change the product it manufactures. For a taxpayer that constructs a facility, the credit is twenty-five percent (25%) of the taxpayer's cost to construct and equip the facility. For a taxpayer that converts a facility, the credit is twenty-five percent (25%) of the taxpayer's cost to convert and equip the existing facility. A taxpayer that claims any other credit allowed under this Chapter with respect to the facility may not take the credit allowed in this section with respect to that facility.

(b) Installments. – The entire credit may not be taken for the taxable year in which the facility is placed in service but must be taken in five equal annual installments beginning with the taxable year in which the facility is placed in service. If, in one of the years in which the

installment of a credit accrues, the facility with respect to which the credit was claimed is disposed of or taken out of service, the credit expires and the taxpayer may not take any remaining installment of the credit. The taxpayer may, however, take the portion of an installment that accrued in a previous year and was carried forward to the extent permitted under G.S. 105-129.17.

(c) Sunset. – This section is repealed effective for a renewable energy property facility placed in service on or after January 1, 2014."

SECTION 3.(b) This section is effective for taxable years beginning on or after January 1, 2011.

CLARIFY LOCAL GOVERNMENT AUTHORITY TO FINANCE ENERGY PROGRAMS

SECTION 4.(a) G.S. 153A-455 reads as rewritten:

"**§ 153A-455. ~~Revolving loan program for energy~~Program to finance energy improvements.**

(a) Purpose. – The General Assembly finds it is in the best interest of the citizens of North Carolina to promote and encourage renewable energy and energy efficiency within the State in order to conserve energy, promote economic competitiveness, and expand employment in the State. The General Assembly also finds that a county has an integral role in furthering this purpose by promoting and encouraging renewable energy and energy efficiency within the county's territorial jurisdiction. In furtherance of this purpose, a county may establish a program to finance the purchase and installation of distributed generation renewable energy sources or energy efficiency improvements that are permanently affixed to residential, commercial, or other real property.

(b) ~~Revolving Loan Fund.~~Financing Assistance – A county may establish a revolving loan fund and a loan loss reserve fund for the purpose of ~~providing loans to finance~~financing or assisting in the financing of the purchase and installation of distributed generation renewable energy sources or energy efficiency improvements that are permanently fixed to residential, commercial, or other real property. A county may establish other local government energy efficiency and distributed generation renewable energy source finance programs funded through federal grants. A county may use ~~Energy Efficiency and Conservation Block Grant Funds~~ State and federal grants and loans and its ~~unrestricted~~ general revenue ~~to fund the revolving loan fund.~~for this financing. The annual interest rate charged for the use of funds from the revolving fund may not exceed eight percent (8%) per annum, excluding other fees for loan application review and origination. The term of any loan originated under this section may not be greater than ~~15 years.~~20 years.

(c) Definition. – As used in this Article, "renewable energy source" has the same meaning as "renewable energy resource" in G.S. 62-133.8."

SECTION 4.(b) G.S. 153A-149(c) is amended by adding a new subdivision to read:

"(10c) Energy Financing. – To provide financing for renewable energy and energy efficiency in accordance with a program established under G.S. 153A-455."

SECTION 4.(c) G.S. 160A- 459.1 reads as rewritten:

"**§ 160A-459.1. ~~Revolving loan program for~~ Program to finance energy improvements.**

(a) Purpose. – The General Assembly finds it is in the best interest of the citizens of North Carolina to promote and encourage renewable energy and energy efficiency within the State in order to conserve energy, promote economic competitiveness, and expand employment in the State. The General Assembly also finds that a city has an integral role in furthering this purpose by promoting and encouraging renewable energy and energy efficiency within the city's territorial jurisdiction. In furtherance of this purpose, a city may establish a program to finance the purchase and installation of distributed generation renewable energy sources or energy efficiency improvements that are permanently affixed to residential, commercial, or other real property.

(b) ~~Revolving Loan Fund~~ Financing Assistance. – A city may establish a revolving loan fund and a loan loss reserve fund for the purpose of ~~providing loans to finance~~ financing or assisting in the financing of the purchase and installation of distributed generation renewable energy sources or energy efficiency improvements that are permanently fixed to residential, commercial, or other real property. A city may establish other local government energy efficiency and distributed generation renewable energy source finance programs funded

through federal grants. A city may use ~~Energy Efficiency and Conservation Block Grant Funds~~ State and federal grants and loans and its ~~unrestricted~~ general revenue ~~to fund the revolving loan fund.~~ for this financing. The annual interest rate charged for the use of funds from the revolving fund may not exceed eight percent (8%) per annum, excluding other fees for loan application review and origination. The term of any loan originated under this section may not be greater than ~~15 years.~~20 years.

(c) Definition. – As used in this Article, "renewable energy source" has the same meaning as "renewable energy resource" in G.S. 62-133.8."

SECTION 4.(d) G.S. 160A-209(c) is amended by adding a new subdivision to read:

"(10b) Energy Financing. – To provide financing for renewable energy and energy efficiency in accordance with a program established under G.S. 160A-459.1."

CLARIFY THAT REAL PROPERTY DONATED FOR A CONSERVATION PURPOSE CAN BE USED ONLY FOR THAT PURPOSE

SECTION 5.(a) G.S. 105-130.34(a) reads as rewritten:

"(a) Any C Corporation that makes a qualified donation of an interest in real property located in North Carolina during the taxable year that is useful for (i) public beach access or use, (ii) public access to public waters or trails, (iii) fish and wildlife conservation, (iv) forestland or farmland conservation, (v) watershed protection, (vi) conservation of natural areas as that term is defined in G.S. 113A-164.3(3), (vii) conservation of natural or scenic river areas as those terms are used in G.S. 113A-34, (viii) conservation of predominantly natural parkland, or (ix) historic landscape conservation is allowed a credit against the tax imposed by this Part equal to twenty-five percent (25%) of the fair market value of the donated property interest. To be eligible for this credit, the interest in real property must be donated in perpetuity ~~to and accepted by~~ for one of the qualifying uses listed in this subsection and accepted in perpetuity for the qualifying use for which the property is donated. The person to whom the property is donated must be the State, a local government, or a body that is both organized to receive and administer lands for conservation purposes and qualified to receive charitable contributions pursuant to G.S. 105-130.9. Lands required to be dedicated pursuant to local governmental regulation or ordinance and dedications made to increase building density levels permitted under a regulation or ordinance are not eligible for this credit.

The credit allowed under this section for one or more qualified donations made in a taxable year may not exceed five hundred thousand dollars ($500,000). To support the credit allowed by this section, the taxpayer must file with the income tax return for the taxable year in which the credit is claimed the following:

(1) A certification by the Department of Environment and Natural Resources that the property donated is suitable for one or more of the valid public benefits set forth in this subsection.

(2) A self-contained appraisal report or summary appraisal report as defined in Standards Rule 2-2 in the latest edition of the Uniform Standards of Professional Appraisal Practice as promulgated by the Appraisal Foundation for the property. For fee simple absolute donations of real property, a taxpayer may submit documentation of the county's appraised value of the donated property, as adjusted by the sales assessment ratio, in lieu of an appraisal report."

SECTION 5.(b) G.S. 105-151.12(a) reads as rewritten:

"(a) An individual or pass-through entity that makes a qualified donation of an interest in real property located in North Carolina during the taxable year that is useful for (i) public beach access or use, (ii) public access to public waters or trails, (iii) fish and wildlife conservation, (iv) forestland or farmland conservation, (v) watershed protection, (vi) conservation of natural areas as that term is defined in G.S. 113A-164.3(3), (vii) conservation of natural or scenic river areas as those terms are used in G.S. 113A-34, (viii) conservation of predominantly natural parkland, or (ix) historic landscape conservation is allowed a credit against the tax imposed by this Part equal to twenty-five percent (25%) of the fair market value of the donated property interest. To be eligible for this credit, the interest in property must be donated in perpetuity ~~to and accepted by~~ for one of the qualifying uses listed in this subsection and accepted in perpetuity for the qualifying use for which the property is donated. The person to whom the

property is donated must be the State, a local government, or a body that is both organized to receive and administer lands for conservation purposes and qualified to receive charitable contributions under the Code. Lands required to be dedicated pursuant to local governmental regulation or ordinance and dedications made to increase building density levels permitted under a regulation or ordinance are not eligible for this credit.

To support the credit allowed by this section, the taxpayer must file with the income tax return for the taxable year in which the credit is claimed the following:

(1) A certification by the Department of Environment and Natural Resources that the property donated is suitable for one or more of the valid public benefits set forth in this subsection. The certification for a qualified donation made by a pass-through entity must be filed by the pass-through entity.

(2) A self-contained or summary appraisal report as defined in Standards Rule 2-2 in the latest edition of the Uniform Standards of Professional Appraisal Practice as promulgated by the Appraisal Foundation for the property. For fee simple absolute donations of real property, a taxpayer may submit documentation of the county's appraised value of the donated property, as adjusted by the sales assessment ratio, in lieu of an appraisal report."

ALLOCATION OF FEDERAL SECTION 179D TAX DEDUCTION FOR ENERGY EFFICIENT COMMERCIAL BUILDINGS OWNED BY A GOVERNMENTAL ENTITY

SECTION 6. G.S. 143-341(3) reads as rewritten:

"**§ 143-341. Powers and duties of Department.**

The Department of Administration has the following powers and duties:

…

(3) Architecture and Engineering:

a. To examine and approve all plans and specifications for the construction or renovation of:

1. All State buildings or buildings located on State lands, except those buildings over which a local building code inspection department has and exercises jurisdiction; and

2. All community college buildings requiring the estimated expenditure for construction or repair work for which public bidding is required under G.S. 143-129 prior to the awarding of a contract for such work; and to examine and approve all changes in those plans and specifications made after the contract for such work has been awarded.

a1. To organize and schedule, within three weeks of designer selection and before the design contract is let, a meeting of the stakeholders for each State capital improvement project to discuss plan review requirements and to define the terms of the memorandum of understanding developed by the State Building Commission pursuant to G.S. 143-135.26(2). The stakeholders shall include the funded agency, each State agency having plan review responsibilities for the project, and the selected designer. Notwithstanding the foregoing, the meeting need not be scheduled if the funded agency so requests.

b. To assist, as necessary, all agencies in the preparation of requests for appropriations for the construction or renovation of all State buildings.

b1. To certify that a statement of needs pursuant to G.S. 143C-3-3 is feasible. For purposes of this sub-subdivision, "feasible" means that the proposed project is sufficiently defined in overall scope; building program; site development; detailed design, construction, and equipment budgets; and comprehensive project scheduling so as to reasonably ensure that it may be completed with the amount of funds requested. At the discretion of the General Assembly, advanced planning funds may be appropriated in support of this certification. This sub-subdivision shall not apply to requests for appropriations of less than one hundred thousand dollars ($100,000).

c. To supervise the letting of all contracts for the design, construction or renovation of all State buildings and all community college buildings whose plans and specifications must be examined and approved under a.2. of this subdivision.

d. To supervise and inspect all work done and materials used in the construction or renovation of all State buildings and all community college buildings whose plans and specifications must be examined and approved under a.2. of this subdivision; to act as the appropriate official inspector or inspection department for purposes of G.S. 143-143.2; and no such work may be accepted by the State or by any State agency until it has been approved by the Department.

e. To require all State agencies to use existing plans and specificiations for construction projects, where feasible. Prior to designing a project, State agencies shall consult with the Department of Administration on the availability of appropriate existing plans and specifications and the feasibility of using them for a project.

f. To provide written allocation of the deduction allowed under section 179D of the Code, as defined in G.S. 105-228.90, for designing energy efficient commercial building property that is installed on or in property owned by the State. The allocation must be made in accordance with section 179D of the Code.

Except for sub-subdivisions b., b1., ~~and e.~~ e., and f. of this subdivision, this subdivision does not apply to the design, construction, or renovation of projects by The University of North Carolina pursuant to G.S. 116-31.11.

…."

EFFECTIVE DATE

SECTION 7. Except as otherwise provided, this act is effective when it becomes law.

In the General Assembly read three times and ratified this the 10th day of July, 2010.

Walter H. Dalton
President of the Senate

Joe Hackney
Speaker of the House of Representatives

Beverly E. Perdue
Governor

Approved _____.m. this _____ day of _____, 2010

ORDER GRANTING PIR HOLDINGS, LLC'S
SPECIAL USE PERMIT (PB 09-36)

I. DECISION:

Approved with conditions. On May 17, 2010, the Currituck County Board of Commissioners ("BOC") voted unanimously to approve the special use permit request with the proposed conditions contained in the case analysis dated May 17, 2010.

II. SUMMARY OF PROCEEDINGS:

1. On October 22, 2009, PIR Holdings, LLC ("PIR") filed a site plan application and special use permit ("SUP Application") with the Currituck County ("County") Planning Department.

2. On November 18, 2009, the County Technical Review Committee ("TRC") met to discuss and review the SUP Application.

3. County Planning Staff submitted a Case Analysis to the County Planning Board.

4. The County Planning Board met to consider the SUP Application on January 12, 2010. After hearing from several speakers, the County Planning Board tabled its consideration of the SUP Application in order for the applicant to address various issues.

5. On February 9, 2010, the County Planning Board heard additional public comment and recommended denial of the SUP Application by a vote of 6-2.

6. On May 17, 2010, the BOC held a public hearing to consider the SUP Application. The County received into evidence the Case Analysis dated May 17, 2010, along with supporting documentation submitted into the record by the County Planning Staff.

7. County Planning Director Ben Woody introduced the Case Analysis and recommended conditional approval of the SUP Application.

8. In support of the SUP Application, PIR offered the testimony of the County Planning Director, Ben Woody. Additionally, Sumit Gupta, PIR's representative, testified at the beginning of the presentation of PIR's case in chief. Thereafter, PIR offered the expert testimony of: Eddie Valdivieso, Principal Engineer with Quible & Associates; Brian Rubino, Environmental Scientist with Quible & Associates; James Spangler, Principal with Spangler Environmental; Ralph Lasater, Principal Partner and Lead Designer for the project with Community Planning & Architectural Associates, PLLC; Judy Randall, President of Randall Travel Marketing, Inc.; Sherry Rollason, Appraiser with Rollason and Wood Realty; David E. Richards, MAI Appraiser with Dominion Realty Advisors; and Richard Adams, a registered professional engineer with Kimley-Horn and Associates. The BOC admitted PIR's exhibits numbered 1-21 into evidence. Members of the public also spoke in favor of the SUP Application.

9. In opposition to the SUP Application, the Pine Island Property Owners Association presented the expert testimony of: Eddie Staley, Geographic Information System Professional with Withers & Ravenal; Bill Hollan, President of Turnpike Properties, LLC; George Wood, President of Environmental Professionals, Inc.; and Charles Moody, III, MAI Appraiser with Realty Services of Eastern North Carolina, Inc. The BOC admitted the opposition's exhibits numbered 1-6 and a North Carolina Land Trust map entitled in part "Priority Water Quality Enhancement Parcels and Proposed Conservation Corridors, Currituck County, NC dated October 2006 into evidence. In addition, Elan Blutinger, a property owner in the Pine Island community and member of the Board of Directors of the Pine Island Property Owners Association, and Brian Hargreaves, an adjoining property owner, also spoke in opposition to the SUP Application.

10. All witnesses in support of and in opposition to the SUP Application were duly sworn and subject to cross-examination.

11. After hearing all testimony from the proponents and opponents of the SUP Application, the BOC closed the public hearing and voted 7-0 to approve the SUP Application with the conditions of approval contained in the Case Analysis dated May 17, 2010, along with a twenty percent (20%) parking reduction requested by PIR in the SUP Application. The BOC then directed the attorneys for PIR to draft proposed Findings of Fact and Conclusion of Law reflecting its decision to approve the SUP Application.

12. In support of its decision, and based on all of the evidence received by the BOC during the May 17, 2010 hearing, the arguments of counsel for PIR and the Pine Island Property Owners Association, and all applicable County ordinances, plans, policies, and other applicable law, the BOC makes the following Findings of Fact:

III. FINDINGS OF FACT:

1. Each witness appearing before the BOC during the hearing to consider the SUP Application on May 17, 2010 was duly sworn and subject to cross-examination.

2. The hearing held by the BOC on May 17, 2010 was properly noticed and advertised in accordance with the requirements of the County Unified Development Ordinance ("UDO") and other applicable law.

3. Section 11.7.1.F.12 of the UDO requires that in order to approve the SUP Application, the BOC determine that:

   a. The SUP Application is complete;

b. The proposed use is one listed in the Table of Permitted Uses in the UDO as a special use, indicated with an "S";

c. The conditions proposed meet or exceed the minimum requirements of the UDO;

d. The proposed special use will not endanger the public health or safety;

e. The proposed special use will not injure the value of adjoining or abutting property and will be in harmony with the area in which it is located;

f. The proposed use will be in conformity with the Land use Plan and other officially adopted plans; and

g. There are adequate public facilities available to serve the proposed special use.

4. The SUP Application and all supporting documentation, including the Case Analysis and materials submitted to the members of the BOC in their agenda packets were admitted into evidence.

5. The Property subject to the SUP Application (the "Property") is zoned Limited Business Hotel ("LBH").

6. PIR has a contract to purchase the Property from its current owner, the National Audubon Society ("Audubon").

7. The Property could be developed under the UDO for single family residential use, with 22,000 square feet of retail, a 100-seat restaurant and with special use permit a hotel, in addition to numerous other uses, without obtaining a special use permit.

8. The Property presently is zoned LBH and the following uses are among the uses permitted on the Property pursuant to the applicable provisions of the UDO:

   a. Retail, cemeteries, hospitals, car washes, uses with drive thru, hotels under 5 acres, convenience stores, and outdoor recreation facilities.

9. PIR needs a special use permit for the project proposed by the SUP Application ~~is~~ because it is proposing a multi-family use combined with a hotel.

10. The SUP Application is complete.

11. The requested special use is among those listed in the Table of Permitted Uses in the UDO as a special use indicated with an "S".

12. The proposed development, with recommended conditions meets or exceeds the minimum requirements of the UDO.

13. The property subject to the SUP Application is classified in the County's 2006 officially adopted Land Use Plan as a Full Service area within the Corolla subarea.

14. The SUP Application is consistent and in conformity with the policies contained in the County's 2006 Land Use Plan, including, without limitation, Policies HN3 Compact Mixed Use Developments; CD2 Commercial or Mixed Use Cluster Development to reduce strip retail; CD7 Attractive and Beneficial landscaping and appropriate buffering; CD8 Mixed Use Developments utilizing residential and nonresidential uses with pedestrian scale and design; PR8 Walkways within Development; ED1 Encourage diversity of economic development projects; and OB2 Encourage cluster development on Outerbanks and discourage strip retail development.

15. The County Planning Department recommended that the SUP Application be approved subject to the conditions and corrections set forth in the Case Analysis, including without limitation, the requested 20% reduction in the amount of parking required as set forth both in the application and the Case Analysis.

16. PIR started working on a plan in 2008 to develop the Property as a mixed use development. After discussions with the County Planning Staff, it was informed that multi-family development was not allowed in the LBH Zoning district.

17. PIR worked with County Planning Staff to develop a text amendment that would allow multi-family uses within the LBH zoning district upon the issuance of a Special Use Permit.

18. The text amendment was recommended for approval by the Planning Board unanimously on September 15, 2009.

19. On October 19, 2009, the BOC voted unanimously to approve the text amendment to allow multi-family uses in the LBH zoning district.

20. The text amendment adopted on October 19, 2009 facilitates the development of the Property as a mixed use project with a multi-family component.

21. On October 22, 2009, the SUP Application was submitted to the County.

22. The SUP Application was reviewed by the Technical Review Committee on November 18, 2009.

23. Revised plans were submitted to the County in response to the TRC comments.

24. The SUP Application was considered by the Planning Board on January 12, 2010 and February 9, 2010.

25. An existing hotel facility is located to the south of the Property.

26. The land uses surrounding the property in question include:

a. The Pine Island Hunt Club to the Northwest;

b. Large 6-8 bedroom vacation and rental homes to the North;

c. The Hampton Inn Hotel and Pine Island pool club to the South; and

d. A privately owned and operated commercial airstrip to the West owned by Turnpike Properties, LLC.

27. The multi-family residential component of the project proposed in the SUP application will be located near the vacation and rental homes to the north, along with a 42-foot transitional buffer designed to shield the vacation and rental homes located in this area appropriately from the proposed development.

28. The development proposed in the SUP Application will be an effective transitional use between the large vacation and rental homes to the north and the hotel and club to the south, in accordance with recognized planning principles, and is in harmony with existing development in the vicinity of the Property.

29. Vehicular circulation and access for the project described in the SUP application has been designed to accommodate all of the anticipated traffic associated with the proposed use, to provide more than adequate access for emergency vehicles and also to protect and promote pedestrian access and circulation.

30. Landscaping will be provided for the proposed development that meets or exceeds the requirements of the UDO.

31. Public water will be supplied to the proposed development by the Southern Outer Banks Water System in a manner that meets or exceeds the requirements of the UDO and all other applicable law.

32. The wastewater treatment system for the proposed development will be designed to meet or exceed the requirements of the UDO and all other applicable law.

33. The stormwater system for the proposed development will be designed to meet or exceed all of the requirements for addressing stormwater in the UDO and all other applicable law.

34. Impervious surfaces for the proposed project will be reduced as a result of the requested 20% parking reduction, which is consistent and in conformity with the County's policy encouraging low impact design.

35. There will be adequate parking for the project during peak hours, even after the requested 20% parking reduction is granted.

36. Internal traffic circulation, including truck turning radii and passenger vehicle circulation, as proposed in the SUP Application, does not raise any significant issues or concerns related to internal circulation for the site.

37. The trip generation resulting from the proposed development is reduced by both pass-by capture and internal capture due to the mixed use nature of the project.

38. Presently, NCDOT is developing a transportation plan for this area of the County. Nothing in the proposed development would impede or be inconsistent with the implementation of the expected plan for NC Highway 12 in this vicinity regardless of the final outcome of that plan.

39. NCDOT has reviewed PIR's proposed development plan, and NCDOT's review is complete.

40. All comments received from NCDOT regarding the plans for the proposed development have been addressed in the materials before the BOC that were submitted with the SUP Application.

41. Other than a driveway permit and encroachment agreement, ~~N~~no further review by NCDOT is required prior to site plan approval for the project proposed in the SUP Application.

42. The project proposed in the SUP Application is consistent and in conformity with, and will help to implement, the recommendations and economic development, travel and tourism policies adopted by the County Department of Travel and Tourism and the BOC in 2007.

43. The economic benefits to the County that will be derived from the proposed development contained in the SUP Application include job creation, tax revenues and needed amenities to serve demand of County residents and tourists.

44. The benefits accruing from the SUP Application are consistent and in conformity with the objectives of the County's officially adopted economic development and tourism plans and policies.

45. The SUP Application addresses the economic development needs of the County and is consistent and in conformity with the officially adopted economic development and tourism plans and policies adopted by the County;

46. The development proposed in the SUP Application is economically viable and is likely to be built so that the benefits to the citizens of the County, which are the objectives of the County's economic development and tourism policies, are likely to be achieved.

47. PIR representative, Brian Rubino, collaborated with the NC Department of Environment and Natural Resources ("DENR") in preparing a report assessing the

environmental significance of the property in question. A copy of his report was admitted into evidence by the BOC as Exhibit 13.

48. The Property in question originally was part of a 3,600 acre tract that was registered by the Audubon Society with DENR Natural Heritage Program in 1979.

49. The Property's registration was withdrawn in 1990 when a portion of the 3,600 acres was developed.

50. The Property's current status is that DENR has listed it as a "C" rated, Regionally Significant Natural Heritage Area based upon the fact that is one of the few undeveloped tracts on the beachfront in Corolla. The Property therefore has some significance because undeveloped beachfront property in that area is scarce. However, nothing in DENR's regulations prevents the property from being developed in the manner shown in the SUP Application.

51. The Property has no unique environmental characteristics that merit its preservation.

52. No endangered or threatened plant or animal species were identified on the Property during assessment of the Property by PIR representative Brian Rubino.

53. Two natural communities exist on the Property, Maritime Grassland and Maritime Shrub, both of which exist in larger, more expansive quantities in a number of areas on the Outer Banks, including in the 960 acre Currituck Wildlife Refuge near Ocean Hill, and on 4500 acres of land near Corona which also is a part of the Currituck Wildlife Refuge. These communities also exist in large quantities on the U.S. Army field station tract at Duck Pier, which consists of approximately 150 acres.

54. Likewise, additional examples of these communities exist on the thousands of acres of the Cape Hatteras National Seashore, the property owned by Audubon in the Corolla area located to the west of Highway 12, and in various other parts of the Outer Banks.

55. Therefore, better examples of the grasses and shrubs on the Property exist in large quantities elsewhere in the vicinity of the Property.

56. The location of Highway 12 creates a significant physical barrier between the Property and the balance of the property owned by Audubon which is located to the west of Highway 12.

57. Audubon's mission is to preserve and protect waterfowl habitat. Through its decision to sell the Property to PIR, Audubon has independently determined that this site is not necessary to the advancement of that mission.

58. In a letter submitted to the BOC by Audubon, and admitted into evidence without objection, Audubon states that its national board has determined that this property does not merit preservation in support of Audubon's mission, and that Audubon has determined that the funds generated from the sale of the Property will be helpful in the preservation of other land Audubon owns in the Corolla area.

59. The decision of the national board of Audubon to sell this property for development after making the determination that is not necessary for it to be preserved in order to support its organizational mission, further supports the conclusion that preservation of this property is not necessary for environmental purposes.

60. Documents relating to the Property which were prepared by DENR are not reliable because they were not based upon an independent analysis and site evaluation. No representative from DENR visited the Property and no meaningful conclusion as to its environmental significance can be reached without a site visit and evaluation.

61. The circumstances surrounding the Property, including the legal right in the Property owners to develop it for the purposes permitted in the UDO indicate that the SUP Application is consistent and in conformity with the environmental protection policies of the County Land Use Plan, including, without limitation, the spirit and intent of Policy ES8.

62. The proposed development described in the SUP Application is in harmony with the use of property in the vicinity.

63. The proposed development will have no adverse impact upon the value of residential properties adjacent to, abutting, or in the vicinity the Property.

64. The proposed development will have no adverse impact upon the values of the various commercial properties adjacent to, abutting, or in the vicinity of the Property.

65. The architectural characteristics of the proposed project have been carefully designed to fit into the surrounding built environment and to be consistent and harmonious with the architectural characteristics of the structures in the vicinity of the Property, including both the single family residential uses to the north of the Property, and the commercial uses to the south of the Property.

66. Exhibits 18-21 were admitted into evidence, and the design of the proposed project reflected on those Exhibits will be incorporated into the requirements of the SUP Application.

67. The proposed project has been designed to fit into the topography and natural environment of the area in which it is located, and it therefore is in harmony with the area surrounding the Property.

In light of the foregoing findings of fact, the BOC makes the following conclusions of law:

IV. CONCLUSIONS OF LAW

1. The SUP Application is complete.

2. The proposed uses set forth in the SUP Application are among those listed in the Table of Permissible Uses in the UDO are identified as special uses indicated with an "S".

3. The conditions proposed meet or exceed the minimum requirements of the UDO.

4. The special use will not endanger the public health or safety.

5. The special use will not injure the value of adjoining or abutting property and will be in harmony with the area in which it is located.

6. The special use is in conformity with the Land Use Plan and other officially adopted plans.

7. The special use will not exceed the County's ability to provide adequate public facilities.

8. Having considered the expert testimony presented by PIR and the opponents, the BOC hereby concludes that PIR's expert testimony and evidence was competent, substantial, material and sufficient to support granting the SUP Application.

9. The opponent's evidence, when considered in light of PIR's expert testimony and evidence was inconsistent with established facts and was less credible than that submitted by PIR and the County Staff, and the BOC hereby concludes that such testimony and evidence was insufficient to support a denial of the SUP Application.

V. ORDER

Based upon the foregoing Findings of Fact and Conclusions of Law, it is hereby ordered that the SUP Application is approved as submitted with shared parking reduction in an amount twenty percent (20%) less than required by the Currituck County Unified Development Ordinance, subject to the following conditions:

a. The site plan, lighting plan and landscape plan must be approved the Currituck County Techinical Review Committee.

b. The Conceptual Design Presentation prepared by CPAA Planning, Architecture, Interior Design, Visual Communications, and Landscape Architecture from Chapel Hill, North Carolina dated January 27, 2010 is incorporated by reference into this Special Use Permit and any significant change to the Conceptual Design shall require modification of the Special Use Permit.

c. All handicap accessible routes shall be designated on the site plan.

d. Trash collection areas shall not be located in proximity to residential units, open space or amenity areas located in Pine Island Planned Unit Development. Fenced service areas and equipment including, but not limited to, dumpsters and mechanical equipment located between principle buildings and North Carolina Highway 12 shall be constructed of exterior materials comparable to surrounding buildings in the immediate vicinity.

e. Landscape plantings shall be salt tolerant species.

f. A type A opaque bufferyard shall be installed along the northern and southern exterior property lines. At the time of planting, the bufferyard shall consist of (i) native salt tolerant trees a minimum of ten (10) feet in height with caliper no less than two (2) inches and (ii) salt tolerant native shrubs of five (5) gallon size.

g. All pedestrian crossings on the site shall be raised with contrasting materials.

h. An internal traffic study of internal vehicular circulation on the site shall be prepared by a professional or licensed professional traffic engineer which must be submitted and reviewed by the Currituck County Technical Review Committee as part of site plan review.

i. A minimum of three low impact development techniques shall be included in site plan design to include, but not limited to, bioretention, native vegetation, solar energy, green building practices, cisterns and preservation of natural features of the site such as existing topography, significant existing vegetation and preservation of areas on site not indentified for construction or grading.

This the 21 day of June, 2010.

By: S Paul O'Neal
Chairman, Currituck County
Board of Commissioners

CASE ANALYSIS FOR THE BOARD OF COMMISSIONERS
DATE: May 17, 2010
PB 09-36 Corolla Club and Resort Special Use Permit

ITEM: PB 09-36 Corolla Club and Resort Special Use Permit request for 32 multi-family units and 100-room hotel.

LOCATION: Ocean Trail, south of Pine Island, Phase 3, and north of the Hampton Inn on the east side of Ocean Trail, Poplar Branch Township.

TAX ID: 0128-000-001D-0000

ZONING DISTRICT: Limited Business Hotel (LBH)

PRESENT USE: Audubon – Conservation Area

OWNER: National Audubon Society
225 Varick Street, Fl 7
New York, NY 10014-4396

APPLICANT: PIR Holding, LLC
c/o Sumit Gupta
PO Box 7442
Kill Devil Hills, NC 27948

ENGINEER: Quible and Associates, PC
PO Drawer 870
Kitty Hawk, NC 27948

LAND USE/ZONING OF SURROUNDING PROPERTY:

	Land Use	Zoning
NORTH:	Residential	PUD-RO1
SOUTH	PUD Amenity Site/Commercial	PUD-LBH
EAST:	Atlantic Ocean	
WEST:	Audubon – Conservation Area	RO1

LAND USE PLAN CLASSIFICATION: The 2006 Land Use Plan classifies the site as Full Service within the Corolla subarea.

SIZE OF SITE: 12.75 acres

NUMBER OF UNITS: 32 multi-family units
100-hotel rooms

PROJECT DENSITY: 2.5 multi-family units/ acre
7.984 hotel units/acre

UTILITIES: The development will be served by Southern Outer Banks Water System (SOBWS). The sewage treatment and disposal will be provided by an on-site wastewater treatment system and on-site disposal pond designed to accommodate 60,000 gpd.

I. NARRATIVE OF REQUEST:

- The developer is seeking approval of a special use permit for a combination use that includes 32 multi-family units and 100-hotel rooms. In addition, the developer is proposing 22,000 square feet of retail and a 100-seat restaurant that can be approved administratively (zoning permit).
- The proposed plan does not meet the standard parking requirements of the UDO and the applicant is requesting administrative relief to the minimum parking requirements. The request is for a 20% parking reduction and is detailed below:

Use	Required	Proposed
Retail	1:200 (110)	1:200 (110 * 20% = 88 spaces)
Hotel	1:room (100)	1:room (100* 20% = 80 spaces)
Multi-Family	2:unit (64)	2:unit (64* 20% = 51 spaces)
Restaurant	1:3 seats (34) 1:2 emp. (7)	1:3 seats (34 * 20% = 27 spaces) 1:2 emp. (7* 20% = 6 spaces)
TOTAL	**315 spaces**	**315 * 20% = 252 spaces**

II. QUESTION(S) BEFORE THE BOARD:
Special Use Permit Criteria and Staff Findings:

Special use permits (SUP) are intended to allow the Board of Commissioners flexibility in the administration of the UDO. Through the SUP procedure, property uses which would otherwise be considered undesirable in certain districts can be developed subject to conditions of approval to minimize any negative effects they might have on surrounding properties.

In order to approve a SUP, certain criteria must be satisfied. The criteria and suggested findings of fact are outlined as follows:

1. Completeness of application.
   Suggested Findings:
   a. The application is complete.

2. The proposed use is among those listed in the Table of Permissible Uses as a special use indicated with an "S".
   Suggested Findings:
   a. Multi-family uses are an allowable use within the Limited Business Hotel (LBH) zoning district with a special use permit.
   b. The multi-family component of the mixed use development shall not exceed 30% of the total project gross floor area. The proposed multi-family development is 30% of the total project gross floor area.
   c. Hotels are an allowable use within the Limited Business Hotel (LBH) zoning district with a conditional use permit. Pursuant to Section 2.4.3 of the UDO combination uses shall be authorized by a special use permit if any of the principal uses combined requires a special use permit.

3. The conditions proposed meet or exceed the minimum requirements of this ordinance.
   Suggested Findings:
   a. The proposed development with recommended plan corrections and conditions meet or exceed the minimum requirements of this ordinance.

4. The special use will not endanger the public health or safety:
   Suggested Findings:
   a. The proposed development with recommended conditions and plan corrections should have an insignificant impact on public health or safety.

5. The special use will not injure the value of adjoining or abutting property and will be in harmony with the area in which it is located
   Suggested Findings:
   a. The Unified Development Ordinance indicates that a combination use comprised of multi-family development, retail, restaurant, and hotel is allowed in the LBH base zoning district with a special use permit.
   b. An existing hotel facility is located to the south and an increased bufferyard requirement is recommended for the northern property boundary.

6. The special use will be in conformity with the Land Use Plan or other officially adopted plan.
   Suggested Findings:
   a. The 2006 Land Use Plan classifies this site as Full Service within the Corolla subarea. The Full Service classification supports a base residential density of 2 units per acre but may be increased to 3-4 units per acre through overlay zoning. The proposed use is in keeping with the policies of the plan, some of which are:

      Policy HN3: Currituck County shall especially encourage two forms of residential development, each with the objective of avoiding traditional suburban sprawl:
      1. OPEN SPACE DEVELOPMENTS that cluster homes on less land, preserving permanently dedicated open space and often employ on-site or community sewage treatment. These types of developments are likely to occur primarily in the Conservation, Rural, and to a certain extent the Limited Services areas identified on the Future Land Use Map.
      2. COMPACT, MIXED USE DEVELOPMENTS or DEVELOPMENTS NEAR A MIXTURE OF USES that promote a return to balanced, self-supporting community centers generally served by centralized water and sewer. These types of development are contemplated for the Full Service Areas identified on the Future Land Use Map.

      Policy CD2: Commercial and office development of greater than a neighborhood scale shall be encouraged to cluster in COMMERCIAL OR MIXED-USE CENTERS to curtail the proliferation of strip development, and minimize traffic generation.

      Policy CD8: MIXED-USE DEVELOPMENTS, properly planned from the outside, which allow for a compatible mixture of residential and non-residential uses with a pedestrian scale and design, are encouraged. Similarly, businesses may be located adjoining (and therefore convenient to) an existing residential area, when such

businesses can be shown to satisfy design considerations similar to a newly planned, pedestrian-scaled, mixed use development.

   b. The following policy does address growth concerns for the development of the subject property:

      Policy ES8: Areas of the county identified for significant future growth shall avoid NATURAL HERITAGE AREAS (e.g. Great Marsh on Knotts Island, Currituck Banks/Swan Island Natural Area, Currituck Banks Corolla Natural Area, Pine Island/Currituck Club Natural Area, Northwest River Marsh Game Land, and many other marsh areas on the mainland).

7. The special use will not exceed the county's ability to provide adequate public facilities, including, but not limited to, schools, fire and rescue, law enforcement, and other county facilities. Applicable state standards and guidelines shall be followed for determining when public facilities are adequate. Such facilities must be in place or programmed to be in place within two years after the initial approval of the plan (sketch plan in the case of major subdivisions).
   Suggested Findings:
   a. The county has adequate public facilities to service this development.

III. TECHNICAL REVIEW COMMITTEE RECOMMENDATION:
Pursuant to the Unified Development Ordinance, the Technical Review Committee recommends approval subject to the site plan corrections identified below. It should be noted that the issuance of a special use permit does not grant site plan approval. The conceptual site plan was reviewed by the TRC on November 12, 2009, and a subsequent submittal to the TRC is required prior to site plan approval.

Planning

1. At a minimum, the landscape plan (bufferyards and shading) shall be submitted that is consistent with UDO requirements prior to site plan approval.
2. A lighting plan consistent with Chapter 4 of the UDO must be provided prior to site plan approval. Specifically, the footcandle measurements at the northern property line exceed the maximum allowances; provide building elevations identifying the building height (mounting height), location and type of light fixtures; verification that all fixtures are full cut-off; hours of operation for all exterior light fixtures; and photometric data for all exterior fixtures including fixtures mounted on the building.
3. A LOMR (Letter of Map Revision) is required prior to approval of this plan. As proposed the plan does not meet the V-zone development requirements of the ordinance. The county received verification on April 14, 2010 that FEMA has accepted and is processing a LOMR request for the property.
4. The maximum non-residential driveway width of 36 feet must be met unless a variance is obtained from the Board of Adjustment.
5. Staff supports administrative relief of the required parking for the proposed mixed use development provided the shared parking analysis submitted by Kimley Horn Associates is approved as part of the special use permit. The American Planning Association,

Parking Standards, supports 10%-20% shared parking reduction within mixed-use developments.

Land Use Plan Consideration:

1. The proposed development is considered a Significant Natural Heritage Area as identified in LUP policy ES8 and significant growth shall avoid these areas. In an effort to address the proposed development impacts the applicant submitted assessment report prepared by Quible and Associates, PC that recognized significant plant and animal species or habitat and environmentally significant areas of this property. *(Staff commentary: In 1990, the National Audubon Society terminated its conservation agreement which registered the entire Pine Island Audubon Sanctuary as a protected North Carolina Natural Heritage Area. However, the termination of the agreement did not affect the identification of the parcel as a Significant Natural Heritage Area. NC DENR staff evaluated the Quible and Associates assessment report, and on February 17, 2010 concluded the tract merits identification as a Significant Natural Heritage Area. It should be noted that the 12.75 acre parcel is part of a 3,500+/- acre Significant Natural Heritage Area).*

NCDOT

The revised plans are under review by NCDOT, but no additional comments have been received.

IV. PLANNING STAFF RECOMMENDATION:

The proposed development with suggested conditions and plan modifications meets the requirements for special use permit approval. Therefore, the **staff recommends conditional approval** of this special use permit subject to the following conditions that address requirements of the ordinance and policies of adopted plans:

1. The issuance of the special use permit does not constitute site plan approval. The site plan, lighting plan, and landscape plan must be approved by the technical review committee.
2. The Conceptual Design Presentation prepared by CPAA Planning, Architecture, Interior Design, Visual Communications, and Landscape Architecture from Chapel Hill, NC dated January 27, 2010 is incorporated into the Special Use Permit. Significant design changes to the project will require modification of the Special Use Permit.
2. Please indicate all handicap accessible routes on the site plan.
3. Staff recommends relocating trash collection areas located in proximity of the residential units in Pine Island as well as the amenity area to the south. All fenced service areas and equipment, including but not limited to dumpsters and mechanical equipment, located between principle buildings and NC 12 shall be constructed of comparable exterior materials of the surrounding buildings within the immediate vicinity. (LUP Policy CD7)
4. Landscaping shall be selected from salt tolerant species.
5. A Type A opaque bufferyard shall be installed along the northern and southern exterior property lines. At the time of planting, the bufferyard shall include:
   a. Minimum 10 foot planting height and 2 inch caliper native, salt tolerant trees; and,
   b. 5-gallon native, salt tolerant shrubs.
6. Staff recommends all pedestrian crossings be raised with contrasting materials.

7. A maximum 20% shared parking relief shall be given to the proposed mixed use development. Retail uses shall be considered high volume traffic generators.
8. An internal traffic study prepared by a professional traffic engineer or licensed professional must be conducted for internal vehicular circulation. The study must be submitted and reviewed by the technical review committee as part of the site plan review. *(Staff commentary: A shared use parking analysis completed by Kimley-Horn and Associates, Inc. was submitted February 9, 2010 and provided justification for shared parking reduction of 20% from the UDO requirements based on all high volume retail uses. The shared parking reduction must be approved as part of the SUP. The analysis did not address internal vehicular circulation.)*
9. Land Use Plan policy statement WQ5 promotes low impact development techniques and encourages developments to preserve the natural features of the site including existing topography and significant existing vegetation. The use of low impact development techniques shall be incorporated into the plan design. A minimum of three techniques shall be provided, including but not limited to the use of bioretention; permeable surfaces; reduction in the use of curb and gutter; drought resistant, native vegetation; solar energy; green building practices; or cisterns. The preservation of natural features of the site, existing topography, and significant existing vegetation may include preservation of non-developed areas (i.e., those areas not identified for construction or unnecessary grading).

V. PLANNING BOARD RECOMMENDATION:

The Planning Board ***tabled*** the request at the January 12, 2010 meeting and ***recommended denial*** at the February 9, 2010 meeting for the following reason:

1. Classification of the property as a Significant Natural Heritage Area and Policy ES8 of the Land Use Plan it would be violated if the project moves forward as proposed.

PLANNING BOARD DISCUSSION (1-12-10)
Mr. Midgette stated how could the board make a recommendation because all the information is not complete.

Mr. Valdivieso stated that there were two key issues, the fire access and parking numbers. Mr. Valdivieso stated they went to Raleigh to meet with the architect and the state fire marshal to ensure this property is in compliance with State fire regulations. They have submitted a plan with detail which addresses the fire access issues. With the better layout for fire access they actually gain more parking spaces to where they are within the 10% to 20% shared parking reduction within mixed-use developments. Mr. Valdivieso stated the Audubon is selling this piece of property to his clients. This property is zoned commercial designation and the Land Use Plan classifies it in a full-service district. Mr. Valdivieso stated this property is not part of the Pine Island PUD and therefore not coming to the Planning Board with an amended sketch plan to amend the Pine Island PUD.

Ms. Wilson stated that with the original parking accommodations, the total impervious surfaces plus the walkways is approximately 86,000 sq. ft. The plan shows that there will be an infiltration pond handling the treated water. Would the developer consider having a treatment applied to the infiltration pond to accommodate the use of gray water or plumbing which would take some of the drain off the county supplied water?

Mr. Valdivieso stated they would take it into consideration. Mr. Valdivieso also stated there is parking underneath the building.

Mr. Clark asked who will be responsible for taking care of the pond.

Mr. Valdivieso stated it will be the owners and then the homeowners association.

Mr. Kovacs asked if there will be any public access to the beach.

Mr. Valdivieso stated no.

Mr. Clark asked if a professional company will be hired to treat the wastewater treatment pond.

Mr. Valdivieso yes.

Mr. Kovacs asked Mr. Valdivieso if he had seen the comments that the Planning Board members had received.

Mr. Valdivieso stated yes.

Mr. Mettenheimer stated he received an email from the Pine Island Association Board which states the original proposal, which included 15 single-family homes and how this project is a departure from the original plan. Mr. Mettenheimer stated the email also stated that the Pine Island board has obtained legal counsel to determine how to prevent any development of the subject parcel land that would affect the value of the Pine Island property. Mr. Mettenheimer stated he finds this project not consistent with the original plan, it will increase the number of people on this property, and it will affect the Pine Island owners' ability to rent their property and property value. Mr. Mettenheimer asks that this request be denied.

Mr. Smith states he has concerns with an incomplete plan, height of buildings, increase landscaping buffer between this project and Pine Island, lighting, beach access not to increase, wastewater treatment under condo building, access needs to be near commercial, and number of dumpsters.

Mr. Valdivieso stated the wastewater treatment will be put under Building B; lighting will be in compliance with the UDO, they will meet the UDO requirements for buffering/landscaping, and they will also need a CAMA permit. A special use permit will dictate what can be put on the property. Mr. Valdivieso stated the buildings will be less than 35 ft. from grade.

Mr. West asked if the condos will be individually owned or time share.

Mr. Valdivieso stated they will be sold.

Mr. Smith stated he is concerned with where the grade is. If the grade is 10-12 ft. then they add the 35 ft. it is really going to be tall. He is concerned with how tall it will be in comparison to his house.

Mr. Valdivieso stated it will be similar with the roof lines of the other commercial structures that are already there.

Ms. Wilson stated the architecture of the buildings is nice but as a resident living in Corolla when you drive by the area what is there now is lovely. Ms. Wilson stated in spite of what decision is eventually made she feels a great deal of sympathy with the area residents.

ACTION
Ms. Wilson recommended that PB 09-36 Corolla Club and Resort (Sumit Gupta) be tabled until all the deficiencies can be addressed and permits are obtained. Mr. Clark seconded the motion. Motion carried unanimously.

PLANNING BOARD DISCUSSION (2-9-10)
Mr. West asked who makes the determination for the Letter of Map Amendment (LOMA).

Ms. Voliva stated FEMA.

Mr. Valdivieso stated that his client is under contract to purchase the property from the National Audubon Society. This property is not part of the Pine Island PUD and is not subject to the Pine Island guidelines. The property is zoned commercial and the site is designated full service district. Mr. Valdivieso stated this case came before the Planning Board in January but was tabled because it did not comply with the fire code access and 20% reduction in the parking requirements. Since this time they have had a parking study done and resubmitted a site plan that meets fire code. Mr. Valdivieso stated the issues with the stormwater disposal or means of wastewater disposal are not valid at this point because the process that they are going through now is to request a special use permit for the site plan. There has been a lot of discussion on the Natural Heritage Program designation of the property. Mr. Valdivieso stated they have been in contact with NC Department of Natural Resources to find out why the subject property is in a Natural Heritage Area and what significance the property has from an environmental prospective. Mr. Valdivieso stated the main reason it is in there Heritage Area program is because it is Audubon property. Mr. Valdivieso stated the county has asked them to check with the NC Department of Natural Resources to find out why the subject property is in a Natural Heritage Area and if it is valid to be under this designation. They did speak to them and basically they said the Natural Heritage Program (NHP) is a non regulatory program. Mr. Valdivieso stated they had a site assessment done with two of his staff members. The conclusion was that there is no threatened, endangered or special concern species recognized by NHP were observed.

Mr. Midgette stated that the property is considered a Natural Heritage Area as identified in the county's Land Use Plan (LUP) and significant growth shall avoid these areas.

Mr. Valdivieso stated he is aware of the statement, but the site assessment which was done states this property does not meet the criteria for a Natural Heritage Area.

Mr. Midgette asked Mr. Valdivieso how the board would get confirmation if the property is a Natural Heritage Area and how long will it take to get confirmation.

Mr. Valdivieso stated they are asking the board to base their decision on the information that they have provided. Mr. Valdivieso stated what they are running into with the NC Department of Natural Resources is that they are not willing to come out and say if this meets their criteria or doesn't meet their criteria.

Mr. West asked what is the zoning of the other property that the National Audubon owes which is across the street.

Mr. Woody stated RO1 and the subject property is zoned Limited Business Hotel (LBH).

Mr. West asked how did this piece of property get rezoned to LBH which is still owned by the National Audubon when the other property is zoned RO1.

Mr. Valdivieso stated he thinks the property was zoned LBH when the National Audubon obtained it, but this is just a guess.

Mr. Adams, a professional traffic engineer, presented a presentation on the Shared Parking Analysis.

Ms. Wilson stated that in the calculation was it taken into consideration the potential number of people parking in these spaces during the peak season time.

Mr. Adams stated that in talking with the development team there is recognition of this factor.

Ms. Wilson stated the developer said the wastewater system will be a very environmental conscious system; would they also apply this as well to the parking system.

Mr. Gupta stated that there are two things with the parking, one being from the business side they want to make sure there is enough parking to sustain the project. During the peak season they need to have in place some sort of management of parking, i.e. valet system. Mr. Gupta stated there are many environmental friendly ways to manage the parking and they are still looking at other options.

Mr. Valdivieso stated they have addressed the issues of fire access, parking and Natural Heritage Area. Mr. Valdivieso stated they have applied to FEMA to change the flood zone designation from a VE designation to an AE designation for construction purposes.

Mr. Hollan stated he was here to speak on behalf of Pine Island and he knows a lot about the history of the property. Earl Slick gave the property to the Audubon. Mr. Hollan provided an overview of the history. Mr. Hollan stated that the Audubon voluntary dedicated this area as a Natural Heritage property. The state does not come in and take someone's property and say it is in a Natural Heritage Area. The Audubon submitted this area to the state as part of the Natural Heritage Program. Mr. Hollan stated the proposed project is not in harmony with the rest of the community. Property taxes have never been paid on this property. Mr. Hollan stated he hopes the board finds this request is inconsistent with the surrounding properties and it is a Natural Heritage Area and will deny the request.

Mr. Clark asked if there is any other area open in Corolla like this property.

Mr. Hollan stated no.

Mr. West stated that farmers can asked that land be put in an agriculture district but they can also remove it. Since the National Audubon asked that this land be put in the Natural Heritage Area, can they request that it be removed?

Mr. Hollan stated he does not think so.

Mr. Gaw stated he is there representing the Pine Island Homeowner's Association. He has a petition with 277 names on it opposing the development. Mr. Gaw stated the Audubon acquires environmental sensitive land that needs to be protective and this is why there is a Natural Heritage designation application to this land. The Natural Heritage is not a regulatory agency but it is an agency that identifies land that needs to be regulated because it is land that is environmentally sensitive. Mr. Gaw stated there is a public health issue because over wash from the ocean and how it will affect the septic systems. There are many problems with this project and he would ask that the board deny this request.

Mr. Wemer stated this project is requesting to get out of the V-zone and with the recent northeaster storm they have lost 10 to 30 feet of dunes in Corolla. He requests the request be denied.

Mr. Jerry Wright stated he is concerned about the water fowl resource that is in Currituck County and how they will be affected because they use the marshes in Pine Island and the Audubon property. The proposed site is directly across from the Pine Island Club House which the northern pintail flight comes and winters on this yard starting in August. Mr. Wright stated the Pine Island community was never intended to have this intense type of development. They have tried to work in Currituck to promote economical growth and activity on the beach while at the same time trying to protect the resources that people come here for; our horses, our water fowl and our fishing. Mr. Wright requests the board denies this request.

Mr. Valdivieso provided an overview of the wastewater treatment system and the affect of over wash and stormwater runoff.

Mr. Kovacs asked if the development will be done in phases.

Mr. Gupta stated yes and the timeline will be 2 to 3 years for build out.

Mr. Valdivieso stated the retention pond will be approximately 10,000 sq. ft. with fencing and will be professional managed.

Mr. Midgette asked how many contractors in Currituck County or Dare County that would be capable of building a hotel of this magnitude.

Mr. Valdivieso stated they do have a contractor but would use local contractor to do the plumbing, framing, electrical, site work, and supplies.

Mr. Midgette stated he thinks they have a great project but the location is not right.

Mr. Gupta stated they have been working on this project for two years. Mr. Gupta stated the county's LUP has this zoned as LBH in a full service district. They have a letter from the Audubon stating they do not see this property as part of the conservation area and are willing to sell the property. Mr. Gupta stated this resort will offer a lot to Corolla in the long run. Mr. Gupta stated it is very frustrating to them as a developer that they have spent two years on a project if the county had told them upfront that they could not develop this land because it was part of a Natural Heritage Area.

Mr. Wright stated the county does adhere to the LUP and Natural Heritage Area which is adopted by the county. Mr. Wright refers to Policy ES8 which states that significant future growth shall avoid Natural Heritage Areas.

Mr. West stated that with no taxes paid on the property that signals something unique with the property.

Mr. Kovacs asked Mr. Valdivieso was he okay with staff recommendations.

Mr. Valdivieso stated the only objection is with the mandate to construct in a V-zone.

Mr. Clark stated he has concerns from citizens which are recommendations in the event the SUP is approved. Construction during June thru October be limited to 9-5, 5 days per week to reduce noise impact, overnight parking for heavy equipment should be at the south end of the property, working hours should be dawn to dust during November thru May seven days per week.

Mr. Valdivieso stated they would take them into consideration.

Ms. Wilson stated that even though the land was reclassified from RO1 to LBH; does this mean the environmental needs disappear with it?

Mr. Valdivieso stated yes. The National Audubon Society is now saying in writing that the site does not have a conservation value.

ACTION
Ms. Wilson motioned to recommend denial based on the classification of the property as a Significant Natural Heritage Area and Policy ES8 of the Land Use Plan it would be violated if the project went forth. Ms. Taylor seconded the motion. Ayes: Mr. West, Mr. Wright, Mr. Midgette, Ms. Taylor, Mr. Clark and Ms. Wilson. Nays: Ms. Newbern and Mr. Kovacs.

PB 09-36 Corolla Club and Resort
Special Use Permit

0 120 240 480 720 Feet
Currituck County Planning Department

PB 09-36 Corolla Club and Resort
Special Use Permit

0 120 240 480 720 Feet
Currituck County Planning Department

PB 09-36 Corolla Club and Resort
Special Use Permit

0 155 310 620 930 Feet
Currituck County Planning Department

MEMORANDUM

To: David A. Deel, Quible & Associates
PIR Holding, LLC

From: Donna Voliva, Planner

Date: November 12, 2009

Re: Corolla Club and Resort

The following comments have been received for the November 18, 2009 TRC meeting. In order to be scheduled for the December 8, 2009 Planning Board meeting, please address all comments and resubmit a corrected plan by 3:00 p.m. on November 23, 2009. TRC comments are valid for six months from the date of the TRC meeting.

Planning, Donna Voliva

Resubmit

1. A 25 foot Type A bufferyard setback shall be applied to both the north property line (adjacent to Pine Island residential lots) and the south property line (adjacent to the Pine Island amenities site).
2. The flood zone data has not been approved and should reflect the approved maps.
3. Please indicate all handicap accessible routes on the site plan.
4. The trash collection sites shall be designed for front loading trucks.
5. The maximum driveway width at the property line is 36 feet.
6. The landscape plan calculations shall be consistent with UDO canopy calculations.
7. Floor area ratios shall exclude all enclosed parking areas but shall include remaining floor area.
8. A traffic study should be conducted for internal circulation. The main access does not appear to have adequate stacking for exiting the property.
9. Note #21 shall include both building B calculations.
10. Fire hydrants may not be located within 15 feet of a parking space.
11. The loading and unloading spaces do not appear functional.
12. Staff recommends all pedestrian crossings be raised and of contrasting materials.
13. A lighting plan must be provided.
14. This proposed phase of development is considered a Natural Heritage Area as identified in the Land Use Plan policy statement ES8 and significant growth shall avoid these areas.
15. Land Use Plan policy statement WQ5 encourages developments to preserve the natural features of the site including existing topography and significant existing vegetation.
16. Landscaping shall be selected from salt tolerant species.
17. Bulkheads or retaining walls shall not be allowed as a method to stabilize or contain fill, except bulkheads established for the purpose of shoreline protection or as otherwise permitted by the county engineer. This shall not include retaining walls used to stabilize or contain existing natural grade when a driveway or walkway is cut into a lot at an elevation lower than existing natural grade.

18. If the flood zone modification is approved, the planning staff recommends all buildings be built to V-zone certification requirements.
19. The proposed parking schedule must be reworked as it does not meet the minimum requirements.

Currituck Soil and Water, Mike Doxey

Approved with corrections.

1. Need high density state stormwater permit.

Currituck County Engineer, Eric Weatherly

Approved with corrections.

1. Provide water main plans from county tie in to end of project.
2. Provide Public Water Supply permit for water main extension.
3. Provide 12" water main extension to project.
4. Provide 12x6 tee, FH, 12 gate valve and plug at end of water main for future extension.
5. The 1 inch water services for condominiums and 50 room motels appears too small. Provide flow calculations to support sizing.
6. Provide sewer system plans and supporting documentation for all collection, treatment and disposal. Provide sewer application and permit.
7. Where will the Typical Storm Pipe Outlet Detail be used at on the project?
8. Provide stormwater and erosion control permits.
9. No fill within 10' of the property line.
10. Provide better narrative description and construction details of the stormwater overflow device.
11. Provide downstream stormwater analysis of the proposed roadside swale to be use as the systems overflow beyond the 10 year storm.
12. A more thorough soils investigation should be provided to support the Currituck Soil Survey book and to identify the SHWT for design of the stormwater chamber infiltration system.
13. Indicate the pad and finish floor elevations.
14. Provide the stormwater chamber system maintenance requirements for the county's file.
15. Provide a copy of the soil scientist report.
16. There are concerns about standing water the entire length of the road frontage (like Harris Teeter).
17. Construction plans must be resumbmitted to TRC.

Currituck County Utilities, Pat Irwin

Approved

1. The county will require a 12 inch water line connected to the existing 12 inch line in front of the Spindrift development a 12 inch valve will be required at the connection to SOBWS.
2. Are one inch service lines to the hotels and condominiums large enough to handle the demand?

Currituck County Emergency Management, James Mims

Denied/Resubmit

1. Fire apparatus must be able to come within 150 feet of all portions of all structures including the deck. This requirement will not be held to the narrow beach access walkways.

2. If structures are greater than 30 feet in height additional access requirements are needed for the fire department ladder truck.
3. If the structures are sprinklered fire department connections must be indicated on the site plans. They should be placed in such a fashion that they can be accessed and an adjacent fire hydrant can be accessed without blocking the full width of the fire apparatus access.

Currituck County Building Inspections, Spence Castello
Approved
1. All amenities must be accessible.

Currituck County GIS, Harry Lee
Reviewed
1. Addresses will be assigned by GIS when building permit(s) applied for. Building elevations will be required to assign addresses.

Currituck County Parks and Recreation, Jason Weeks
Reviewed
1. No comment.

Currituck County Economic Development, Peter Bishop
Reviewed
1. Please provide total commercial retail space proposed, insight on tenant mix and space available, total project investment, and permanent job-creation projection.

NC Division of Coastal Management, Charlan Owens
1. A CAMA Major Permit will be required. Permitting rules concerning structure setback requirements were amended effective August 11, 2009. The setback distance is determined by both the size of the development and the shoreline erosion rate. Please see 15A NCAC 07H. 0306 at http://www.nccoastalmanagement.net/Rules/Text/t15a-07h.0300.pdf
2. The plans show calculations relative to the new rules, however additional support documentation will be needed to verify the required setback. Please contact Ron Renaldi, DCM Field Representative, at 252-264-3901 for additional information.

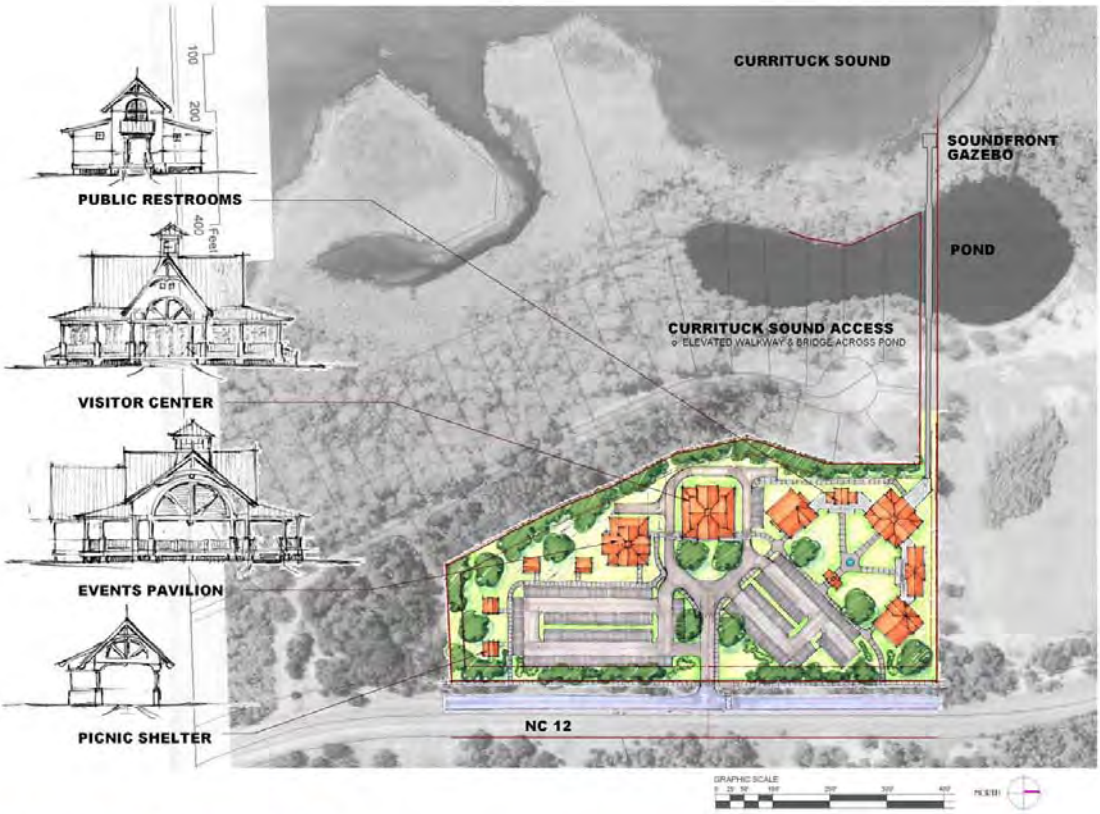
NCDOT, Gretchen Byrum
Approved with corrections
1. A 5 ft paved shoulder is existing on NC 12, but the plans show a 2 ft paved shoulder. The 5 ft paved shoulder shall be restored to maintain the improvements made by NCDOT to better facilitate bicyclist on NC 12.
2. The plans show a continuous left turn lane and continuous right turn lane. The left turn lane shall be broken up into individual left turn lanes via pavement markings or concrete islands. There should be 3 individual left turn lanes, the 2 proposed driveways and 1 at existing Audubon Drive. The right turn lane shall be physically broken up into 2 separate right turn lanes.
3. Pavement markings should be in accordance with std specifications and drawings. The arrows, etc can be found in std drawing 1205. 06. All markings shall be thermoplastic. The white edge line separating traffic from the paved shoulder shall be Vibraline.
4. The traffic entering the site at primary driveway is shown as having a STOP condition. This shall be changed to such that internal traffic will have the STOP condition and entering traffic will have the right of way and free flow. This short driveway stem length is

concerning but a free flow entrance may help. An internal roundabout at the entrance to deal with the internal flow is recommended.
5. The main entrance traffic island is just under the 20 max width. It also may be closer to the through travel lane (6-12 ft). 6 ft would be preferred provided landscaping does not block sight distances. A narrower entrance is recommended to reduce the appearance to motorist of two separate drives.
6. A note was made referencing a NC 12 HWY roadway improvement plan (lower left hand corner). This plan needs to be reviewed before additional comments are made and permits issued.
7. The roadway improvements and pavement marking plans should be illustrated in separate plan sheets for clarity.

NCDENR, Land Quality, Pat MCClain
Approved
1. More than one acre will be affected in the course of developing this project. Therefore, an erosion and sedimentation control plan must be submitted to and approved by the Land Quality Section prior to initiating any land disturbance associated with this development.

Albemarle Regional Health Services, Joe Hobbs
Reviewed
1. THE PROPOSED WASTEWATER TREATMENT PLANT TO SERVE THIS PROPOSED DEVELOPMENT WILL NEED TO BE APPROVED BY THE NC DIVISION OF WATER QUALITY (WASHINGTON REGIONAL OFFICE) AT (252)946-6481. PLEASE SUBMIT WASTEWATER TREATMENT PLANT ENGINEERED PLANS AND APPROVAL LETTER TO HEALTH DEPT. FOR KNOWLEDGE AND REVIEW.
   *NOTE: ANY PROPOSED COMMUNITY POOLS, RESTAURANTS, FOOD STANDS WILL NEED TO BE REVIEWED BY HEALTH DEPT. BEFORE APPROVAL CAN BE GRANTED BY HEALTH DEPT.. CONSULT WITH HEALTH DEPT.(252)232-6603.
2. ALSO PROPOSED HOTEL(S) PLANS WILL NEED TO BE REVEIWED BY HEALTH DEPT. BEFORE APPROVAL CAN BE GRANTED BY HEALTH DEPT.. AGAIN, PLEASE CONSULT WITH HEALTH DEPT. (252) 232-6603. THANK YOU

Currituck County Schools, Dr. Megan Doyle
Currituck County Local Volunteer Fire Department
Currituck County GIS, Harry Lee
NCDENR, Environmental Management, Roger Thorpe
NCDENR, Public Water, Siraj Chohan
NC State Archaeology, Lawrence Abbot
US Army Corps of Engineers, Tom Steffens
Embarq, Hester Jones
Charter Communications, Sam Scilabba
Dominion Power, Troy Lindsey



Coastal Designs, PLLC
Mary Johnson, AIA
Architect
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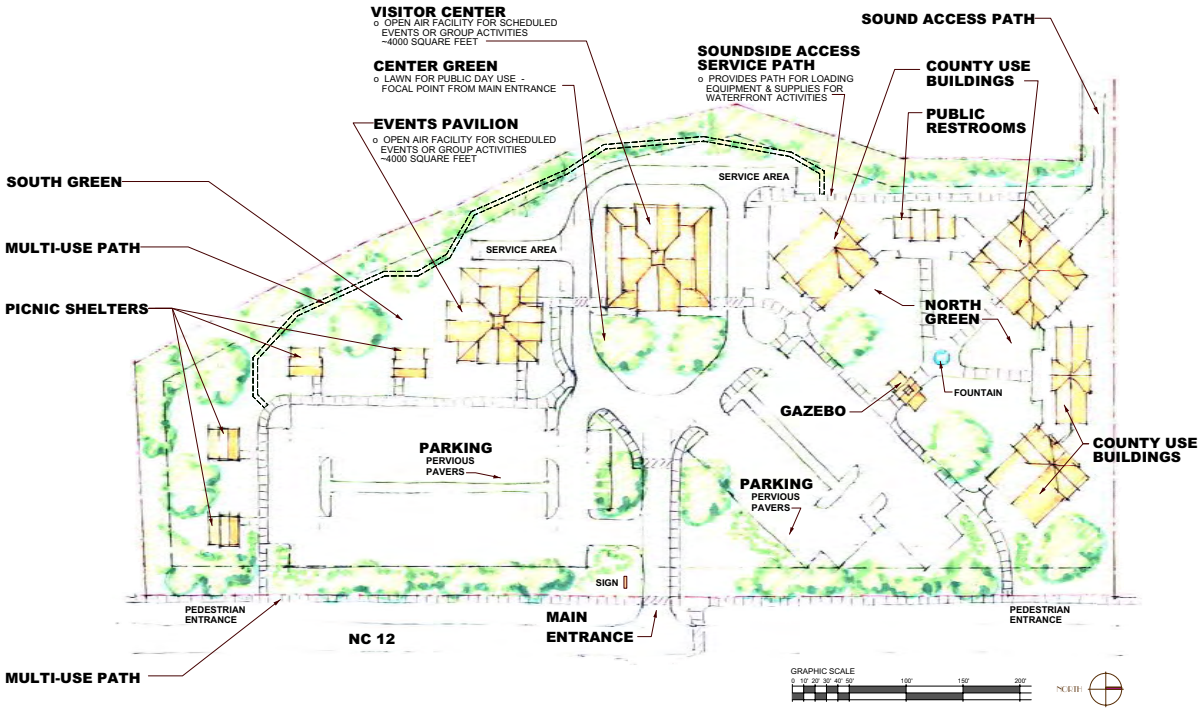
drawn by: mike florez October 15, 2008

DEVELOPMENT CONCEPT STUDY FOR:

COROLLA PUBLIC USE FACILITY

CURRITUCK COUNTY, NORTH CAROLINA

SHEET 2 OF 2



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Mary Johnson, AIA
Architect
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drawn by: mike florez October 15, 2008

DEVELOPMENT CONCEPT STUDY FOR:

COROLLA PUBLIC USE FACILITY

CURRITUCK COUNTY, NORTH CAROLINA

SHEET 1 OF 2

Roberts, Tracy

From: Ben Woody [bwoody@co.currituck.nc.us]
Sent: Friday, July 30, 2010 2:39 PM
To: Roberts, Tracy
Subject: Farmland Preservation and Conservation Subdivision

A weblink for the farmland preservation program: http://www.co.currituck.nc.us/Farmland-Preservation.cfm

The conservation subdivision requirements are below. Please note these requirements apply to any subdivision greater than 40 lots, and that a minimum of 50% of the land remains undeveloped (emphasizing preservation of environmentally sensitive features).

10.3.9 Conservation Subdivisions

A. The purpose of conservation subdivision design is to preserve agricultural and forestry lands, natural and cultural features, and rural character that would be likely lost through conventional development approaches. To accomplish this goal, greater flexibility and creativity in design of such developments is encouraged. This type of subdivision allows the developer to decrease lot sizes and leave the land "saved" as common open space, thereby lowering development costs and increasing the amenity of the project without increasing the density beyond what would be permissible is the land were to be developed into lots using the conventional subdivision standards.

B. Subdivisions with more than 40 lots are required to meet the conservation subdivision standards, unless all lot sizes are five acres or more. See Chapter 2 for dimensional requirements in each zoning district.

C. On sites not served by public sewerage or a centralized private sewage treatment facility, soil suitability for individual septic systems shall be demonstrated at the time of sketch plan submission. The planning staff and Albemarle Regional Health Services shall select ten percent of the lots to be tested, in areas considered to be marginal. Costs for the tests shall be the responsibility of the applicant. If tests on the sample lots pass the soil test as conducted by Albemarle Regional Health Services, the applicant's other lots shall also be deemed suitable for septic systems, for the purpose of calculating total lot yield. However, if any of the sample lots fail, several others of the county's choosing shall be tested, until all the lots in a given sample pass.

D. For conservation subdivisions, the developer may utilize the following density bonuses. Conservation subdivisions within the RO2 District are not eligible for a density bonus.

1. For all conservation subdivisions, the total number of lots may be increased above what the yield plan will allow, by up to 20 percent in an Agricultural (A) zoning district and 5 percent in the other zoning districts.

2. For conservation subdivisions in which 50 percent of the required open space (excluding primary conservation areas) is being actively farmed and remaining under the ownership of the developer, farmer or farm preservation trust and is protected from future development by a permanent conservation easement, the total number of lots my be increased by 5 percent above what the yield plan will permit.

3. For conservation subdivisions in the residential and agricultural zoning districts, the total number of lots my be increased by 5 percent above what the yield plan will permit if at least 20 acres of land outside of the required open space is donated and accepted for county facilities.

E. An existing features analysis plan showing existing conditions and that analyzes each site's special features is required at the sketch plan stage as indicated in the plan submission requirements in this chapter for all proposed conservation subdivisions.

F. Each sketch plan for a conservation subdivision shall follow a four-step design process as described below. When the conceptual sketch plan is submitted, applicants shall be prepared to demonstrate to the county that these four design steps were followed by their site designers in determining the layout of the proposed streets, house lots, and greenway lands.

1. During the first step all potential conservation areas (both primary and secondary) shall be identified, using the existing features analysis. Primary conservation areas shall consist of CAMA and adjacent 404 wetlands. Secondary conservation areas shall comprise 50 percent of the remaining land, and it shall include the most sensitive and noteworthy natural, scenic, and cultural resources on that remaining half of the property.

2. During the second step, potential house sites are tentatively located. Because the proposed location of the houses within each lot represents a significant decision with potential impacts on the ability of the development to meet the subdivision standards, applicants shall identify tentative house sites on the conceptual sketch plan. House sites should generally be located not closer than 50 feet to primary conservation areas.

3. The third step consists of aligning proposed streets to provide vehicular access to each house in the most reasonable and economical way. When lots and access streets are laid out, they shall be located in a way that avoids, or at least minimizes, adverse impacts on both the primary and secondary conservation areas. Wetland crossings shall be avoided. Street connections shall be provided to minimize the number of cul-de-sacs and to facilitate easy access to and from homes in different parts of the property (and on adjoining parcels). Where cul-de-sacs are necessary, those serving five or fewer homes may be designed with "T-intersections" facilitating three-point turns. Cul-de-sacs shall be designed with a central island containing indigenous trees and shrubs (either conserved on site or planted).

4. The fourth step is simply to draw in the lot lines where applicable.

G. Prior to review of the sketch plan, the applicant shall submit to the planning staff a "preliminary engineering certification" stating that the approximate layout of proposed streets, house lots, and open space lands complies with the county regulations, particularly those sections governing the design of subdivision streets and stormwater management facilities. This certification requirement is meant to provide the county with assurance that the proposed plan is able to be accomplished within the current regulations of the county.

H. In evaluating the layout of lots and open space, the following design principles will be considered by the county as indicating design appropriate to the site's natural, historic, and cultural features, and meeting the purpose of this ordinance. The county shall evaluate proposals to determine whether the proposed development:

1. Provides a 50 foot buffer with wildlife plantings along open space utilized as active farmland;

2. Protects and preserves all floodways and wetlands;

3. Preserves and maintains mature woodlands, existing fields, pastures, meadows, and orchards, and creates sufficient buffer areas to minimize conflicts between residential and agricultural uses;

4. Maintains or creates an upland buffer of natural native species vegetation of at least 50 feet in depth adjacent to wetlands and surface waters, including creeks, streams, springs, lakes, and ponds;

5. Protects wildlife habitat areas of species listed as endangered, threatened, or of special concern by the U.S. Environmental Protection Agency and/or by the North Carolina Department of Environment, Health, and Natural Resources;

6. Designs around and preserves sites of historic, archaeological, or cultural value, and their environs;

7. Protects rural roadside character and improves public safety and vehicular carrying capacity by avoiding development fronting onto existing public roads and establishes buffer zones along the scenic corridor of rural roads with historic buildings, hedgerows, etc;

8. Landscapes common areas (such as community greens), cul-de-sac islands, and both sides of new streets with native specie shade trees and flowering shrubs with high wildlife conservation value;

9. Provides active recreational areas in suitable locations offering convenient access by residents, and adequately screened from nearby house lots;

10. Includes a pedestrian circulation system designed to assure that pedestrians can walk safely and easily on the site, between properties and activities or special features within the neighborhood open space system. All roadside footpaths should connect with off-road trails, which in turn should link with potential open space on adjoining undeveloped parcels (or with existing open space on adjoining developed parcels, where applicable); and,

11. Provides open space that is reasonably contiguous. Fragmentation of open space shall be minimized so that these resource areas are not divided into numerous small parcels located in various parts of the development. Open space shall generally abut existing or potential open space land on adjacent parcels, and shall be designed as part of larger contiguous and integrated greenway systems.

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NORTH CAROLINA Turnpike Authority

Mid-Currituck Bridge Study

STIP No. R-2576

AGENDA

Meeting with Local Emergency Management Officials Regarding
Selection of Preferred Hurricane Evacuation Treatments

August 19, 2010 - 1:30 PM to 4:30 PM
Currituck County Center
120 Community Way
Barco, North Carolina

1. **Introduction and Background**
   (Mike Fendrick, PB)
   - Purpose of Meeting and Project Status
   - Hurricane Evacuation Assumptions
   - Public and Agency Comments Regarding DEIS Hurricane Evacuation Treatments
   - Review of Hurricane Evacuation Treatments
2. **Discussion of Preferred Hurricane Evacuation Treatments**
   (Meredith McDiarmid, NCDOT & Mike Fendrick, PB)
   - Discussion of nine questions on Handout #1, including identifying preferred hurricane evacuation treatments for different roadway sections on Handout #2 (see shaded cells in Table 1).
3. **Other Issues/Comments**

Attachments:

- Handout #1 – Discussion Questions
- Handout #2 – Verify Preferred Hurricane Evacuation Treatment (fill out Table 1)
- Handout #3 – Detailed Breakdown of Agenda Items & Additional Tables
- Hurricane Evacuation Alternatives Analysis Technical Memorandum

Handout #1
Discussion Questions

Bridge Pros and Cons

1. If no other hurricane evacuation infrastructure is provided, how will a Mid-Currituck Bridge aid in evacuation, recognizing that traffic merges together again at the bridge interchange? Would it create any new challenges for you?

Value of Evacuation Improvement Options in Draft Environmental Impact Statement

2. Do you think a third outbound lane would be helpful to you in achieving your objective of having everybody reach a point of safety before the arrival of hurricane force winds? Why or why not? If not, is it something you might see as useful in the future and under what conditions?
3. Do you think a reversed lane would be helpful to you in achieving your objective of having everybody reach a point of safety before the arrival of hurricane force winds? Why or why not? If not, is it something you might see as useful in the future and under what conditions?

Recommended Evacuation Treatment with and without Mid-Currituck Bridge

4. Assuming a Mid-Currituck Bridge is built, what is your recommendation for a hurricane evacuation Preferred Alternative, including methods and timing? The options are adding a third outbound lane, reversing the center turn lane, doing nothing beyond building a Mid-Currituck Bridge. Doing nothing assumes that you believe adequate hurricane clearance times can be achieved by you in the course of your normal operations without adding lanes or a notable investment in new equipment.
5. If the widening existing roads alternative was selected over a bridge, what is your recommendation for a hurricane evacuation Preferred Alternative, including methods and timing?
6. In making your recommendations, how do the conditions of 2035 development, 75 percent tourist occupancy, and a category 3 hurricane play into your thinking? For example, was one factor in your thinking that category 3 hurricanes are rare in North Carolina and generally occur after the peak tourist season? Was one factor that you considered that ordering an earlier than normally desirable evacuation might be acceptable under extreme conditions since they are rare? Was one factor that improving the evacuation capacity is not a near-term issue for you and 2035 develop is too far in the future to be an important consideration now? There may be other factors besides these three examples.

Response to Public Comments

7. Our impression is that you prefer to order an evacuation in the morning and complete it in 18 hours? How do we answer a public that says improved hurricane tracking can allow you to order evacuations earlier such that no improvements are needed to the road system for evacuation?
8. How do we answer those who say that hurricane improvements in our project area, including the Mid-Currituck Bridge, will accomplish nothing because Virginia closes the border? What is your current agreement with Virginia and contingency plans for when they do close the border? Under what conditions and with what frequency would Virginia close the border?

Use of Roundabouts on NC 12

9. We are considering using roundabouts as a part of NC 12 improvements with a bridge. Do they pose any particular challenge to an evacuation?

Handout #2 – Verify Preferred Hurricane Evacuation Treatment

Need to identify preferred hurricane treatments for different roadway sections (see shaded cells in Table 1).

Table 1. Hurricane Evacuation Treatments by Network Section

US 158 Section	Length (miles)	Description	Existing	No-Build with Reversed Center Turn Lane	ER2	MCB2	MCB4
G	3.0	US 158 north of Knapp Bridge to Barco	2 northbound lanes (5-lane section)	3 lanes Reverse center lane	3 lanes Reverse center lane **OR** 3rd shoulder lane	3 lanes Reverse center lane **OR** 3rd shoulder lane	3 lanes Reverse center lane **OR** 3rd shoulder lane
F	1.4	Knapp Bridge	2 northbound lanes (pair of 2 lane bridges)	3 lanes (contraflow on southbound bridge (MID TERM)	3 lanes (contraflow on southbound bridge (MID TERM)	3 lanes (contraflow on southbound bridge (MID TERM)	3 lanes (contraflow on southbound bridge (MID TERM)
E	0.6	Future Mid-Currituck Bridge interchange area	2 northbound lanes (5-lane section)	3 lanes Reverse center lane	3 lanes Reverse center lane **OR** **3rd shoulder lane**	Interchange	Interchange
D	19.8	US 158 between Wright Memorial Bridge & Mid-Currituck Bridge	2 northbound lanes (5-lane section)	3 lanes Reverse center lane	3 lanes Reverse center lane **OR** **3rd shoulder lane**	2 lanes	2 lanes
C	2.0	Wright Memorial Bridge	2 northbound lanes (pair of 2 lane bridges)	3 lanes (contraflow on southbound bridge) MID TERM	3 lanes (contraflow on southbound bridge) MID TERM	2 lanes on Wright Memorial Bridge	3 lanes (contraflow on southbound bridge) LONG TERM
B	1.9	US 158 in Kitty Hawk between NC 12 & Wright Memorial Bridge	2 northbound lanes (5-lane section)	3 lanes Reverse center lane	Widened to 3 lanes	Widened to 3 lanes	3 lanes Reverse center lane **OR** 3rd shoulder lane
A	0.3	US 158 at NC 12 intersection	Merge of US 158 and NC 12 manually controlled: (see notes)	3 lanes (widening needed for merge)	Interchange	Interchange	3 lanes (with widening for merge)

Handout #3
Detailed Breakdown of Agenda Items & Additional Tables

1. **Purpose of Meeting and Project Status**
   - Purpose of Meeting: Need to determine preferred hurricane evacuation treatments for the Mid-Currituck Bridge project
   - Project Status
     - DEIS published on March 31, 2010
     - Open houses and public hearings held in May 2010
     - Currently in the process of selecting a Preferred Alternative and responding to agency and public comments
   - Hurricane Evacuation Status
     - Meetings held with local emergency management officials in May 2008 and April 2009
     - Hurricane Evacuation Technical Memorandum developed
     - Traffic management concept plan prepared at critical locations
     - Need to determine preferred hurricane evacuation treatments for Preferred Alternative selection

2. **Hurricane Evacuation Assumptions**
   - Hurricane evacuation to serve 75 percent tourist occupancy in 2035 with Category 3 storm (greater than existing conditions)
   - Goal is to reduce clearance time to 18 hours. Third outbound lane on US 158 would reduce this to 22 hours. Reversing the center turn lane on US 158 would reduce it to 27 hours assuming 2035 population and 75 percent tourist occupancy and a Category 3 storm
   - In addition to the above variables, traffic volumes vary by network location with and without a Mid-Currituck Bridge (see Table 2)
   - Critical finding for hurricane evacuation
     - Without a Mid-Currituck Bridge (ER2 and No-Build), approximately 29 miles of 3 northbound lanes would be needed on US 158 from NC 12 north to US 158/NC 168 in Barco
     - With a Mid-Currituck Bridge (MCB2 and MCB4), approximately 7-9 miles of 3 northbound lanes on US 158 would be needed
       - 2-4 miles from NC 12 to and over the Wright Memorial Bridge
       - 5 miles from the proposed Mid-Currituck Bridge interchange north to US 158/NC 168 in Barco

3. **Public and agency comments regarding hurricane evacuation**
   - Public preferred center lane reversal at an approximately 4:1 ratio
     - center lane reversal (113 favor, 1 oppose)
     - third outbound lane (29 favor, 4 oppose)

   - Questioned whether hurricane evacuation improvements were really needed in light of modern weather forecasting techniques allowing evacuation orders to be issued well in advance of an approaching storm.
   - General belief that hurricane evacuation improvements associated with a Mid-Currituck Bridge would be futile should Virginia close its border during an evacuation.
   - Since a new bridge would not reduce clearance time, what benefits (if any) would a new bridge provide for evacuation?
   - General belief that reversing the center turn lane would have less environments impacts and be less costly. Questioned whether traffic capacity would be significantly different with a third outbound lane.
   - Although reducing hurricane evacuation clearance times is a desirable goal, improvements to obtain this goal need to be carefully weighed against the costs and adverse environmental impacts. (EPA)

4. **Review of Hurricane Evacuation Treatments**
   - Describe hurricane evacuation treatments included in the DEIS
   - Discuss contra-flow at Wright Memorial Bridge and Joseph P. Knapp Bridge (Table 3)
   - Review traffic operations at proposed Mid-Currituck Bridge interchange with US 158
   - Review traffic operations at NC 12 and proposed Mid-Currituck Bridge

5. **Discussion of Preferred Hurricane Evacuation Treatments (Handouts 1 and 2)**

6. **Other Issues/Comments**

Table 2. Hurricane Evacuation Traffic Volume Estimates on US 158

US 158 Section	Description	Hurricane Evacuation Traffic Volume Estimates for Category 3 to Category 5 Storm (Number of Vehicles)			
		Existing (2007) Conditions (Low Occupancy)[1]	Existing (2007) Conditions (75 Percent Tourist Occupancy)[2]	2035 Without Mid-Currituck Bridge (75 Percent Tourist Occupancy)[2]	2035 With Mid-Currituck Bridge (75 Percent Tourist Occupancy)[2]
North of Barco	NC 168 north of Section G (to Virginia)	11,662	22,100	32,539	32,539
West of Barco	US 158 west of Section G (to Elizabeth City)	12,963	24,566	37,907	37,907
F & G	US 158 north of Knapp Bridge	22,863	43,327	64,974	64,974
E	Future Mid-Currituck Bridge interchange area	22,863 from US 158	43,327 from US 158	64,974 from US 158	16,156 from Mid-Currituck Bridge 48,818 from US 158
D	US 158 between Wright Memorial Bridge and proposed Mid-Currituck Bridge	22,863	43,327	64,974	48,818
B & C	US 158 in Kitty Hawk including Wright Memorial Bridge	20,318	38,504	56,262	40,106
A (US 158)	US 158 at NC 12 intersection	11,662 from US 158 7,284 from NC 12	22,100 from US 158 24,556 from NC 12	35,005 from US 158 37,907 from NC 12	35,005 from US 158 37,907 from NC 12

General Notes:

- The roadway sections are identified from Section A through Section G in order to follow the direction of traffic evacuating northbound on US 158 from the south to north. In this table, the sections are listed in reverse order (Section G through Section A) so that the table matches evacuation flow from the south (Section A at the bottom of the table) to the north (Section G at the top) following the convention that north is to the top.
- Traffic volume indicates total number of evacuating vehicles for a storm event. As such, it does not necessarily represent a 24-hour volume. Also note that the evacuating traffic volumes are for a single direction of travel.

[1]Evacuating traffic volume estimates for existing conditions (2007) with low occupancy calculated from evacuating traffic volume estimates for existing conditions with 75 percent occupancy using multiplier of 52.8 percent. This is the ratio in the PBS&J model between the 2035 evacuating traffic volume with 75 percent occupancy and the 2035 volume with low occupancy.

[2]Evacuating traffic volume estimates for existing (2007) and 2035 conditions with 75 percent occupancy taken from PBS&J model used for the *North Carolina Hurricane Evacuation Update (2000)* with additional enhancements for this study.

Table 3. Phasing of Contraflow on Bridges

Alternative	Contraflow on Knapp Bridge	Contraflow on Wright Memorial Bridge
No-Build	Required in 10-15 years	Required in 10-15 years
ER2	Required in 10-15 years	Required in 10-15 years
MCB2	Required in 10-15 years	Not required
MCB4	Required in 10-15 years	Required in 20-25 years (or widen & improve US 158 westbound approaching Wright Memorial Bridge)

Note: The above table indicates when Contraflow would be required for a Category 3, 4, or 5 hurricane during a period with 75 percent tourist occupancy.

Hurricane Evacuation Preferred Alternative Meeting

Mid-Currituck Bridge Study
August 19, 2010

Mid-Currituck Bridge Study

Project Status

- Public meetings held in May 2010
- DEIS published March 31, 2010
- Currently selecting Preferred Alternative & responding to comments

Need input from local emergency management on hurricane evacuation

Mid-Currituck Bridge Study

Purpose of Meeting

Solicit input in form of 9 key questions:

- Identifying preferred treatment
  - 3rd Shoulder Lane or Reversing Center Lane
  - Variations with & without Mid-Currituck Bridge
- Determine responses to public and agency questions

Mid-Currituck Bridge Study

Work on Hurricane Evacuation Issues related to MCB

- Meetings held in May 2008 and April 2009
- Hurricane Evacuation Alternatives Analysis Tech Memo developed
- Included Concept Plan for Traffic Control

Need to determine preferred evacuation treatments & respond to public questions

Mid-Currituck Bridge Study

Detailed Study Alternatives

Mid-Currituck Bridge Study

Hurricane Evacuation Assumptions

- Scenario
  - Design Year 2035
  - 75% Tourist Occupancy
  - Category 3 storm
- Clearance Time
  - Goal: 18 hours
  - Existing (2007): 27 hours
  - No-Build (do-nothing): 36 hours
  - With or without Bridge: 22-27 hours

Mid-Currituck Bridge Study

Key Findings of Model Analysis

- Need 3 northbound evacuation lanes
- Controlling link is section of US 158 from NC 12 north to US 158/NC 168 split in Barco (approx. 29 miles)
- Building MCB shortens controlling link from proposed bridge north to US 158/NC 168 split in Barco (approx. 5 miles)

Mid-Currituck Bridge Study

How to Provide 3 Evacuation Lanes?

- Option 1 – Utilize existing center turn lane (contra-flow) with active traffic management during evacuation
- Option 2 – Provide a 3rd shoulder lane with new pavement

Mid-Currituck Bridge Study

Contraflow vs. 3rd Shoulder Lane

Contraflow	3rd Shoulder Lane
1. Higher clearance time (27 hrs)	1. Reduced clearance time & higher capacity (22-27 hrs)
2. Left turns not provided and signal heads wrong.	2. Center turn lane still functions
3. Requires more manpower & equipment for evacuation (approx. 10-20% more)	3. Still requires manpower & equipment for intersections & enforcement
4. Minimal impacts to adjacent property	4. Construction impacts include relocations, wetlands, & gravesites.
5. Contraflow required at existing Wright Memorial & Knapp Bridges	5. Contraflow required at existing Wright Mem. & Knapp Bridge due to cost
6. Not practical for extended sections	

Mid-Currituck Bridge Study

Impacts with or Without New Bridge

- Required length of 3-lane is critical
- With No Bridge, 27 miles required (including reversing a lane on the Intracoastal Waterway bridge)
  - Contraflow: Identified as not practical for implementation on 23 miles at prior meeting.
  - 3rd NB lane: $72 Million, 10 relocations, 2.6 ac wetlands, 66 gravesites
- With Bridge, 9 miles required (including reversing a lane on the Intracoastal Waterway and Wright Memorial bridges)
  - Contraflow: Can be implemented over shorter section, but more manpower & equipment required.
  - 3rd NB lane: $12-$18 Million, 2 relocations, 2.6 ac wetlands, 16 gravesites

Mid-Currituck Bridge Study

Contraflow on Bridges

- In addition, existing bridges will/ may require contraflow in future.

Table 4. Phasing of Contraflow on Bridges

Alternative	Contraflow on Knapp Bridge	Contraflow on WMB
No-Build	Required in 10-15 years	Required in 10-15 years
ER2	Required in 10-15 years	Required in 10-15 years
MCB2	Required in 10-15 years	Not required
MCB4	Required in 10-15 years	Required in 20-28 years

Note: The above table indicates when Contraflow would be required for a Category 3, 4, or 5 hurricane during a period with 75 percent occupancy

Mid-Currituck Bridge Study

Other Operational Issues

- US 158 between NC 12 and the Wright Memorial Bridge
- NC 12 flow & access to MCB
- Mid-Currituck Bridge
- MCB Interchange merge with US 158 northbound

Mid-Currituck Bridge Study

Focus of meeting – Input for EIS

- **9 key questions**
- **5 broad categories**
  - Bridge Pros & Cons (1)
  - Value of Evac. Treatment Options (2)
  - Recommended Evac. Option with & without the MCB (3)
  - Response to Public Comments (2)
  - Use of Roundabouts on NC 12 (1)

Mid-Currituck Bridge Study

Hurricane Evacuation Preferred Alternative Meeting

Mid-Currituck Bridge Study
August 19, 2010

Mid-Currituck Bridge Study

Focus of meeting – Input for EIS

- **9 key questions**
- **5 broad categories**
  - Bridge Pros & Cons (1)
  - Value of Evac. Treatment Options (2)
  - Recommended Evac. Option with & without the MCB (3)
  - Response to Public Comments (2)
  - Use of Roundabouts on NC 12 (1)

Mid-Currituck Bridge Study

1. Bridge Pros and Cons

- If no other hurricane evacuation infrastructure is provided, how will a Mid-Currituck Bridge aid in evacuation, recognizing that traffic merges together again at the bridge interchange?
- Would it create any new challenges for you?

Mid-Currituck Bridge Study

2. Value of Evacuation Improvement Options in DEIS – Third Outbound Lane

- Do you think a third outbound lane would be helpful to you in achieving your objective of having everybody reach a point of safety before the arrival of hurricane force winds?
- Why or why not?
- If not, is it something you might see as useful in the future and under what conditions?

Mid-Currituck Bridge Study

3. Value of Evacuation Improvement Options in DEIS – Reverse Center Turn Lane

- Do you think a reversed lane would be helpful to you in achieving your objective of having everybody reach a point of safety before the arrival of hurricane force winds?
- Why or why not?
- If not, is it something you might see as useful in the future and under what conditions?

Mid-Currituck Bridge Study

4. Recommended Evacuation Treatment with Mid-Currituck Bridge

- Assuming a Mid-Currituck Bridge is built, what is your recommendation for a hurricane evacuation Preferred Alternative, including methods and timing?
- The options are adding a third outbound lane, reversing the center turn lane, doing nothing beyond building a Mid-Currituck Bridge. Doing nothing assumes that you believe adequate hurricane clearance times can be achieved by you in the course of your normal operations without adding lanes or a notable investment in new equipment.

Mid-Currituck Bridge Study

5. Recommended Evacuation Treatment without Mid-Currituck Bridge

- If the widening existing roads alternative was selected over a bridge, what is your recommendation for a hurricane evacuation Preferred Alternative, including methods and timing?

Mid-Currituck Bridge Study

6. Recommended Evacuation Treatment Occupancy, Severity & Growth Assumptions

- In making your recommendations, how do the conditions of 2035 development, 75 percent tourist occupancy, and a category 3 hurricane play into your thinking?
- For example, was one factor in your thinking that category 3 hurricanes are rare in North Carolina and generally occur after the peak tourist season?
- Was one factor that you considered that ordering an earlier than normally desirable evacuation might be acceptable under extreme conditions since they are rare?
- Was one factor that improving the evacuation capacity is not a near-term issue for you and 2035 develop is too far in the future to be an important consideration now?
- There may be other factors besides these three examples.

Mid-Currituck Bridge Study

7. Response to Public Comments: Improved Forecasting?

- Our impression is that you prefer to order an evacuation in the morning and complete it in 18 hours?
- How do we answer a public that says improved hurricane tracking can allow you to order evacuations earlier such that no improvements are needed to the road system for evacuation?

Mid-Currituck Bridge Study

8. Response to Public Comments: What if Virginia closes border?

- How do we answer those who say that hurricane improvements in our project area, including the Mid-Currituck Bridge, will accomplish nothing because Virginia closes the border?
- What is your current agreement with Virginia and contingency plans for when they do close the border?
- Under what conditions and with what frequency would Virginia close the border?

Mid-Currituck Bridge Study

9. Use of Roundabouts on NC 12

- We are considering using roundabouts as a part of NC 12 improvements with a bridge. Do they pose any particular challenge to an evacuation?

Mid-Currituck Bridge Study

Handout #2 (refer to Table 1) Evacuation Treatments by Network Section

US 158 Section	Length (miles)	Description	ER2	MCB4
G	3.0	US 158 north of Knapp Bridge to Barco	Reverse center lane **OR** 3rd shoulder lane	Reverse center lane **OR** 3rd shoulder lane
F	1.4	Knapp Bridge	Contraflow on SB bridge MID TERM	Contraflow on SB bridge MID TERM
E	0.6	Future MCB interchange area	Reverse center lane **OR** 3rd shoulder lane	Interchange
D	19.8	US 158 between WMB & MCB	Reverse center lane **OR** 3rd shoulder lane	2 lanes adequate
C	2.0	WMB	Contraflow on SB bridge MID TERM	Contraflow on SB bridge LONG TERM
B	1.9	US 158 between NC 12 & WMB	Widened to 3 lanes	Reverse center lane **OR** 3rd shoulder lane
A	0.3	US 158 at NC 12 intersection	Interchange	3 lanes with widening for US 158/NC 12 merge

Mid-Currituck Bridge Study

Thanks for coming!

Mid-Currituck Bridge Study

Meeting with Local Emergency Management Officials Regarding Selection of Preferred Hurricane Evacuation Treatments

Meeting Minutes

Date: August 19, 2010
1:30 PM to 4:15 PM
Currituck County Center, Barco, North Carolina

Project: STIP R-2576 Mid-Currituck Bridge Study - BRS-OOOS(35)

Attendees:

Dan Scanlon, Currituck County
James Mims, Currituck County
Rob Glover, Currituck County
Mary Beth Newns, Currituck County
Rebecca Christenbury, Currituck County
Peter Bishop, Currituck County
Bill Jones, Lower Currituck Fire Department
Sandy Sanderson, Dare County
Bill Biddlecome, US Army Corps of Engineers
Chris Gwin, NC Div. of Emergency Management
Jerry Jennings, NCDOT–Division 1
Chad Edge, NCDOT–Division 1
Meredith McDiarmid, NCDOT–Mobility and Safety
Jennifer Harris, NCTA
Tracy Roberts, HNTB
Bradley Reynolds, HNTB
Spencer Franklin, HNTB
Jose Luque, Currituck Development Group
Mike Fendrick, PB
Eric Misak, PB
Bobby Norburn, PB

Presentation Materials

- Meeting Agenda
- Handout 1 – Discussion Questions
- Handout 2 – Verify Preferred Hurricane Evacuation Treatment
- Handout 3 – Detailed Breakdown of Agenda Items & Additional Tables
- Mid-Currituck Bridge Study Citizens Summary
- PowerPoint Presentation on Project Status and Background
- PowerPoint Presentation on Hurricane Evacuation Option Input Needed from Local EMOs

Purpose

The purpose of the meeting was to solicit input from local Emergency Management Officials (EMOs) on the hurricane evacuation options presented in the Draft Environmental Impact Statement (DEIS). This was accomplished in the form of asking nine key questions (see below) to the meeting attendees to identify their preferred options for hurricane evacuation improvements depending on the Preferred Alternative that is chosen, as well as to get their input on public and agency comments on the DEIS related to hurricane evacuation.

Introduction

Mike Fendrick opened the meeting and asked the attendees to introduce themselves. He then gave an overview of the meeting handouts. Mike went through the PowerPoint presentation on the project status and background (see attached printout of slides), including giving an overview of the detailed study alternatives presented in the DEIS.

Jerry Jennings asked if any consideration was given for hurricane evacuation improvements to US 158 between Barco and Belcross. Mike responded that the US 158/NC 168 intersection was the critical point on US 158 since three northbound lanes are provided from US 158 and this splits into two lanes north on NC 168 and one lane west on US 158. In effect, there are already three evacuation lanes in place north and west of this intersection.

Jerry also asked what if US 158 from Barco to Belcross is widened to 4 lanes. Mike responded that the planned widening of US 158 to the west would provide additional capacity for hurricane evacuation in the future, particularly in the event of Virginia closing the border with North Carolina.

Nine Key Questions Discussion

Mike went through the PowerPoint presentation on the hurricane evacuation option input needed from the local EMOs (see attached printout of slides). Discussions related to the nine key questions are summarized in the following sections.

1. **Bridge Pros and Cons**

Sandy Sanderson asked if the Mid-Currituck Bridge (MCB) would promote additional evacuation time (i.e., will it extend the time it takes to evacuate). Mike Fendrick responded that the bridge would not increase and should reduce the time it takes for an individual vehicle to evacuate, even in the 2035 design year, because the bottleneck for evacuating traffic would be shorter. The clearance time itself (the amount of time from the start of evacuation to the last vehicle being evacuated) would remain the same with or without the bridge because US 158 would be the controlling link in both cases. (Note that this assumes that three evacuation lanes would be provided for evacuation with or without the bridge.)

Dan Scanlon said the MCB would allow the Currituck Outer Banks to control its own economic destiny with respect to evacuations rather than being at the mercy of Dare County decisions, including decisions with respect to when to re-open the Outer Banks after an evacuation. Currently Currituck County is at the mercy of Dare County decisions related to re-opening the Wright Memorial Bridge (WMB). He added that because of the geography of the coastline (i.e., the Dare Outer Banks jut out further to the east), the Currituck Outer Banks often get less damage than Dare County, but Currituck County still cannot open until after Dare County does because the only access is through Dare County.

Dan said the discussion of the MCB serving as a solution to the area's hurricane evacuation challenges does not make sense until US 158 is widened to four lanes between Barco and Elizabeth City. Until that section of US 158 is widened, the MCB just moves the evacuation bottleneck into Currituck County at the Knapp Bridge.

James Mims said in the 1980s there were times when US 158 was closed to eastbound traffic at the NCDOT rest area south of Aydlett Road because of problems in Dare County even though there was no damage on the Currituck Outer Banks.

Dan and James discussed that the MCB would allow easier egress from the Currituck Outer Banks after other events (e.g., heavy rainfall events) in addition to hurricane evacuations.

Jennifer Harris asked for input from the local officials on any other Outer Banks issues that the MCB would impact. Jerry Jennings responded that the MCB would simplify problems with hurricane evacuation operations at the US 158/NC 12 intersection. This intersection has problems now and will be much worse in the future.

Dan asked where the increase in traffic is coming from that results in the tripling of evacuating traffic volumes for Links F and G in Table 2 of Handout 3 (i.e., from 22,863 vehicles for 2007 to 64,974 vehicles in 2035). Mike responded that much of this growth is coming from the south on US 158 (i.e., Kitty Hawk and Kill Devil Hills) because there will be less future growth on NC 12 to the north of US 158.

Spencer Franklin also noted that the future 2035 analysis assumes a Category 3 storm and 75 percent tourist occupancy (which is mandated by the North Carolina legislature), whereas recent evacuations have reflected lower tourist occupancy since these evacuations occurred after the peak tourist season ended. Therefore, the low tourist occupancy scenario traffic volumes (shown in Table 2 of Handout 3) are likely more reflective of traffic evacuated in recent evacuations. In comparison, the existing peak season (75 percent occupancy) would be approximately twice the recent evacuations, and the 2035 peak season (75 percent occupancy) would be approximately three times the recent evacuation volumes.

Sandy said he thinks the area to the south on US 158 is also just about built-out. Spencer re-iterated that much of the growth in evacuating traffic is because recent storms did not occur during high tourist occupancy periods. Sandy said even when comparing the existing and future 2035 evacuating volumes for 75 percent tourist occupancy in Table 2 (i.e., 43,327 versus 64,974), there is still more growth in evacuating volumes than he would expect because the Currituck and Dare Outer Banks are already relatively built-out in the project area.

It was discussed that the MCB would be a substantial benefit to the local transportation network because it would provide an alternative evacuation and/or access route after a hurricane if a portion of NC 12 was washed out north of Southern Shores. The MCB would also divert a lot of traffic from NC 12 and it would allow Currituck County officials to reopen their portions of the Outer Banks without waiting for Dare County to allow return access.

2. Value of Evacuation Improvement Options in DEIS – Third Shoulder Lane

Jerry Jennings said even with an extra northbound lane on US 158 for hurricane evacuation, a lane would still have to be reversed on the Knapp Bridge, which concerns him. He also said a third shoulder lane intended solely for hurricane evacuations would not be needed for most of the year, and he would prefer that if extra pavement is added that it be something that could be used productively year-round. However, it would probably only be used for the wrong reasons, such as for parking and breakdowns, most of the year. He is not sure how the lane would be managed when it is not being used for hurricane evacuation.

Dan Scanlon agreed with Jerry's concerns. He said it could be a safety issue and asked how motorists could be kept from using it for reasons other than the intended purpose.

James Mims agreed with these concerns and added that motorists would not be used to having the lane.

Rob Glover thought that operating the lane could lead to similar problems as with HOV (high occupancy vehicle) lanes, such as enforcement issues. He thought the negatives of the lane would outweigh the positives. He said widening US 158 between Barco and Elizabeth City would be more useful to his department and a better use of funds than adding a third shoulder lane for hurricane evacuation. Rob said he is also concerned with reversing a lane on the Knapp Bridge, but he thought that it could be worked through so that it would operate properly.

Peter Bishop thought that the expense of adding a third shoulder lane was high considering the limited benefits and that the money would be better spent elsewhere. He also noted that there is a substantial amount of utilities that would have to be relocated.

In response to a question, Dan said he does not like the appearance of the third shoulder lane for hurricane evacuation. He added that he would like NCDOT to remove the existing center lane on US 158 (replacing it with a median) except where it is actually needed for left turns. Meredith McDiarmid asked if the third shoulder lane could be useful at some point in the future. None of the attendees thought that it would be. Mike Fendrick brought up that if US 158 were to be widened at some point in the future, the future roadway design would not likely use the new pavement for the third shoulder lane (i.e., the shoulder lane is not designed to work with a six lane US 158).

Mike Fendrick and Chad Edge discussed signalization issues (such as the US 158/NC 168 intersection) related to the third shoulder lane. They determined that this was not a concern (i.e., the county's signal equipment is sophisticated enough that signal heads could be programmed to handle the extra lane when needed). However, additional signal heads may need to be permanently added to the existing signals to serve the temporary northbound lane during evacuations.

Jerry said it might be preferable if a bicycle lane could be built and used as a third outbound lane for hurricane evacuation when needed. In this case, the lane would be used year-round for bicycles, so it would be a better use of funds than simply providing a paved shoulder.

In response to a question, Chad said having rumble strips along the outside shoulder for the two northbound lanes should not be a concern with respect to adding a third northbound shoulder lane because motorists

using the evacuation lane should be able to avoid the rumble strips (i.e., the rumble strip would not need to be placed directly under the wheel of anticipated evacuation vehicles).

It was discussed that improved access management along the entire US 158 corridor between the WMB and Barco would be helpful.

Sandy asked when the third shoulder lane would be built. Mike responded that it would not be needed for 10 to 15 years. Sandy asked if the third shoulder lane could be kept as a possible option for the future in case it is determined that future evacuations using a reversed center turn lane are impractical (in particular with a 25-mile evacuation treatment without the MCB). This topic was readdressed under Question 5 (Recommended Evacuation Treatment without Mid-Currituck Bridge) as part of the discussion on the possibility of not making a decision on hurricane evacuation improvement options now, but rather conducting a study to determine appropriate hurricane evacuation improvement options at some point in the future when local emergency management officials determine that improvements are needed.

Sandy also said even though the county makes the official decision on when an evacuation should begin, the public decides to leave based on when they feel threatened by an approaching storm. He thinks there is a possibility that the media may cause evacuations to start happening sooner in the future, so we need to see how this evolves over time before making some of these decisions about future needs.

Dan pointed out that most of the tourists are able to enter the Outer Banks within 18 hours on summer Saturdays, so it would seem they should be able to get out in that amount of time as well.

Peter asked if the third shoulder lane is needed if US 158 is widened between Barco and Elizabeth City. Mike responded that this would still be the bottleneck (since US 158 will need three northbound evacuation lanes south of Barco).

3. Value of Evacuation Improvement Options in DEIS – Reverse Center Turn Lane

Jerry said it would take a tremendous amount of manpower to control all of the numerous driveways along US 158 on the Currituck County mainland, so he thought that reversing the center turn lane for 25 miles under ER2 would not be feasible. It may be possible to reverse the center lane for a shorter section of road, but it would still be difficult. Sandy agreed that it would take too much manpower for the longer section, and also said it would be a safety risk. Peter wondered what would be the impact to non-evacuation traffic of reversing the center turn lane.

Sandy discussed the mobilization process for a hurricane evacuation. He said people do not move prior to 36 hours prior to the start of the evacuation.

James agreed that lack of manpower is a serious concern for reversing lanes. He said the county may not get mutual aid from other jurisdictions because everyone is trying to figure out where the storm is going until possibly the last minute. This leads to other jurisdictions not being able to commit to helping with an evacuation, so it is hard to plan for how much manpower will be available. He added that the county does not have enough resources today for reversing 25 miles.

Meredith asked the attendees about their preferences with respect to the hurricane evacuation options. Dan responded that he prefers reversing lanes to adding an additional shoulder lane for 25 miles under ER2. He thought reversing lanes could be done for 5 miles under MCB4.

Note that in later discussion of Question 4, Jerry said the NCDOT division currently has the equipment, or can get it, for reversing the 5 mile section, but he cannot speak for the NC Highway Patrol.

[Discussion after the meeting: After the conclusion of the general meeting, Mike Fendrick and Chad Edge discussed signalization issues related to reversing the center turn lane for hurricane evacuation. It was identified that the use of the center turn lane for northbound evacuation treatments would complicate signal timing issues during an evacuation (since the left turn signals serving the center turn lane would not be applicable during an evacuation). Therefore, additional study would be required to develop appropriate signal timing schemes and identify signal equipment needs that could be used during an evacuation. In any

event, flashing signals with traffic control would be applicable if equipment adjustments were determined to be impractical.]

4. Recommended Evacuation Treatment with Mid-Currituck Bridge

Dan said reversing the center turn lane so that there would be three northbound lanes and one southbound lane is the best option, especially considering that there is not much reason to make a left turn north of the MCB interchange (most gas stations are on the right side of the road). Jerry agreed, but only when it has to be done. He added that sending some evacuating traffic to US 64 would be a good option for Currituck County because it would help to avoid disrupting homes and businesses along US 158 on the mainland with construction to add a third shoulder lane. Jerry added that he is very concerned about reversing the Knapp Bridge – he said this should not be done until it is absolutely necessary.

Dan added that he thinks we are just moving the bottleneck until US 158 is widened to Elizabeth City.

Rob said he is concerned that these improvements will create a false sense of security when the choke point is still there. He said the schools in Barco cannot serve as shelters of last resort for large volumes of evacuating people that get caught in Barco.

Bill Biddlecome asked what the design year is. It was stated that the design year was 2035. Bill then commented that he was concerned with statements that local evacuation officials would not implement the provision of a third lane in the shorter-term even if it was required to achieve, or be closer to, the 18-hour evacuation clearance time goal. Bill said he wondered whether the evacuation need in the DEIS purpose and need would be satisfied if the reversible lanes were not utilized or delayed into the future.

Jennifer said she is hearing that the attendees (i.e., the local emergency management officials) would recommend the contra-flow option, but not until absolutely needed. It was discussed that part of the reason for waiting to implement the reversible center lane would be to reflect the time of year and percent occupancy occurring for actual evacuations (i.e., the 75 percent occupancy would not always be met). In this case, it would be unnecessary to request the additional equipment and manpower needed for reversing the center lane. In any event, the local officials control the evacuation decisions and their decisions may or may not always match the model.

Meredith said if a storm hits at the "right" time, it could cause the need for reversing lanes now. Mike added that we would not meet the 18-hour goal even now if a storm hits at the right time. Sandy said if we had an evacuation this weekend (August 2010), he thinks it could be done in 18 hours.

Jerry said NCDOT currently has the equipment, or can get it, for reversing the 5 mile section, but he cannot speak for the NC Highway Patrol.

Spencer identified an interesting point in terms of fulfilling purpose and need. He noted that the NCDOT division has enough equipment for providing a 5-mile evacuation with a MCB, but not enough to cover 25 miles without a MCB (ER2). Spencer then speculated that this difference could mean that with a MCB the hurricane evacuation purpose is met in the short- and mid-term (since local evacuation officials do have the necessary equipment available to implement lane reversals if needed). In contrast, it may be that the No-Build and ER2 alternatives do not meet the hurricane evacuation need since local evacuation management officials do not have the ability to implement a third reversible evacuation lane in the short- and mid-term.

James said the improvements that he considers to be the "big fixes" for hurricane evacuation (i.e., widening US 158 to Elizabeth City and widening the Knapp Bridge over the Intracoastal Waterway) are not being discussed for implementation. He thinks the options we are talking about are smaller fixes, and that we are going in circles. Robert added that the tourist season is getting longer over time which may make higher tourist occupancy percentages applicable beyond August.

5. Recommended Evacuation Treatment without Mid-Currituck Bridge

Jennifer asked what the best hurricane evacuation option without a MCB is given that: 1) the third shoulder lane was not desired; and 2) reversing the center turn lane for 25 miles (as would be required for the No-Build and ER2) was not feasible.

Sandy responded that it is yet to be determined. Dan said there are so many variables (e.g., day of week, time of year, strength of storm, etc.) it is hard to know. It is hard to anticipate all possible conditions, but they will do whatever is needed locally. Jennifer said demand management may be a better solution without a bridge because the other options did not seem to have much support. There were no objections.

Dan mentioned the possibility of not making a decision on hurricane evacuation improvement options now, but rather conducting a study to determine appropriate hurricane evacuation improvement options at some point in the future when local emergency management officials determine that improvements are needed. Using updated data at that time, this study could re-evaluate the best solution for providing three northbound lanes on US 158 (e.g., third shoulder lane, lane reversals, etc.), as well as evaluate additional hurricane evacuation improvement options that could possibly be implemented instead of adding a third lane, such as diverting evacuating trips from US 158 to US 64, revising current hurricane evacuation procedures, or developing new procedures/strategies. Note that the request for a future study was tied directly to the alternatives without a MCB (No-Build or ER2) under which participants agreed that the provision of a reversed center turn lane along a 25-mile section of US 158 was not viable.

6. Recommended Evacuation Treatment Occupancy, Severity and Growth Assumptions

The first bullet on the slide asked "In making your recommendations, how do the conditions of 2035 development, 75 percent tourist occupancy, and a Category 3 hurricane play into your thinking?" Dan said the 75 percent occupancy assumption was reasonable, but Sandy said a Category 3 storm is rare.

The second bullet on the slide asked "For example, was one factor in your thinking that Category 3 hurricanes are rare in North Carolina and generally occur after the peak tourist season?" Dan said this question seems to be from the Audubon Society and that the county always plans for the worst. He added that the worst-case storm would be a Category 3 storm on the Fourth of July holiday weekend. In addition, it would be easy to have a worse storm than what is discussed on the slide. However, he felt that 75 percent tourist occupancy with a Category 3 storm was a reasonable assumption for evacuation option analyses.

Dan added that calling for an evacuation has massive economic repercussions such as businesses having to shut down, rental weather insurance kicking-in, and people leaving early from their vacations.

It was discussed that an evacuation has not occurred since the median barrier was built on the Knapp Bridge in the spring of 2006.

Dan said the design year of 2035 seemed reasonable.

7. Response to Public Comments: Improved Forecasting?

Dan said that evacuation orders are issued early in the day to maximize daylight hours.

The second bullet on the slide asked "How do we answer a public that says improved hurricane tracking can allow you to order evacuations earlier such that no improvements are needed to the road system for evacuation?" Mary Beth and Dan both doubted the assumption that hurricane forecasting accuracy had substantially improved overall. They said they do not believe that hurricane tracking has been improved substantially, certainly not enough to affect local evacuation decisions which must be made days before the storm reaches land when the storm category and direction are still not decided.

Dan discussed how he thinks Jim Cantore with the Weather Channel impacts hurricane evacuations. He said although a storm may be approaching, and even if a storm's forecasted path could be accurately predicted days in advance, tourists naturally do not want to leave the Outer Banks as long as the weather still seems good because they have spent a substantial amount of money on renting a house and other expenses to plan their vacations. This is especially true early in the vacation week, but maybe they would be more willing to evacuate towards the end of the vacation week.

8. Response to Public Comments: What if Virginia Closes Border?

Jerry said there is no agreement in place between North Carolina and Virginia with respect to when or under what conditions Virginia would close the border. He added that North Carolina has never closed the border (Virginia closed its border once) and he does not think this would be an issue.

Dan said Virginia probably would not completely shut down the border for an extended time, but they might implement an ebb/flow or metering operational strategy in allowing traffic across the border during an evacuation. Sandy said that local EMOs coordinate with Virginia when a storm is approaching, and he is comfortable that communication is open enough to allow him to adjust his plans based on Virginia's planned actions. Virginia would prefer that North Carolina traffic use US 158 to I-95 (instead of NC 168 or US 158 to US 17) to evacuate northeastern North Carolina, but much of the traffic consists of Virginia residents going home rather than North Carolina residents evacuating, and this traffic wants to use NC 168 to Virginia. Jerry said that we can encourage traffic not to go towards Norfolk in an evacuation, and even close NC 168, but people will use "back" roads to head in that direction as soon as they can if that is where they want to go.

Sandy said Virginia has indicated that they would likely provide a 4-hour advance notification of closing the border. He also said Chesapeake, Virginia is often perceived as the "bad guy" in an evacuation because of the decisions they have to make to accommodate traffic through their jurisdiction.

Additional Details for Questions 4 and 5: Recommended Evacuation Treatments for US 158 between NC 12 and WMB with and without a Mid-Currituck Bridge

Jennifer pointed out that we accidentally skipped discussing hurricane evacuation options for US 158 between NC 12 and the WMB on the Outer Banks as part of Questions 4 and 5. Mike described the options for this section of US 158:

- With the No-Build Alternative, there would not be any improvements to US 158 in this area. The existing US 158/NC 12 intersection would require additional manpower and equipment to allow the merge of two lanes from US 158 and one lane from NC 12. Three lanes would need to be carried westbound to the WMB. Severe congestion would be expected in the vicinity of the signals at the Juniper Trail/Wal-Mart and Market Place/Cypress Knee Trail intersections as a result of the overlap of evacuating traffic and traffic trying to access the retail shopping for hurricane provisions and hardware items. (Note that under this scenario, the controlling evacuation link is located in this section.) West of this location, the center turn lane would continue to be used and a third lane would need to be transitioned to contraflow over the WMB. These evacuation operations would be required in the mid-term.
- ER2 includes widening US 158 (which provides a third outbound lane) and then reversing the third lane over the WMB in the mid-term as a result of higher traffic volumes.
- MCB2 includes widening US 158 with adequate merge and signalization to allow the widened road to be merged to two lanes prior to the WMB.
- MCB4 would require widening west of the Wal-Mart intersections to allow three northbound lanes past these traffic signals. In the western portion, signals would likely need to be turned off during an evacuation to either facilitate a merge to two lanes, or the transitioning of a third lane over the WMB in the long-term. If a third lane is required in the long-term over the WMB, it would be merged back to two lanes north of the bridge.

Bill Jones said the best option is probably extending a third westbound through lane through the intersection for Kitty Hawk Elementary School. Chad said the software for the existing signal system could be re-programmed to accommodate necessary evacuating traffic signal timings and patterns, so the signals could continue to operate. This means it would not be necessary to have police officers controlling signalized intersections along US 158 during an evacuation. In response to a suggestion to possibly turn off some of the signals during an evacuation, it was discussed that most likely Kitty Hawk would not allow the signal at The Woods Road that provides access to Kitty Hawk Village to be turned off. Sandy said he thinks we need to experience several more storms before making final decisions on these options, particularly any decision to provide reversible flow over the WMB.

9. Use of Roundabouts on NC 12

It was discussed that a roundabout is being considered for the MCB/NC 12 intersection to reduce the amount of four-lane widening needed on NC 12, as well as to keep the traffic making the dominant movement between the bridge and NC 12 (and the reverse movement) from having to stop at a traffic signal. Bradley Reynolds used a computer simulation model to demonstrate how the proposed roundabout at the MCB/NC 12 intersection on the Outer Banks would operate. Dan said he is not concerned that the roundabout would cause any traffic operations problems for hurricane evacuation.

Sandy asked how much traffic volume the roundabout can efficiently accommodate. Mike responded that 16,156 vpd is the forecast 2035 evacuating traffic volume with 75 percent tourist occupancy at this intersection (see Table 2), and the roundabout should be able to handle this volume. It was also discussed that, if needed, police control could be used to provide gaps so that southbound NC 12 traffic would be able to access the roundabout and turn onto the bridge during the peak periods of a hurricane evacuation. Mike added that this is not the expected bottleneck location for hurricane evacuations – the western end of the bridge at US 158 is the potential bottleneck location. It was discussed that the meeting attendees were not concerned about the roundabout from an emergency management perspective.

As a post-meeting observation, it has also been noted that a roundabout would be functional with or without power as may occur after a major hurricane.

Meeting Summary and Conclusions

Mike summarized the results of the meeting using Table 1 in Handout 2. He said based on the input from the meeting attendees, the preferred treatments are:

- ER2 – It was agreed that the reversible center lane for 25 miles is not a feasible solution. It was suggested that if ER2 is selected as the Preferred Alternative that the third-outbound lane not be implemented immediately. Rather at such time as local emergency management representatives feel an improvement is needed, that a new alternatives study be conducted that could consider additional demand management solutions, such as forcing some evacuees that would prefer to evacuate via US 158 to use US 64, in addition to a physical improvement to US 158.
- MCB2 north sections – Reverse center turn lane north of Knapp Bridge to US 158/NC 168 in Barco.
- MCB4 north sections – Reverse center turn lane north of Knapp Bridge to US 158/NC 168 in Barco.
- MCB4 south sections – Provide merge area 1,000 feet west of Juniper Trail/Wal-Mart and Market Place/Cypress Knee Trail signals to allow merge from three lanes to two lanes. Try to maximize this merge capacity to eliminate or forestall future long-term need for WMB reversible flow.

Next Steps

It was discussed that if any of the meeting attendees (i.e., the local emergency management officials) wanted to provide "official" written comments from their agencies on the DEIS, they could do so and these comments would be responded to in the Final Environmental Impact Statement.

AGENDA

Water Quality Meeting – Mid-Currituck Bridge

October 1, 2010 – 10:00 AM
NCDENR Division of Water Quality
Transportation Permitting Unit
2321 Crabtree Boulevard, Suite 250
Raleigh, NC 27604

1. Purpose of Meeting and Framework – to collectively gain an understanding of what could be reasonable and permitable approaches to stormwater management for the Mid-Currituck Bridge project (MCB4) that employs best management practices to meet the provisions of NC Session Law 2008-211 to the maximum extent practicable (MEP).
    a. No precise definition of MEP exists
    b. The MEP standard allows for maximum flexibility to develop and implement programs to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods, and such other provisions as appropriate for the control of pollutants.
    c. MEP generally emphasizes pollution prevention and source control Best Management Practices (BMPs) primarily (as the first line of defense) in combination with treatment methods serving as a backup (additional lines of defense).
    d. MEP is not just stormwater control requirements, but the system and method used to implement and manage effective controls to meet water quality objectives.
2. Proposed NCTA/NCDOT stormwater management plan for Mid-Currituck Bridge project
    a. Currituck Sound crossing – frequent deck cleaning of entire bridge roadway surface, capture of stormwater only over coastal wetlands adjacent to the sound with treatment in an infiltration BMP, and direct discharge into the sound outside of coastal wetlands.
    b. Outer Banks and Mainland – infiltration BMPs
    c. Maple Swamp crossing – direct discharge
3. Potential impact of runoff from bridge over Currituck Sound
    a. Perspective – Currituck Sound and Mid-Currituck Bridge Crossing
    b. Traffic Volumes
    c. Existing Water Conditions
    d. Storm Event – Frequency and Intensity
    e. NCDOT Division 1 Water Quality Plan
    f. Stormwater Runoff from Bridges Study and other similar efforts

4. Practicability of capturing first 1.5 inches of runoff from Currituck Sound crossing
    a. High bridge with full capture
    b. Inlet based capture and treatment
5. Discussion on proposed stormwater management and other potential approaches to minimizing stormwater impacts from a Mid-Currituck Bridge
    a. Deck Cleaning – reasonable, innovative, and economical
    b. Other Mitigation Concepts – possibilities
        i. Currituck County Strategy for Water Quality Enhancement
        ii. Currituck Sound Ecosystem Restoration Feasibility Study
        iii. Other
    c. Land Based Treatment
        i. Infiltration Basins – Outer Banks and Mainland
        ii. Direct Discharge – Maple Swamp crossing
6. ICE Comments from DWQ
7. Review of Conclusions and Action Items

CONTECH STORMWATER SOLUTIONS

Filtration

The Stormwater Management StormFilter®

Case Study

Easy Maintenance Makes Filtration System Ideal for Bridge Deck

Burnside & Broadway Bridges

Portland, OR

Application
- Municipal

Target Pollutants
- Trash & Debris
- Solids
- Oil & Grease

Solution
- CatchBasin StormFilter systems

Managing stormwater runoff on bridge decks has become a more prevalent issue as concerns about the quality of receiving water bodies is on the rise. Pollutants such as trash and debris, heavy metals, oil and grease, and particulates are constantly found on the bridge deck, as are sand, gravel and chemicals used for deicing.

Previously, stormwater runoff on bridges such as the Burnside and Broadway bridges in Portland, OR, would be directed away from bridge decks through scuppers or storm drains with horizontal piping off the bridge or directly into the river. These piping systems have long posed significant maintenance challenges, as horizontal pipes and traditional catch basins tend to clog with debris. Additionally, transportation authorities have been hesitant to install any stormwater management system that would require significant traffic disruption or bridge closure for regular maintenance.

The Challenge

When Chuck Maggio, P.E., a Project Manager in Multnomah County's Bridge Section, was tasked with replacing the outdated stormwater systems on the Burnside and Broadway Bridges, his goal was to eliminate both direct discharges into the Willamette River as well as the horizontal pipes that were prone to clogging.

Maggio investigated the feasibility of using a combination of traditional catch basins and piping to direct discharge either into the river or into the City of Portland's existing sewer system.

The Solution

After considering the available options, Multnomah County chose to replace the outdated stormwater systems on each bridge with the Stormwater Management StormFilter®.

Four additional CatchBasin StormFilters will be installed on the lift spans on the Burnside Bridge, a bascule bridge with a 788-foot-long main span.

The StormFilter is available in a variety of configurations to meet site constraints. To allow installation right in the bridge deck, Maggio selected the CatchBasin StormFilter. This compact system features a three-in-one design that combines a catch basin, a high flow bypass device, and a StormFilter into one structure.

Easy access from the bridge deck makes maintaining the CatchBasin StormFilter quick and easy — maintaining each system takes less than 20 minutes. Additionally, with point-of-entry treatment the CatchBasin StormFilter treats sheet flow as it enters the system and then allows discharge to the river at the outlet.

"This system provided a catch basin where solids settle out," said Maggio. "Filtration is a big benefit. We're actually treating the water and discharging it straight into the river. The CatchBasin StormFilter provided a design that fit easily into the existing bridge structure and a BMP that was easy to

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Daily Rainfall Data Near Mid-Currituck Bridge

Station ID	NC-CC-1	KONX	KECG	KFFA
Station Type	CoCoRaHS	AWOS	ASOS	AWOS
Station Name	Corolla 11.7 NNW	Currituck County Airport	Coast Guard Air Field	First Flight Airport
City, State, County	Corolla, NC Currituck County	Currituck, NC Currituck County	Elizabeth City, NC Pasquotank County	Kill Devil Hills, NC Dare County
Coordinates	Latitude: 36.548906 Longitude: -75.86876	Latitude: 36.3989292 Longitude: -76.0163014	Latitude: 36.2605806 Longitude: -76.1745722	Latitude: 36.0182228 Longitude: -75.6712869
Distance to Mid-Currituck Bridge (miles)	14	9	18	25
Days of Data	1076	1065	1112	1110
Days with Measurable Rainfall (days)	343	305	518	339
Average Measurable Rainfall Interval (days)	3.1	3.5	2.1	3.3
Rainfall Days > or = 0.1 inches (days)	219	166	192	177
Average Rainfall Interval Days > or = 0.1 inches (days)	4.9	6.4	5.8	6.3
Rainfall Days > 1.5 inches (days)	13	5	13	12
Total Rainfall (inches)	129.16	90.14	116.14	98.62
Average Rainfall (inches)	0.38	0.30	0.22	0.29
Max Rainfall (inches)	2.70	3.66	4.33	3.97

Data Period: 9/07 to 9/10

Source: NC CRONOS - State Climate Office

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maintain. The StormFilter system allowed us to filter the water and direct it back into the river without the need for extensive piping, which would have had an impact on the visual quality of the bridge —plus be a maintenance problem," added Maggio.

Fourteen CatchBasin StormFilters were installed on the Burnside Bridge, replacing the existing system that routed stormwater runoff off the bridge or to the nearest intersection and an inlet to the storm sewer system. On the Broadway Bridge, ten CatchBasin StormFilters were installed during the deck replacement and microsilic overlay, including two that treat stormwater runoff from the lift span. Perlite, a naturally occurring puffed volcanic ash often used in gardening, was the media chosen for the systems on the Burnside and Broadway bridges. The highly porous nature, multicellular structure, and rough edges of Perlite make it very effective for removing suspended solids (TSS) and oil and grease.

The CatchBasin StormFilter was designed to address the constraints of the bridge deck. "The StormFilter did not require a great deal of modification to the bridge structure to support them," said Maggio. "They easily fit between the stringers of the bridge."

Flexibility in the CatchBasin StormFilter design allowed it to fit in an opening in the deck. This allows maintenance to be completed from the deck surface while allowing for easy replacement in the future. The company also provided information on the StormFilter's pollutant removal efficiency that was used during discussions with the National Marine Fisheries Service and the Oregon Department of Environmental Quality.

On the Broadway Bridge, the CatchBasin StormFilters that treat runoff from the lift span are mounted underneath the deck on the pier. A manhole installed directly above the units provides easy access for maintenance and cleaning.

After removing the StormFilter Cartridge a vactor truck cleans out the catch basin to remove remaining sediment and debris.

The Result

Traffic disruption during maintenance is minimal. On a bridge like the Burnside Bridge, with its long, straight sightlines, maintenance does not require a complete lane closure. Signs are posted warning traffic of road work and a limited lane closure ahead. Then the crew simply positions an arrow truck behind the vactor truck to alert drivers, and the operation quickly moves from system to system down one side of the bridge and up the other.

On bridges like the Broadway, where sight is limited due to a curve in the roadway and the grade of the bridge deck, cones are used to block off one lane for safety. Minimal maintenance time allows the crews to complete maintenance between the morning and the evening rush hours.

Tony Lester, Bridge Maintenance Supervisor, noted the system's compact design and ease of access from the bridge deck as factors that make it easy to maintain. While he recognizes that replacing the StormFilter cartridge adds an additional step not required when maintaining traditional catch basins or scuppers, he believes that the advantages of filtration outweigh any additional effort. "With other systems the stormwater is going directly into the river," said Lester, "It's more involved but obviously, that's putting all those pollutants — unfiltered, uncleaned — right into the river. So this is the way of the future."

The three-in-one system design allows the maintenance crews to clean the catch basin portion of the system at a different frequency than the StormFilter Cartridge. "We change these filters every year, but because the catch basin [chamber] is separate from the filter chamber…we can still clean the catch basins and get the debris out without having to put new filters in, and that's kind of nice," said Lester.

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NORTH CAROLINA Turnpike Authority

Mid-Currituck Bridge

STIP No. R-2576

Attendance Sheet

October 1, 2010 – 10:00AM
NCDENR Division of Water Quality
2321 Crabtree Boulevard, Suite 250
Raleigh, NC 27604

Name	Organization	Phone	Email
Tracy Roberts	HNTB/NCTA	788-7147	tracy.roberts@ncturnpike.org
John Page	PB	468-2130	pagej@pbworld.com
SPENCER FRANKLIN	HNTB/NCTA	741-9997	sfrankl@hntb.com
STEVE BROWDE	CDG/LOCHNER	571-7111	sbrowde@hulochner.com
ROY BRUCE	"	"	rbruce@hulochner.com
MIKE RANDALL	DWQ-SWPU	919-807-6374	mike.randall@ncdenr.gov
Jennifer Harris	NCTA	919.571.3004	jennifer.harris@ncturnpike.org
[illegible]			
JOSE LUQUE	CDG/ACS Infra.	305-904-07-55	jlugue@acsinfra.com
RON FERRELL	PBSJ	919-210-3260	RFERRELL@pbsj.com
Matt Lauffer	NCDOT	919-250-4106	mslauffer@ncdot.gov
Brian Wehm	NCDWQ	919-737-5715	brian.wehm@ncdenr.gov
David Wainwright	NCDWQ	919-715-3415	David.Wainwright@ncdenr.gov
JAMES BYRD	HNTB/NCTA	919-424-0437	jabyrd.hntb.com
MAX PRICE	WEI	919-851-8077	MPRICE@WETHERILL[illegible].com
Dave Henderson	NCDOT	250-4100	dhenderson@ncdot.gov

Meeting Summary (Final)

Date: October 1, 2010 at 10:00 AM

Subject: Water Quality Meeting – Mid-Currituck Bridge

Place: North Carolina Department of Environment and Natural Resources (NCDENR) – Division of Water Quality (DWQ)
2321 Crabtree Boulevard, Suite 250
Raleigh, NC

Participants: (See Attached Attendance Sheet and Meeting Agenda)
Jennifer Harris, North Carolina Turnpike Authority (NCTA)
Dave Henderson, North Carolina Department of Transportation (NCDOT)
Matt Lauffer, NCDOT
Mike Randall, NCDENR-DWQ
Brian Wrenn, NCDENR-DWQ
David Wainwright, NCDENR-DWQ
Tracy Roberts, HNTB/NCTA
Spencer Franklin, HNTB/NCTA
James Byrd, HNTB/NCTA
John Page, PB
Steve Browde, CDG/Lochner MMM LLP
Roy Bruce, CDG/Lochner MMM LLP
Jose Luque, CDG/ACS Infrastructure
Ron Ferrell, CDG/PBS&J
Max Price, CDG/Wetherill Engineering

1. Purpose of Meeting – Roy Bruce

To collectively gain an understanding of what could be reasonable and permitable approaches to stormwater management for the Mid-Currituck Bridge project (MCB4) that employs best management practices to meet the provisions of NC Session Law 2008-211 to the maximum extent practicable (MEP).

- No precise definition of MEP exists
- The MEP standard allows for maximum flexibility to develop and implement programs to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods, and such other provisions as appropriate for the control of pollutants.
- MEP generally emphasizes pollution prevention and source control Best Management Practices (BMPs) primarily (as the first line of defense) in combination with treatment methods serving as a backup (additional lines of defense).
- MEP is not just stormwater control requirements, but the system and method used to implement and manage effective controls to meet water quality objectives.

2. Proposed NCTA/NCDOT stormwater management plan for Mid-Currituck Bridge project – Roy Bruce

- Currituck Sound crossing – frequent (weekly during the summer) deck cleaning of entire bridge roadway surface, capture of stormwater only over coastal wetlands adjacent to the east side of the sound with treatment in an infiltration BMP, and direct discharge into the sound outside of coastal wetlands.
- Outer Banks and Mainland – infiltration BMPs
- Maple Swamp crossing – direct discharge

3. Potential Impact of runoff from bridge over Currituck Sound – Roy Bruce

- Perspective
  - According to US Army Corps of Engineers (USACE) in the *February 2010 Currituck Sound Ecosystem Restoration Feasibility Study – Feasibility Scoping Meeting Report*, Currituck Sound covers approximately 153 square miles or 97,920 acres with an average water depth of 5 feet. This equates to 489,600 acre-feet of water. Report is available at: http://www.saw.usace.army.mil/Currituck/FSM/Currituck%20Sound%20FSM%20Report_February%202010_FINAL.pdf.
  - The first 1.5 inches of runoff from the proposed bridge over Currituck Sound equates to roughly 3.85 acre-feet of water.
  - The Currituck Sound drainage basin covers approximately 733 square miles or 469,120 acres. The proposed bridge over Currituck Sound would have roughly 31 acres of surface area.
- Traffic Volumes
  - Average annual daily traffic (ADT) for the Mid-Currituck Bridge in 2035 is 12,600 vehicles per day (vpd). The bridge is projected to carry 22,500 vpd in 2035 on summer weekend peak move in and move out days.
  - Generally accepted traffic threshold is around 30,000 vpd where transportation-based pollutant loadings become significant.
- Existing Water Conditions
  - Currituck Sound has evolved from a saline condition to a brackish condition since the last direct inlet to the Atlantic Ocean closed around 1830 (Caffey's Inlet). Historically as many as five inlets existed at one time or another directly into Currituck Sound from the ocean. These inlets closed between the mid-1600s to 1830. Since the last inlet closed, water conditions have changed such that salinity levels now range from near fresh water to around five parts per thousand. Near the Wright Memorial Bridge with a southerly wind, the salinity levels have reached to around 15 parts per thousand. However, this concentration typically dissipates quickly to the north in the sound. The salinity levels are a factor of wind directions and currents as well as freshwater runoff.
  - USACE Currituck Sound water quality areas of concern:
    - Nutrient loading from runoff of agriculture, logging, and urban development

- Septic wastewater contamination from development
- Increased turbidity caused by natural and human influences
- Saltwater intrusions with increased pollution loading from increased linkage to drainage basins in the tidewater area of Virginia

  - Primary nutrients of concern are nitrogen and phosphorus. Recent studies have shown that nutrient levels are not excessive, but remain a concern as development continues.
  - Turbidity is an issue as total suspended solids (TSS) act to diminish the ability of light to penetrate the water for the maintenance and propagation of submerged aquatic vegetation (SAV). Studies have shown that TSS levels in Currituck Sound are higher than the tributaries flowing into the sound which is contrary to normal expectations. Re-suspension of existing bottom sediments from wind and wave events are thought to be a contributor to the higher TSS levels in Currituck Sound.
  - Water quality data in the USACE study near a duck blind close to the C1 alignment shows nitrogen and phosphorus levels were lower than median condition in Currituck Sound while TSS levels were higher than median conditions. TSS levels ranged from 15 mg/l to 34 mg/l. Because of the higher TSS levels, secchi depth was lower than median conditions in the Currituck Sound.
  - The water quality change in Currituck Sound is the result of a combination of natural and human induced effects. From the closing of the inlets, the change in salinity, and reduced exchange of water (flushing), the water quality and environmental conditions in Currituck Sound have evolved. The activities of man through agriculture practices, logging, and urban development have also contributed to the changes in water quality in Currituck Sound.
  - The water quality conditions in Currituck Sound are not ideal, but they are not poor due to the system being well oxygenated from wind driven aeration and mixing and nutrient levels not being excessive.

- Storm Event – Frequency and Intensity (see attached table distributed at meeting)
  - Survey of four nearby weather stations for the past three years (September 2007 through September 2010) – all stations are within 25 miles of the project site.
  - Average daily rainfall was around 0.30 inches.
  - On average daily rainfall was detected every 6 days at 0.1 inches or more. The planned weekly deck cleaning fits well with the storm event frequency history.
  - There appeared to be about 12 or 13 storm events during the study period that had daily rainfall totals in excess of 1.50 inches.
  - Research shows that deck cleaning captures 90+% of pollutants. This controls the pollutants before they enter the water system. There is greater efficiency with larger particulate matter; however, the smallest particulate matter is still 90% or better.
- NCDOT Division 1 Water Quality Plan - Matt Lauffer
  - Matt Lauffer showed a map of stormwater retrofits in NCDOT Division 1.
  - One retrofit project is done in each division every year under the stormwater program.

  - NCDOT also has other stormwater program elements on-going such as staff training, encroachment program, illicit discharge detection, research, and other activities.
- Stormwater Runoff from Bridges Study and other similar efforts – Matt Lauffer
  - Matt Lauffer pointed out that the recently concluded study showed pollutant levels coming off bridges to be lower than standards for most pollutants, particularly TSS. Deck cleaning in advance of a rainfall event would lessen the TSS to well below standards and would likely yield stormwater with lower TSS than the receiving waters of Currituck Sound.
  - A conclusion of the recent bridge study is that deck cleaning may be a viable alternative for stormwater mitigation, especially when other methods of treatment are not feasible or are cost-prohibitive, which may be the case for long coastal bridges. Roy Bruce added that the Mid-Currituck Bridge project could also be an opportunity to study the effectiveness of deck cleaning.
  - Dave Henderson pointed out that deck cleaning as source control (i.e. pollutants are removed before they become suspended in water) is consistent with NCDOT philosophy. He noted that staff training in source control is done internally at NCDOT now.
  - Brian Wrenn stated that regardless of the bridge study findings, the NPDES and stormwater permit regulations must still be met. There will be some pollutants discharged into the sound despite the effectiveness of deck cleaning.

4. Practicability of capturing first 1.5 inches of runoff from Currituck Sound crossing – Roy Bruce

- High Bridge with full capture
  - The minimum bridge bottom chord elevation would be 16 feet to clear storm event and account for sea level rise with the pavement at about 23 feet. With a nearly 5 mile long bridge, the bridge elevation would be about 85 feet in order to drain the water from the bridge. Bridge cost would be at least double that of a traditional coastal bridge with significant foundation costs.
  - Max Price noted that this would require an approximately 42-inch PVC pipe (versus the typical 16-inch pipe) at each bridge end to convey the first 1.5 inches of rainfall and would require 4 acre-feet of pond (2 acre-feet on the outer banks and 2 acre-feet on the mainland).
  - Dave Henderson noted that NCDOT is not getting the anticipated life expectancy from bridge drainage systems. Life cycle is showing to be about 12 years instead of the anticipated 25 years.
- Inlet based capture and treatment
  - An inlet spaced roughly every 90 feet along the bridge (225 inlets total) would add approximately $12 million to the bridge cost, and would require maintenance to clean out catch basins and replace filtering devices. Annual maintenance costs would be about $1.4 million. Disposal of hazardous materials such as the filter units would be a concern.
  - This type of system was used on a couple of bridges in Oregon that were significantly shorter than the proposed bridge on this project (see attached article).

- NCDOT/USGS/NCDENR-DWQ study of bridge runoff indicates that the benefits derived from this option do not justify its implementation and on-going maintenance costs.

5. **Discussion on proposed stormwater management and other potential approaches to minimize stormwater impacts from the Mid-Currituck Bridge:**

- NCDENR-DWQ interpretation of MEP – Mike Randall
  - The four bullet points on the agenda adequately capture the intent of MEP and are consistent with NCDOT's NPDES permit.
  - Treating the first 1.5 inches of runoff from all new built upon areas is the statutory requirement in the coastal region in NC. This is the primary obligation to be satisfied but NCDENR-DWQ understands that site constraints may make it difficult to completely meet this requirement. NCDENR-DWQ is not concerned with economic constraints but will take this into account during the decision-making process.
  - NCDENR-DWQ needs to know what portion of the requirement can be met on the project and what portion cannot be met and why not?
  - NCDENR-DWQ needs to know what mitigation can be provided for water quality enhancement in the drainage basin for the portion of the requirement that cannot be met?
  - Bridge deck cleaning and off-site mitigation can be effective measures to offset the portion of the requirement that cannot be met.
- Deck cleaning proposal and stormwater capture over coastal wetlands
  - Brian Wrenn felt that deck cleaning and source control are positive approaches for long bridges. He said that NCDENR-DWQ does not expect NCTA to capture and treat all water from the bridge. Some direct discharge is expected. Deck cleaning helps to mitigate the lack of stormwater capture.
  - David Wainwright asked if the entire bridge deck will be cleaned or just the shoulders. Roy Bruce responded that it is NCTA's intent to have the entire bridge deck (travel lanes and shoulders) cleaned regularly.
  - David Wainwright expressed concern over the effectiveness of the deck cleaning equipment over time. Also a concern is the effectiveness of deck cleaning with oils, grease, and hydraulic fluid. Matt Lauffer noted that most liquids bind with particulate matter. Roy Bruce noted that the scrubbing action of the brushes in combination with the vacuum help to remove these liquids. Additionally, the controlled water used in the scrubbing helps to remove dried liquids. The cleaning equipment is designed for use in environments (such as parking lots) where these types of leaking fluids are more of an issue than on a bridge deck with moving traffic.
  - Roy Bruce added that the concession agreement with NCTA would make stormwater management provisions of deck cleaning a contractual requirement by the concessionaire. This would ensure a legal framework for adherence to the stormwater management plan of regular deck cleaning.

  - Brain Wrenn stated that NCDENR-DWQ wants stormwater to be captured on both ends of the bridge. NCTA is proposing to capture and treat stormwater over coastal wetlands on the east send of the bridge for a distance of approximately 600 feet. The west end has no wetlands and no SAV. The presence of Narrow Shore Road on the west end may make stormwater capture a challenge on this end of the bridge because of grade separations and profiles. This detail will need to be worked out with NCDENR-DWQ.
- Currituck County Strategy for Water Quality Enhancement – Roy Bruce
  - There is a *Countywide Land Prioritization Strategy for Water Quality Enhancement for Currituck County* from September, 2006. The report is available at: http://co.currituck.nc.us/pdf/documents-plans/Water-Quality-Enhancement-2006.pdf.
  - The 2006 strategy plan seeks to protect water quality in Currituck Sound through land conservation and restoration. The purpose of the plan is to identify priority tracts of land that have potential to enhance water quality.
  - Land tracts were evaluated for several factors and combined to identify low, moderate, high, and highest water quality enhancement values. There are tracts in the project area that rated high or highest.
  - Acquisition of land under this plan is being considered by NCTA as an additional potential mitigation measure for water quality impacts associated with the bridge project.
  - Parcel 153 was of interest as it rated in the highest category and is at the north end of Maple Swamp where it enters Currituck Sound. This is a 548 acre parcel with an assessed tax value of $1.7 million. Road access to this parcel is at the northern end of Narrow Shore Road.
  - Parcel 145 is also rated in the highest category and is along Currituck Sound and the Outer Banks near the project area. This is a 1300 acre parcel with an assessed tax value of $750,000. This parcel is composed of the marsh islands in Currituck Sound immediately to the south of the project area.
  - Besides these two parcels in the project area there are 16 other parcels that have the highest rating as well as 25 parcels with a high rating for water quality enhancement value.
- Submerged Aquatic Vegetation (SAV)
  - David Wainwright expressed concern about SAV near the bridge over Currituck Sound. He expressed concern about light penetration in conjunction with turbidity and nutrients from the bridge runoff.
  - Matt Lauffer noted that weekly deck cleaning will remove most solids for TSS before they enter the water. This will result in bridge deck runoff that has lower TSS than the receiving waters. He also indicated that the results of the bridge study showed very low TSS from bridges. He also noted scupper studies that have been completed that indicate vegetation around scupper splash zones is quite healthy.
  - David Wainwright stated that no studies have been done on bridge runoff to SAV. The body of knowledge is incomplete in this area. Brian Wrenn added that SAV are different from terrestrial vegetation. This could be another area for research associated with this project.

- John Page noted that Bonner Bridge (NC 12) and the Washington Baum Bridge (US 64) have direct bridge discharge into or near SAV. He suggested that perhaps some research had been done or could be done at these locations.
- Matt Lauffer and Brian Wrenn agreed that shading impacts from the bridge on SAV may be the bigger concern than bridge stormwater runoff.
- Brian Wrenn noted that mitigation for SAV loss by replanting has historically been challenging. However there have been some successes recently.
- David Wainwright noted that the 2003 SAV survey by Elizabeth City State University showed much more SAV in Currituck Sound than the 2007 USACE survey. Tracy Roberts noted that NCTA and East Carolina University are conducting new SAV surveys this month along the bridge corridor.
- Wave action and currents seem to affect SAV as well as light penetration and water depth. Areas along the eastern end of the bridge have greater potential for SAV as the area is more protected from winds, waves, and currents. Winds and waves can cause re-suspension of sediments thereby reducing light penetration because of natural turbidity.
- Roy Bruce stated that capturing stormwater over SAV areas on C1 would extend the capture area another 3,000 feet of bridge on the east end. This would raise the bridge height by another 15 feet, yielding a deck height of about 38 feet.
- David Henderson added that more SAV surveys would be done and that they could be used for inventory efforts to track SAV coverage over time. Brian Wrenn added SAV surveys will be needed prior to and following construction. Jennifer Harris noted that SAV inventorying could be offered as potential mitigation.
- Judson Kenworthy of the NC Division of Marine Fisheries in Morehead City is an SAV expert that advises NCDENR-DWQ on SAV matters.

- Infiltration Basins
  - Along NC 12 and US 158, NCTA is proposing to use infiltration basins for stormwater control and treatment.
  - Brian Wrenn stated that he would like to see as much treatment as possible in these areas.
- Maple Swamp
  - NCTA is proposing direct discharge into Maple Swamp from the crossing on bridge and/or fill. Brian Wrenn stated that capture and treatment should be evaluated and provided where it makes sense.
  - Mike Randall noted that the stormwater issue is volume, concentration, and discharge as well as water quality and pollutant runoff.
  - Brian Wrenn requested profiles and schematics of the options through the swamp and agreed to provide further written comments on stormwater issues for the project.

- Timing and Process
  - Brian Wrenn noted that a LEDPA had not yet been identified for the project and yet fairly detailed discussions are underway on stormwater management. This is not typical and may be somewhat premature. Jennifer Harris responded that TEAC representatives have indicated that addressing key concerns such as stormwater runoff is important to the decision on a Preferred Alternative/LEDPA. Roy Bruce added that identifying environmental permitting risks is important to the concessionaire to determine a reasonable estimation of project costs and financial feasibility.
  - Brian Wrenn agreed that NCDENR-DWQ could provide additional comments relative to water quality and stormwater based on available information to date. However, NCDENR-DWQ cannot give detailed feedback until a stormwater management plan is developed and presented along with engineering drawings.
  - Brian Wrenn stated that he does not foresee any "red flags" for the project and a permit can likely be issued based on a combination of stormwater treatment, deck cleaning, and possibly off-site mitigation.

6. Indirect & Cumulative Effects (ICE) Comments from DWQ – John Page

- John Page indicated that NCTA needs to know if more detailed study is needed between the Draft EIS and the Final EIS than is presented in the Draft EIS's ICE Technical Report in order to meet NCDENR-DWQ's ICI needs. NCDENR-DWQ comments on the Draft EIS indicated NCDENR-DWQ planned to review the ICE Technical Report in that regard.
- David Wainwright asked questions related to the extent of induced development on the mainland and assumptions about its potential for natural resource impacts. He asked if there was a potential for public utility expansions.
- John Page described the interrelationship between the extent of induced development and CAMA plan lands suitable for development. He indicated that there are no plans in Currituck County for public utilities on the mainland.
- David Wainwright indicated he would review the ICE Technical Report and provide comments as it relates to meeting their ICI requirements.

7. Action Items

- NCTA will send to NCDENR-DWQ the schematic plans for the crossing of Maple Swamp.
- NCDENR-DWQ will send to NCTA comments on stormwater and the ICE.

Meeting concluded at 11:30 am.

Phone (252) 232-2115
Fax (252) 232-2750

Mary Beth Newns
Director

Currituck County
EMERGENCY MANAGEMENT
P.O. Box 240 •
Currituck, North Carolina 27929

October 7, 2010

Ms. Jennifer H. Harris, P.E.
NC Turnpike Authority
1578 Mail Service Center
Raleigh, NC 27699-1578

Re: Evacuation of Currituck Beaches

Dear Ms. Harris:

I wanted to take a moment to make you aware of traffic issues we encountered during the recent evacuation of the Currituck Outer Banks due to anticipated effects of Hurricane Earl.

The Emergency Operations Center determined that there was too much uncertainty in Hurricane Earl's forecasted track and that an evacuation of our visitors would be appropriate. The tourists staying at our beaches were very compliant and traffic volumes started to build. Although traffic was heavy, it was moving adequately until an accident occurred in Duck which was then compounded by a malfunctioning traffic light. This turned the Currituck portion of highway 12 into a literal parking lot for several hours. Our call center was over loaded with concerned, scared and angry tourists.

While we understand that putting a mid-county bridge in our county will not alleviate all traffic issues and will not be protected from the occasional accident, it does offer us the opportunity to reroute traffic. How can we expect people to continually respond well to our evacuation orders if they must sit on a road with thousands of other vehicles and not move for long periods of time? Many of these people turned around and went back to their rental properties because they naturally assumed the traffic was going to be this way throughout the evacuation route.

As the storm passed, the Currituck Emergency Operations Center started working on re-entry. The same challenges surfaced immediately; when was Dare County going to let people re-enter and were Southern Shores and Duck going to permit our returning population back into the Currituck Outer Banks? Mr. Scanlon's previous statement about having control of our financial destiny was certainly pondered in those hours.

Phone (252) 232-2115
Fax (252) 232-2750

Mary Beth Newns
Director

Currituck County
EMERGENCY MANAGEMENT
P.O. Box 240 •
Currituck, North Carolina 27929

Currituck County Emergency Operations looks forward to the progress in the efforts to build a mid-county bridge.

Sincerely,

Mary Beth Newns

Mary Beth Newns

Cc: Currituck County Board of Commissioners
Dan Scanlon, Currituck County Manager
Sandy Sanderson, Dare County Emergency Management
Jerry Jennings, North Carolina Department of Transportation

STATE OF NORTH CAROLINA
TURNPIKE AUTHORITY

BEVERLY E. PERDUE
GOVERNOR

1578 MAIL SERVICE CENTER, RALEIGH, N.C. 27699-1578

DAVID W. JOYNER
EXECUTIVE DIRECTOR

January 12, 2011

Ms. Charlan Owens, AICP
NC DCM District Planner
NCDENR-Division of Coastal Management
1367 US 17 South
Elizabeth City, North Carolina 27909

RE: Draft Environmental Impact Statement, Mid-Currituck Bridge Study (STIP Project No. R-2576), Currituck and Dare Counties, NCDENR-DCM Comments Related to Coastal Area Management Act (CAMA) Land Use Plan (LUP) Provisional Consistency Determinations

Dear Ms. Owens:

We are in receipt of NCDENR-DCM's June 4, 2010, comment letter (signed by Ms. Cathy Brittingham) on the Mid-Currituck Bridge Study Draft Environmental Impact Statement (DEIS). Those comments will be answered in the Final EIS. Also attached to the comment letter was a memorandum from you providing Provisional Consistency Determinations for some of the detailed study alternatives with respect to the CAMA LUPs in the project area (i.e., Currituck County, Town of Duck, Town of Southern Shores, and Town of Kitty Hawk). For example, the memorandum indicated that "the alternatives are consistent with the Town of Southern Shores 1997 LUP certified by the CRC on September 25, 1998." However, the memorandum also included requests for additional information before Provisional Consistency Determinations could be made for all of the detailed study alternatives.

Enclosed please find our responses to these requests for additional information. Each of your comments related to requests for additional information from the "Basis for Determination" sections of the memorandum for each LUP is listed separately, followed by a response that includes any relevant policy references.

Please note that although MCB4/C1 with mainland approach Option A is NCTA's recommended Preferred Alternative, we would like to have Provisional Consistency Determinations for all five of the detailed study alternatives analyzed in the DEIS. Please notify us if any additional information is needed beyond what we are providing in order to make these determinations. As indicated in your letter, we understand that a Formal Consistency Determination on the Preferred Alternative will not be made until a CAMA major permit application is submitted by NCTA and a formal NCDENR-DCM review is completed.

NORTH CAROLINA TURNPIKE AUTHORITY
TELEPHONE: 919-571-3000 FAX: 919-571-3015

Thank you for your assistance in this matter. If you have any questions, please contact me at (919) 571-3000 or jhharris1@ncdot.gov.

Sincerely,

Jennifer Harris

Jennifer Harris
Director of Planning & Environmental Studies

cc: Cathy Brittingham, NCDENR-DCM
Tracy Roberts, HNTB/NCTA
John Page, PB

Response to Comments and Questions Related to the Consistency of Mid-Currituck Bridge Detailed Study Alternatives with Project Area CAMA Land Use Plans

January 12, 2011

I. CURRITUCK COUNTY 2006 LUP

NCDENR-DCM Comments Related to Basis for Determination (Memorandum page 19 of 36):

Comment 1

"Under Option B, traffic traveling between US 158 and Aydlett would use the bridge approach, with a local connection provided between the bridge approach road and the local Aydlett street system. The existing road connecting Aydlett to US 158 would be removed. Additionally, a lighted toll plaza would be placed in Aydlett. This proposal is in direct conflict with the Policy Emphasis for the "Intersection of Proposed Mid-County Bridge and US Highway 158" subarea designation on Page 11-7, the Policy Emphasis for "Aydlett and Waterlilly/Churches Island sub area designation on Page 11-8, and Policy TR 13 on Page 9-12. These policies address protection of the Aydlett community character with no access to be provided from the bridge road."

Comment 1a:
"Additionally, a lighted toll plaza would be placed in Aydlett."

Response 1a:
Agreed. The toll plaza would be lighted at night, and those lights would be seen by homes to the south. The nighttime lighting of the toll plaza was expressed as a concern by citizens from Aydlett, particularly as it relates to star gazing hobbyists who recognize Aydlett as an uncommon dark sky location. However, the decision has been made to not construct the toll plaza in the Aydlett community and to keep Aydlett Road open.

Comment 1b:
"This proposal is in direct conflict with the Policy Emphasis for the 'Intersection of Proposed Mid-County Bridge and US Highway 158' subarea designation on Page 11-7, the Policy Emphasis for 'Aydlett and Waterlilly/Churches Island' subarea designation on Page 11-8, and Policy TR 13 on Page 9-12. These policies address protection of the Aydlett community character with no access to be provided from the bridge road."

Response 1b:
Agreed. Providing any access to the bridge other than at US 158 does conflict with the LUP. However, as stated above, the decision has been made to keep Aydlett Road open with no change in access (i.e., there will be no access to the bridge other than at US 158).

Comment 2

"Additional information is needed concerning the protection of Natural Heritage Areas in Currituck County, specifically Maple Swamp. The bridge corridor passes through Maple Swamp. Under Option B, fill would be placed within the swamp, resulting in a significant encroachment into the floodplain and altering the watercourse. The bridge over Maple Swamp in Option A would drain directly into Maple Swamp. Clarify how the improvements are consistent with the 'Conservation' designation description, Policy ES 2 concerning swampland, Policy ES 8 concerning Natural Heritage Areas, Policy NH 3 concerning the mitigation of natural hazards, and Policy WQ 10 concerning water treatment discharges."

Comment 2a:
"Clarify how the improvements are consistent with the 'Conservation' designation description, Policy ES 2 concerning swampland […]."

Response 2a:
Policy ES 2, concerning swampland: *Non-coastal wetlands, including freshwater swamps, and inland, non-tidal wetlands, shall be conserved for the important role they play in absorbing floodwaters, filtering pollutants from stormwater runoff, recharging the ground water table, and providing critical habitat for many plant and animal species. Currituck County supports the efforts of the U.S. Army Corps of Engineers in protecting such wetlands through the Section 4042 permit program of the Clean Water Act, as well as Section 4013 water quality certifications by the State of North Carolina.*

The decision has been made to bridge Maple Swamp. The crossing will not affect surface water levels, storm surge levels, or the ground water.

Comment 2b:
"Clarify how the improvements are consistent with the 'Conservation' designation description, […] Policy ES 8 concerning Natural Heritage Areas […]."

Response 2b:
Policy ES 8, concerning Natural Heritage Areas: *Areas of the County identified for significant future growth shall avoid Natural Heritage Areas (e.g. Great Marsh on Knotts Island, Currituck Banks/Swan Island Natural Area, Currituck Banks Corolla Natural Area, Pine Island/Currituck Club Natural Area, Northwest River Marsh Game Land, and many other marsh areas on the mainland).*

The project does not fall within areas of the County identified for significant future growth that are also within Natural Heritage Areas. Also, the project is not anticipated to induce significant future growth in Natural Heritage Areas. Induced growth is expected to be confined to the proposed bridge's interchange with US 158 on the mainland.

Comment 2c:
"Clarify how the improvements are consistent with the 'Conservation' designation description, […] Policy NH 3 concerning the mitigation of natural hazards […]."

Response 2c:
Policy NH 3, concerning the mitigation of natural hazards: *New public facilities and structures, as well as improvements to existing public facilities and structures, shall be located and designed to mitigate natural hazards. When placement in a natural hazard area is unavoidable, compliance with the National Flood Insurance Program and County Flood Damage Prevention Ordinance shall be required.*

The decision has been made to bridge Maple Swamp. The project will be designed to comply with the National Flood Insurance Program and the County Flood Damage Prevention Ordinance.

Comment 2d:
"Clarify how the improvements are consistent with the 'Conservation' designation description, […] Policy WQ 10 concerning water treatment discharges."

Response 2d:
Policy WQ 10, concerning water treatment discharges: *Sewage treatment discharges shall not be permitted into the waters of Currituck County. Water treatment discharges may be allowed if such discharge would not cause significant degradation of water quality (e.g. negatively affecting the fisheries resource).*

NCTA is working with NCDENR-DWQ to develop a stormwater management plan for the Mid-Currituck Bridge that will meet their requirements and not significantly degrade water quality.

Comment 3
"Additional information is also needed concerning anticipated shoreline stabilization to address Policy NH8, the use of vegetated buffers along shorelines to address Policy ES4 and Policy WQ6, handicapped accessibility of proposed public access facilities to address Policy PA2, use of vegetated roadside swales in handling of stormwater drainage to address Policy WQ7, proposed highway corridor improvements to address Policy CA1 and Policy CA2, relocation of utilities underground to address Policy CA6, including traffic signals in Lower Currituck to address the "Point Harbor" subarea description on Page 11-10, and the anticipated infrastructure for day visitors and service needs for Currituck County to address Action TR3."

Comment 3a:
"Additional information is also needed concerning anticipated shoreline stabilization to address Policy NH8 […]."

Response 3a:
Policy NH8, anticipated shoreline stabilization: *Currituck County encourages owners of properties along estuarine shorelines to employ the least hardened approach to shoreline stabilization (i.e. marsh grass favored over riprap favored over bulkheading, etc.), provided that reasonable access is available to install the technology available.*

Shoreline stabilization would not be needed with most of the construction methods that are being considered for the proposed Mid-Currituck Bridge; however, one approach that is being considered for bringing supplies to the proposed bridge and barges on the western shore of Currituck Sound would involve using temporary shoring to extend the existing north/south seawall/bulkhead from just south of the proposed bridge to just north of the proposed bridge. With the temporary shoring in place to stabilize the shoreline, a crane could be parked along the shoreline and used to load material on to waiting barges. If desired, this shoring could be left in place after construction is completed. These decisions would be made in consultation with NCDENR-DCM during the CAMA permitting process.

Comment 3b:
"Additional information is also needed concerning […] the use of vegetated buffers to address Policy ES4 and Policy WQ6 […]."

Response 3b:
Policy ES4, the use of vegetated buffers along shorelines: *Currituck County shall support the retention or creation of a vegetated buffer area along estuarine shorelines as a simple, effective and low-cost means of preventing pollutants from entering estuarine waters. Exceptions to this requirement may include developments involving pre-existing man-made features such as hardened shorelines, ditches, and canals. Farming and forestry operations that abide by appropriate "best management practices" are also exempt. The County also supports CAMA use standards for all coastal shorelines, whether estuarine or otherwise.*

Policy WQ6, the use of vegetated buffers along shorelines: *Currituck County supports the retention or preservation of vegetated buffers along the edge of drainage ways, streams and other components of the estuarine system as an effective, low cost means of protecting water quality.*

NCTA is currently working with NCDENR-DWQ on a stormwater management plan to minimize pollutants from entering estuarine waters. Current vegetated buffers will not be removed beyond the bridge approach footprint.

Comment 3c:
"Additional information is also needed concerning […] handicapped accessibility of proposed public access facilities to address Policy PA2 […]."

Response 3c:
Policy PA2, handicapped accessibility of proposed public access facilities: *The County supports many forms of 'access' to the water, including scenic outlooks and boardwalks, boat ramps, marinas and docks, fishing piers, canoe and kayak launches, and other means of access. Whenever possible, such facilities shall be designed to accommodate the needs of handicapped individuals.*

Pedestrian and bicycle provisions are now planned for the bridge, which, if feasible, would be constructed to meet requirements of the Americans with Disabilities Act, as applicable.

Comment 3d:
"Additional information is also needed concerning […] use of vegetated roadside swales in handling of stormwater drainage to address Policy WQ7 […]."

Response 3d:
Policy WQ7, use of vegetated roadside swales in handing of stormwater drainage: *The environmental benefits of properly designed, vegetated roadside drainage swales shall be recognized. Curb and gutter shall be reserved to developments that are urban in character (i.e. less than 10,000 square foot lot sizes) and that are served by adequate stormwater collection, retention and slow release facilities.*

In most areas, vegetated roadside drainage swales would be used on roadway components of the project. Curb and gutter is only planned for a short distance along the eastern side of NC 12 to the south of Albacore Street adjacent to the existing stormwater retention ponds across from the TimBuck II development. The curb and gutter is necessary in this portion of the NC 12 commercial area because of the close proximity of the existing ponds to the edge of NC 12.

Comment 3e:
"Additional information is also needed concerning […] proposed highway corridor improvements to address Policy CA1 and Policy CA2 […]."

Response 3e:
Policy CA1, proposed highway corridor improvements: *The important economic, tourism, and community image benefits of attractive, functional major highway corridors through Currituck County shall be recognized. Such highway corridors, beginning with US 158 and NC 168, shall receive priority attention for improved appearance and development standards, including driveway access, landscaping, buffering, signage, lighting and tree preservation.*

Policy CA2, proposed highway corridor improvements: *A canopy of street trees shall be encouraged along all major highways in the County. This canopy may be implemented through the preservation of existing trees or the planting of trees that will reach substantial size at maturity. The preservation or planting of such trees shall be encouraged in the area immediately adjoining the right of way.*

The project's appearance will be a consideration in finalizing the project's design. Trees will be preserved where possible. Landscaping decisions will be made during final design.

Comment 3f:
"Additional information is also needed concerning […] relocation of utilities underground to address Policy CA6 […]."

Response 3f:
Policy CA6, relocation of utilities underground: *To foster an improved community appearance, promote public safety, and help prevent service outages, the placement of utility wires underground shall be encouraged in all public and private developments.*

Above ground utilities are not planned for the project. The relocation of utilities would be included in final design plans. Decisions related to the manner of existing utility relocations along US 158 and NC 12 will be made by the utility companies. NCTA would coordinate construction activities with the appropriate officials to minimize damage or disruption of existing service.

Comment 3g:
"Additional information is also needed concerning […] traffic signals in Lower Currituck to address the 'Point Harbor' subarea description on Page 11-10 […]."

Response 3g:
With respect to traffic signals in the Lower Currituck "Point Harbor" subarea the Currituck County 2006 Land Use Plan states the following on page 11-10: *Coordinate with NCDOT for the strategic placement of traffic signals along US 158 in the Southern portion of the Mainland.*

No changes in traffic signal locations along US 158 in the southern portion of the mainland are anticipated with any of the detailed study alternatives.

Comment 3h:
"Additional information is also needed concerning […] the anticipated infrastructure for day visitors and service needs for Currituck County to address Action TR3."

Response 3h:
Action TR3, the anticipated infrastructure for day visitors and service needs for Currituck County: *Establish a Task Force to look at the broad implications of a mid county bridge and its potential impacts, such as growth in the RO2 COBRA zone, beach access and other infrastructure needs of increased numbers of day visitors, changes in county services such as law enforcement, economic impacts on the Mainland and the Outer Banks, etc. The findings of such a task force should be made available well in advance of the construction of the bridge.*

The county is welcome to establish such a task force. The ICE analysis in the DEIS assesses the potential for day visitors mentioned in the action item. This could serve as a starting

point for such a task force. Ben Woody, Currituck County Planning Director, told representatives of NCTA in a December 13, 2010 telephone conversation that the county commissioners already have plans to appoint a task force, but they do not want to start this effort until they know for sure where the bridge termini will be located. They expect this effort will take approximately one year to complete.

II. TOWN OF KITTY HAWK 2004 LUP

NCDENR-DCM Comments Related to Basis for Determination (Memorandum page 25 of 36):

Comment 1

"Additional information is needed concerning anticipated shoreline stabilization to address Policy #6d, anticipated wetland mitigation to address Policy #12b, handling of stormwater drainage to address Policy #21a, Objective #21b, and Objective #23d, and proposed multi-use trail enhancement to address Objective #23i."

Comment 1a:
"Additional information is needed concerning anticipated shoreline stabilization to address Policy #6d […]."

Response 1a:
Policy #6d, anticipated shoreline stabilization: *Kitty Hawk supports the construction of properly permitted estuarine bulkheads. It is the policy of Kitty Hawk to support State rules regarding bulkheading. Alternative uses such as sills and marsh plantings and other more environmentally friendly erosion control measures will be welcomed and preferred to bulkheading when conditions are favorable to such use.*

No part of MCB4 is located in Kitty Hawk, and ER2 and MCB2 do not include components in estuarine areas in Kitty Hawk. The only portion of the project in Kitty Hawk is the US 158 improvements from the Wright Memorial Bridge to the NC 12 area on the south side of the road with ER2 and MCB2.

Comment 1b:
"Additional information is needed concerning […] anticipated wetland mitigation to address Policy #12b […]."

Response 1b:
Policy #12b, anticipated wetland mitigation: *Kitty Hawk supports CAMA regulations as applicable and also the U. S. Army Corps of Engineers in its enforcement of regulations pertaining to '404 Wetlands' with the exception of Corps' allowance of mitigation measures to be undertaken on sites outside of Town when filling is allowed within the Town.*

Minimal wetland impacts are expected in Kitty Hawk with any of the detailed study alternatives. All US Army Corps of Engineers requirements will be met with any alternative.

Comment 1c:
"Additional information is needed concerning […] handling of stormwater drainage to address Policy #21a, Objective #21b, and Objective #23d […]."

Response 1c:
Policy #21a, handling of stormwater drainage: *Kitty Hawk is committed to minimizing and mitigating the effects of storm water drainage and to implementing a comprehensive approach to storm water management. The Town supports the concept of ocean outfalls as a means to remove stormwater from low lying areas during emergency situations. Kitty Hawk supports the concept that all stormwater should be contained on the property where it was generated, except in circumstances where rainfall exceeds that of a five-year storm.*

Objectives #21b and #23d, handling of stormwater drainage: *Ensure that North Carolina Department of Transportation provides appropriate and timely levels of service with respect to storm water drainage issues within Kitty Hawk.*

There would not be any construction in Kitty Hawk with MCB4 because construction would be limited to the north side of US 158 on the Outer Banks (for the addition of a third outbound lane for hurricane evacuation between NC 12 and Cypress Knee Trail). With ER2 and MCB2, any roadside drainage along US 158 in Kitty Hawk would be accommodated by roadside drainage ditches.

Comment 1d:
"Additional information is needed concerning […] proposed multi-use trail enhancement to address Objective #23i."

Response 1d:
Objective #23i, proposed multi-use trail enhancements: *Maintain and enhance the multi-use trail system).*

Existing multi-use paths for bicyclists and pedestrians affected by any of the detailed study alternatives would be replaced in-kind along both US 158 and NC 12.

III. TOWN OF DUCK 2004 LUP

NCDENR-DCM Comments Related to Basis for Determination (Memorandum page 35 of 36):

Comment 1
"Under no bridge alternative E2 and bridge alternative MCB2, the entire NC 12 roadway through the Town of Duck would be widened to a three-lane roadway. Currently, only the

Duck village area is a three-lane roadway. This is in direct conflict with Policy #26a, Page IX-26 and implementing Objective #26b, Page IX-26 to maintain the existing two-lane configuration of NC 12."

Response 1:
Policy #26a, Page IX-26: *Duck supports the construction of a mid-Currituck County bridge and maintenance of the existing two-lane configuration of NC 12 with the Duck Trail along NC 12 through Duck.*

Objective #26b, Page IX-26: *Lobby for maintaining NC 12 as a two-lane facility in its present configuration through Duck.*

Agreed. ER2 and MCB2 would be in direct conflict with Policy #26a and Objective #26b. MCB4 would not be in conflict with Policy #26a and Objective #26b.

Comment 2
"Additional information is also needed concerning handling of stormwater drainage to address Policy #13i and Objective #23b, proposed multi-use trail enhancements to address Policy #8a, Objectives #8b, #8e, #8f, #8g, #8h, #8j, and Objectives #17g and #17h, and relocation of utilities underground to address Policy #14a."

Comment 2a:
"Additional information is also needed concerning handling of stormwater drainage to address Policy #13i and Objective #23b […]."

Response 2a:
Policy #13i: *Take steps locally and in conjunction with NCDOT and adjacent jurisdictions to improve traffic safety and drainage to mitigate the impact of localized flooding and seek alternative methods of hazard avoidance such as construction of the mid-Currituck (County) Bridge.*

Objective #23b: *Encourage the North Carolina Department of Transportation to provide appropriate and timely response to storm water drainage issues within Duck.*

The accommodation of drainage on NC 12 was a focus in developing the preliminary designs along NC 12, both because a wider NC 12 would generate more runoff and because existing road flooding would continue to occur on NC 12 during storm events without improvement.

The preliminary designs for NC 12 with the detailed study alternatives generally use infiltration strategies, along with a limited number of outfalls to Currituck Sound. Infiltration strategies involve locations for water to be absorbed into the ground rather than be transported to and released into a water body like Currituck Sound. The infiltration strategies would include infiltration basins and linear infiltration strips (roadside ditches).

Infiltration basins and linear infiltration strips would remain dry except during and after storms. These volume-based Best Management Practices (BMPs) would be sized to store temporarily the runoff from a 10-year storm. The infiltration strategies closely replicate existing drainage patterns, while improving storage capacity during the infiltration process. The specific approach to be taken varies along the roadway corridor for the NC 12 widening alternatives.

Comment 2b:
"Additional information is also needed concerning […] proposed multi-use trail enhancements to address Policy #8a, Objectives #8b, #8e, #8f, #8g, #8h, #8j, and Objectives #17g and #17h […]."

Response 2b:
Policy #8a: *Duck supports the continued maintenance of the Duck Trail and efforts to enhance, improve, and expand the facility to provide a safe setting for recreation and as an alternative transportation route.*

Objective #8a: *Seek ways to manage and support Duck Trail use.*

Objective #8e: *Seek ways to improve safety along Duck Trail, particularly at cross streets, cross walks, and parking area entrances and exits.*

Objective #8f: *Support the addition or incorporation of appropriate landscaping to better define Duck Trail and improve user safety.*

Objective #8g: *Support the placement of appropriate signage and marking(s) along Duck Trail and the installation of information kiosks to provide maps, safety and contact information, local events calendar(s), and information on the positive health and recreation benefits of biking and walking/jogging.*

Objective #8h: *Support the creation of way stations/rest areas, the installation of bicycle racks, and incorporate fitness stations as appropriate at various points along Duck Trail.*

Objective #8j: *Support efforts to enhance and improve the connectivity of Duck Trail facilities.*

Objective #17g: *Seek ways to minimize conflicts between pedestrians and vehicles and improve safety along Duck Trail, particularly at cross streets and parking area entrances and exits.*

Objective #17h: *Encourage the placement of appropriate signage and marking(s) along Duck Trail to improve safety.*

Existing multi-use paths for bicyclists and pedestrians affected by any of the detailed study alternatives would be replaced in-kind along both US 158 and NC 12. In addition, space

would be provided along widened sections of NC 12 with any of the detailed study alternatives to accommodate future installation of new multi-use paths by others in areas where there are no existing paths.

Comment 2c:
"Additional information is also needed concerning […] relocation of utilities underground to address Policy #14a."

Response 2c:
Policy #14a: *Duck supports the placement or replacement of utility lines underground.*

Above ground utilities are not planned for the project. The relocation of utilities would be included in final design plans. Decisions related to the manner of existing utility relocations along US 158 and NC 12 will be made by the utility companies. NCTA would coordinate construction activities with the appropriate officials to minimize damage or disruption of existing service.

Meeting Summary

Date: March 21, 2011 at 10:00 AM

Subject: **Stormwater Management and Water Quality – Mid-Currituck Bridge**

Place: North Carolina Turnpike Authority
5400 Glenwood Avenue, Suite 400
Raleigh, NC

Participants: Steve DeWitt, North Carolina Turnpike Authority (NCTA)
Jennifer Harris, NCTA
Matt Lauffer, North Carolina Department of Transportation (NCDOT)
Brian Wrenn, North Carolina Department of Environment and Natural Resources, Division of Water Quality (NCDENR-DWQ)
David Wainwright, NCDENR-DWQ
*Bill Biddlecome, US Army Corps of Engineers (USACE)
*Ron Sechler, National Marine Fisheries Service (NMFS)
*Kevin Hart, North Carolina Department of Environment and Natural Resources, Division of Marine Fisheries (NCDENR-DMF)
Tracy Roberts, HNTB/NCTA
Spencer Franklin, HNTB/NCTA
Jose' Luque, Currituck Development Group (CDG)/ACS Infrastructure
Jim Hinda, CDG/Dragados-USA
Ron Ferrell, CDG/PBS&J
Roy Bruce, CDG/Lochner MMM LLP

** Participated by phone*

1. Purpose of Meeting – Tracy Roberts

The purpose of the meeting was to continue coordination on what could be reasonable and permitable approaches to stormwater management for the Mid-Currituck Bridge project (MCB4) that employs best management practices (BMP) to meet the provisions of NC Session Law 2008-211 to the maximum extent practicable (MEP).

a) At the January 20, 2011 Turnpike Environmental Agency Coordination (TEAC) meeting, the environmental regulatory and resource agencies raised stormwater management as one of four potential issues of concern for the project from a permitting perspective. The three other potential issues of concern were a fisheries moratorium; submerged aquatic vegetation (SAV) impacts/mitigation, and dredging. Dredging is no longer being considered for the project.

b) In response to that meeting and based on previous discussions and correspondence relative to stormwater management for the project, NCTA and CDG prepared a briefing paper on stormwater management (copy attached). This paper was distributed in advance of the meeting.

c) The goal of the meeting was to review the briefing paper, receive agency comments on the general stormwater management plan, and identify any remaining issues that might substantially delay or result in denial of issuance of stormwater and water quality permits.

2. Proposed stormwater management plan for Mid-Currituck Bridge project – Roy Bruce

a. There are roughly 72 acres of additional impervious surface associated with the project. About 33 of these acres are on land in conjunction with the US 158 interchange area and the NC 12 widening. Generally there are about 11 acres associated with the bridge over Maple Swamp and 28 acres with the bridge over Currituck Sound. Additionally, there are approximately 18 acres of existing impervious surface in the project area that are along roadways that will be improved within the project's construction limits.

b. The following summary information was on the white board in the meeting room:

72 acres – Additional Impervious Surface (new)
- 33 acres – Roadway, Parking, Buildings, etc.
- 11 acres – Bridge over Maple Swamp
- 28 acres – Bridge over Currituck Sound

56 acres – Capture and Treatment of first 1.5 inches of rainfall
- 33 acres – New Roadway, Parking, Buildings, etc.
- 1 acre – Bridge over Maple Swamp (500 feet each end)
- 4 acres – Bridge over Currituck Sound (4,000 feet on east end)
- 18 acres – Existing Impervious Surface

16 acres – Remaining (from bridges with deck cleaning at 90% effectiveness)

c. The proposed stormwater management plan for the Maple Swamp and Currituck Sound bridge crossings includes frequent (weekly during the summer) deck cleaning of entire bridge roadway surface (all 39 acres), capture/treatment of stormwater over existing SAV beds for 4,000 feet on the east end of the bridge over the sound (4 acres), capture/treatment of stormwater for 500 feet at each end of the bridge over Maple Swamp (1 acre), and for the remaining bridge areas, the first 1.5" of stormwater would directly discharge into Currituck Sound and Maple Swamp outside of the three capture areas at the bridge ends.

d. For the Outer Banks (NC 12) and Mainland (US 158) areas, infiltration and stormwater pond BMPs for treating all impervious surfaces (33 acres additional and 18 acres of retrofitting existing conditions) is proposed.

e. This approach yields capture and treatment of the first 1.5 inches of stormwater for 56 of the 72 acres of additional impervious surface. The remaining 16 acres would be on the two bridges and would have had the pollutants removed prior to being suspending in rainwater through regular deck cleaning.

3. Potential Impact of runoff from bridges over Currituck Sound and Maple Swamp – Roy Bruce

a. The table at the end of the briefing paper on stormwater management presents pollutant removal for various stormwater treatment methodologies for the proposed bridges over Maple Swamp and Currituck Sound.

b. Pollutant removal levels are shown for total suspended solids (TSS), total nitrogen (T-N), and total phosphorus (T-P) with four different stormwater treatment methods.

c. The base case (#1) is the traditional bridge deck capture and treatment system utilizing a stormwater wetland treatment facility. This approach typically removes roughly 85% of TSS and 40% of T-N and T-P.

d. The next method (#2) is bridge deck cleaning. Research shows this removal will be upwards of 97% effective with the smallest particulate matter at above 90% removal. Therefore, 90% effectiveness for all three pollutants is used in the table.

e. The 3rd treatment method (#3) is capturing/treating stormwater for 5,000 feet or 1 mile (4000 feet + 500 feet + 500 feet) of the 6.2 miles of bridge length. This results in 13% effectiveness for TSS and 6% for T-N and T-P.

f. The 4th scenario (#4) is what is being proposed for the bridges over Currituck Sound and Maple Swamp with a combination of the 2nd and 3rd treatment methods. This results in 91% effectiveness for all three pollutants studied.

4. Questions and Discussion

a. The frequency of deck cleaning and definition of significant rainfall event were discussed. It was agreed that it was impractical to expect to clean the deck in advance of a sudden storm or to define a significant storm event in terms of inches of rainfall. Regular deck cleaning such as weekly during the peak summer season following the peak traffic on the weekend would seem to be an effective and consistent performance measure. Flexibility should be built into the deck cleaning program so that the regular deck cleaning could be adjusted if a significant storm event was predicted. The definition of a significant storm event could be developed during the final design and permitting process.

b. NCTA will have a requirement in the concession agreement to ensure compliance with the program of regular deck cleaning. NCDENR-DWQ requested they be allowed to review and comment on the protocols on this matter that will be included in the concession agreement.

c. Off-site mitigation was previously discussed as a possible means of addressing stormwater requirements. At this time, off-site mitigation is not being proposed as a component of the stormwater management plan because NCTA feels it is meeting the intent of maximum extent practicable using the other methods described above.

d. NCDENR-DWQ will expect to see an on-going water quality monitoring plan as part of the overall stormwater management plan.

e. NCDENR-DWQ recommended consideration of collecting background data for water quality prior to construction. Existing data should be used to the extent that it is readily available. Project area monitoring should start roughly a year in advance of construction so as to have baseline data in each season. Water quality monitoring should follow NCDENR-DWQ ambient water quality monitoring protocols.

f. NCDENR-DWQ had discussions about erosive energy of direct discharge stormwater from bridge scuppers into wetlands. David Wainwright noted that once the fall height is above 16 feet from the bottom of the scupper to the ground, the winds tend to make it like rainfall again. For less than 16 feet of height a rip-rap area may need to be provided under each scupper. However,

the rip-rap area would be a permanent wetland impact. Matt Lauffer noted research by NCDOT based on 100 bridges around the state that shows an approximately two foot impression area under scuppers with very little erosion as long as the ground slope is not steep. In fact, the area around the impression often has taller vegetation than the surrounding area. With a vertical scupper, the water tends to spiral through the pipe and drop without concentration and thereby eliminating or reducing erosion. A sloping scupper pipe allows the water to concentrate into a stream and is more erosive. The current design assumes vertical pipes but a final decision has not been made. Matt Lauffer will provide information to NCDENR-DWQ on this research since the issue of erosion from bridge scuppers has statewide implications for NCDOT.

g. Brian Wrenn is interested to understand why more stormwater from the bridge over Maple Swamp cannot be captured and treated. This information would be useful for the NCDENR-DWQ to have in making a decision on whether NCTA's proposal is meeting the intent of maximum extent practicable. Narrative, plans, and pictures will be useful in assisting NCDENR-DWQ is evaluating NCTA's proposal to capture and treat stormwater for 500 feet at each end of the bridge. This additional information will be provided by NCTA once additional design development has been completed.

h. More information will be required on the stormwater capture and treatment for the impervious surfaces on land as the designs progress.

i. All agreed that once the bridge is built and in operation, this will be a great opportunity for on-going research on the effectiveness of the proposed advanced technology of bridge deck (vacuum/sweeping) cleaning and its effects on water quality.

j. The availability of the land at the east end of the bridge over Currituck Sound was discussed as a potential location for a stormwater treatment pond. This land is part of the undeveloped Phase II of the Corolla Bay subdivision. According to the developer, the land is currently being used for stormwater and to meet Currituck County's open space requirements. NCTA has initiated discussions with the developer. Research on the restrictions on the land is underway to determine availability for locating a stormwater facility. The site is about 4 acres with an existing one acre pond. Approximately an additional one acre pond will be needed.

k. Continued coordination will be needed with NCDENR-DWQ as the project develops, particularly if there are changes in the stormwater management plan proposal.

l. At this time, NCDENR-DWQ does not see any deal breakers and believes that the project should be able to obtain the appropriate water quality and stormwater permits. NCDENR-DWQ was comfortable with the proposed stormwater management plan and, although additional details need to be resolved, did not see any major hurdles that could not be overcome.

m. NMFS had no other concerns about stormwater and was satisfied with the direction of the project relative to stormwater management.

n. USACE indicated their support as long as NCDENR-DWQ is satisfied with the proposal.

o. NCDENR-DMF had no other concerns or comments at this time relative to stormwater management.

p. NCTA/NCDOT was satisfied with the direction and decision of the project relative to stormwater management and appreciated the collaboration of the agencies for this effort.

5. Action Items

a. NCTA will provide NCDENR-DWQ for review and comment the bridge deck cleaning protocols that will be in the concession agreement once they are developed.

b. NCTA will perform a baseline water quality assessment for one year in advance of the start of construction.

c. CDG and NCTA will provide additional information relative to the capture and treatment of stormwater from the bridge over Maple Swamp.

d. NCDOT will provide additional information on erosive energy from bridge scuppers to NCDENR-DWQ.

e. The following additional details need to be resolved in conjunction with the permitting process:
   - Define significant storm event, if necessary
   - Confirm Corolla Bay parcel can be used for stormwater treatment facility
   - Agree on concession agreement bridge deck cleaning protocols
   - Perform baseline water quality assessment and develop an on-going plan for water quality assessments
   - Provide additional stormwater details as design progresses

Meeting concluded around 10:50 AM.

LEDPA Achievement Process

Stormwater Management

The North Carolina Turnpike Authority (NCTA) held the January 20, 2011 Turnpike Environmental Agency Coordination (TEAC) meeting to review the Preferred Alternative of MCB4/C1 with Design Option A (MCB4/A/C1) and to reach an agreement with the environmental regulatory and resource agencies (agencies) to consider this option as the Least Environmentally Damaging Practicable Alternative (LEDPA). At the conclusion of the meeting, the agencies did not solidly confirm MCB4/A/C1 as the LEDPA. However, the agencies expressed their intention to consider MCB4/A/C1 as the LEDPA instead of ER2 once four environmental permitting issues are resolved to the agencies' satisfaction.

The four environmental permitting issues are: moratorium for in-water construction activities (specifically, bottom-disturbing activities) in submerged aquatic vegetation (SAV) beds and SAV habitat (as defined by the NC Marine Fisheries Commission and collectively referred to herein as "SAV areas"), dredging, stormwater management, and impacts to SAV from bridge shading and pile driving.

Stormwater Management

This document's focus is on stormwater management and summarizes some past history of options discussed in Handout 26 and also in the January 2011 Preferred Alternative Report. Its main intent is to present a refined and more detailed stormwater management strategy for the project.

CONTEXT/BACKGROUND:

In a meeting on October 1, 2010 and at various TEAC meetings, the following issues have been raised by the North Carolina Department of Environment and Natural Resources, Division of Water Quality (NCDENR-DWQ):

1. North Carolina coastal stormwater regulations require capture and treatment of the first 1.5 inches of rainfall from all new built upon areas (NC Session Law 2008-211). NCDOT is exempt from these requirements, but in order to comply with the provisions of NCDOT's National Pollutant Discharge Elimination System (NPDES) permit, NCTA will need to comply with these regulations to the maximum extent practicable.
2. NCDENR-DWQ understands that site constraints may make it difficult to completely meet this requirement.
3. NCDENR-DWQ has requested that NCTA provide the portion of the requirement that could be met on the project and what portion could not practicably be met and why not.
4. NCDENR-DWQ has asked what mitigation could be provided for water quality enhancement in the drainage basin for the portion of the requirement that could not practicably be met.

5. NCDENR-DWQ has indicated that bridge deck cleaning, source control, and off-site mitigation could be effective measures to offset the majority portion of the requirement that could not be met.
6. NCDENR-DWQ has expressed concern over the effectiveness of the deck cleaning equipment over time. Also a concern of NCDENR-DWQ is the effectiveness of deck cleaning in picking up oil, grease, and hydraulic fluid on the bridge.
7. NCDENR-DWQ has stated they expect stormwater to be captured on both ends of each bridge (Maple Swamp bridge and Mid-Currituck Bridge) if it could not be practicably captured for the entire length of both bridges. NCDENR-DWQ has expressed a desire to have stormwater captured over SAV areas.
8. NCDENR-DWQ has concerns about turbidity (resulting in limitation of light penetration) and pollutants in SAV areas as well as energy concerns from concentrations of water being discharged from bridge outlets.
9. NCDENR-DWQ is interested in support for research on the impacts of stormwater runoff from coastal bridges on SAV.
10. For the bridge over Maple Swamp, NCDENR-DWQ has indicated that the stormwater issues they are interested in relate to volume, concentration, and discharge as well as water quality and pollutant runoff.

MAXIMUM EXTENT PRACTICABLE STANDARD:

- No precise definition of maximum extent practicable (MEP) exists
- The MEP standard allows for maximum flexibility to develop and implement programs to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods, and such other provisions as appropriate for the control of pollutants.
- MEP generally emphasizes pollution prevention and source control Best Management Practices (BMPs) primarily (as the first line of defense) in combination with treatment methods serving as a backup (additional lines of defense).
- MEP is not just stormwater control requirements, but the system and method used to implement and manage effective controls to meet water quality objectives.

➢ **Conclusion:**

Criteria applied should be reasonable in keeping with the spirit and intent of the regulations

PERSPECTIVE/SETTING

1. **Currituck Sound Bridge Crossing**

   - Additional impervious surface associated with the MCB4/A/C1 Revised alignment is approximately 72 acres.
   - According to the US Army Corps of Engineers (USACE) in the *Currituck Sound Ecosystem Restoration Feasibility Study* (February 2010), Currituck Sound covers 153 square miles or 97,920 acres.
   - Also according to the USACE reference mentioned above, the water depth in Currituck Sound is 5 feet on average. This equates to 489,600 acre-feet of water.
   - First 1.5 inches of runoff from the additional impervious surfaces equates to roughly 10 acre-feet of water or 0.002 percent of the total volume of Currituck Sound.
   - Currituck Sound drainage basin = 733 square miles or 469,120 acres.
   - Additional impervious surface is 0.015 % (percent) of the drainage basin.

   ➢ **Conclusion:**

   The additional stormwater runoff contribution from the Mid-Currituck Bridge would amount to only a minimal portion of the total volume of Currituck Sound or the total drainage basin. Additionally, it should be taken into account that any traffic that would use the Mid-Currituck Bridge would be a portion of the traffic that otherwise would use the Wright Memorial Bridge. Therefore, a portion of the additional pollution associated with this project would result in a corresponding reduction in pollution at the Wright Memorial Bridge. It should be noted that there is no stormwater treatment system provided on the Wright Memorial Bridge.

2. **Traffic Volumes**

   - Average annual daily traffic (AADT) for the Mid-CurrituckBridge in 2035 is 12,600 vehicles per day (vpd)
   - Generally accepted daily traffic volume threshold where pollutant loadings become significant is 30,000 vpd (Robert Sylvester 1972, Washington State Highway Department Research Report No. 7.1, Character and Significance of Highway Runoff Waters)
   - Mid-CurrituckBridge is projected to carry 22,500 vpd in 2035 under summer weekend conditions, which include peak rental check in and rental check out days

   ➢ **Conclusion:**

   Traffic volumes would be below the significance threshold of potential pollutant loadings.

3. **Existing Water Conditions** from the USACE *Currituck Sound Ecosystem Restoration Feasibility Study* (February 2010)

   - Currituck Sound has evolved from a saline condition to a brackish condition since the last direct inlet to the Atlantic Ocean closed around 1830 (Caffey's Inlet). Historically as many as five inlets existed at one time or another directly into Currituck Sound from the ocean. These inlets closed between the mid-1600s to 1830. Since the last inlet closed, water conditions have changed such that salinity levels now range from near fresh water to around five parts per thousand. Near the Wright Memorial Bridge with a southerly wind, the salinity levels have reached to around 15 parts per thousand. However, this concentration typically dissipates quickly to the north in the sound. The salinity levels are a factor of wind directions and currents as well as freshwater runoff.
   - According to USACE, water quality in Currituck Sound is threatened by four primary sources: 1) nutrient loading from runoff of agriculture, logging, and urban development; 2) septic wastewater contamination from increased development; 3) increased turbidity caused by natural and human influences; and 4) saltwater intrusions with increased pollution loading from increased linkage to drainage basins in the tidewater area (Chesapeake and Virginia Beach) of Virginia.
   - Primary nutrients of concern are nitrogen and phosphorus for Currituck Sound. Recent water quality studies have shown that nutrient levels are not excessive but remain a concern as development activities continue.
   - Turbidity is an issue as total suspended solids (TSS) act to diminish the ability of light to penetrate the water for the maintenance and propagation of SAV. Recent studies have shown that TSS levels in Currituck Sound are higher than in the tributaries flowing into the sound which is contrary to normal conditions. Re-suspension of existing bottom sediments from wind and wave driven events are thought to be a contributor to the higher TSS levels in Currituck Sound.
   - The change in water quality in Currituck Sound is apparently the result of a combination of natural and human induced effects. From the closing of the inlets, the change in salinity, and reduced exchange of water (flushing), the water quality and environmental conditions in Currituck Sound have evolved. The activities of man through agricultural practices, logging, and urban development have also contributed to the changes in water quality in Currituck Sound.

- Water quality conditions in Currituck Sound are not ideal, but they are not poor. The system is well oxygenated due to wind driven aeration and mixing. Nutrient levels are not excessive.

➢ **Conclusion:**

Based on available data, current water conditions in Currituck Sound are documented and understood.

4. **Storm Event – Frequency and Intensity**

- Review of data from four nearby weather stations for the past three years (September 2007 through September 2010) – all stations are within 25 miles of the project site
- Data reviewed was daily rainfall amounts
- Daily rainfall amounts ranged from trace (0.01 inches or less) to a high of 4.33 inches
- Average daily rainfall was around 0.30 inches
- There appeared to be about 12 or 13 storm events during the study period that had daily rainfall totals in excess of 1.5 inches
- On average, daily rainfall was detected every 6 days at 0.1 inches or more

➢ **Conclusion:**

Average rainfall events are well below 1.5 inches.

5. **Stormwater Runoff from Bridges** (Final Report to Joint Legislation Transportation Oversight Committee)– July 2010 – NCDOT/USGS/NCDENR-DWQ

- Bridge vacuum/sweeping will continue to be considered as a potential water quality level II treatment stormwater control measure for bridge decks
- Bridge vacuum/sweeping is a viable alternative for stormwater mitigation, especially when other methods of treatment are not feasible or are cost-prohibitive, which is the case for long coastal bridges

➢ **Conclusion:**

Bridge vacuum/sweeping is a reasonable and practicable stormwater management technique for long coastal bridges.

SOLUTIONS/APPROACH:

The Draft Environmental Impact Statement (Section 2.1.7.2) outlined three (3) approaches to stormwater drainage from the bridge over Currituck Sound:

Option 1 -- the high bridge

Option 2-- the bridge drainage filtering devices

(these two approaches have been deemed impracticable) and

Option 3 -- Partial Capture and Pre-treated Discharge (presented here and being proposed with enhancements to what is included in the Draft EIS).

- **High bridge with full capture** (Option 1)-considered by NCTA to be impracticable
  - Minimum bridge bottom chord elevation of 16 feet to clear storm event and sea level rise. Pavement at about 23 feet.
  - The C1 Revised (straight bridge) is roughly 24,700 feet long or 4.7 miles across Currituck Sound.
  - At 0.5 percent slope with a high point in the center, the bridge would be at **about 78 feet to bottom chord and at least 85 feet to the pavement**.
  - Bridge cost would at least double the cost of a traditional coastal bridge with significant foundation costs.
  - Using just the 1.5 inch volume alone would result in more than 70,000 cubic feet of water, requiring the pipe size to be more than 30 inches in diameter, plus the weight of water to be conveyed. This would make this option impracticable.
- **Bridge drainage filtering devices** (Option 2)-considered by NCTA to be impracticable
  - Assume inlets would be spaced roughly every 90 feet (C1 Revised would need about 275 inlets)
  - Costs $12 million
  - Inlets would require maintenance to clean out catch basins and replace filtering device every two months.
  - Maintenance would need to be done on the bridge shoulder adjacent to traffic.
  - Specialized equipment would be required for the collection of the filters.
  - Annual maintenance costs would be about $1.4 million
  - NCDOT/USGS/DWQ study of bridge runoff indicates that the benefits derived from this option do not justify its implementation and on-going maintenance.
- **Partial Capture and Treatment** (Option 3 Enhanced from Draft EIS)-considered by NCTA to be reasonable and practicable
  - Capture of stormwater on the east end of the Mid-Currituck Bridge to the maximum extent practicable over SAV areas (4,000 feet) with treatment in either a stormwater wetland or a wet detention basin.

Source control (via frequent vacuum/sweeping deck cleaning, as explained below) would be used on the remainder of the bridge across Currituck Sound.

- Use NCDOT accepted bridge stormwater closed drainage system for this approach in accordance with the NCDOT Stormwater Best Management Practices Toolbox (March 2008).
- Capture of stormwater on the west end of the Mid-Currituck Bridge would not be practicable because of the grade of the bridge as a result of crossing over Narrow Shore Road immediately adjacent to the water's edge. Because of this grade separation, there would be no means to capture and transfer water off the bridge to a treatment facility.
- Frequent deck cleaning of entire bridge roadway surface.
- The equipment to be used for the bridge vacuum/sweeping (as detailed in Handout 26) would include the most advanced street cleaning equipment that would combine vacuum/sweeping technology in conjunction with water and/or air for the most effective surface cleaning possible.

➢ **Conclusion:**

Option 3 would be the only practicable solution for stormwater management across Currituck Sound and is the proposed stormwater management plan for the Mid-Currituck Bridge.

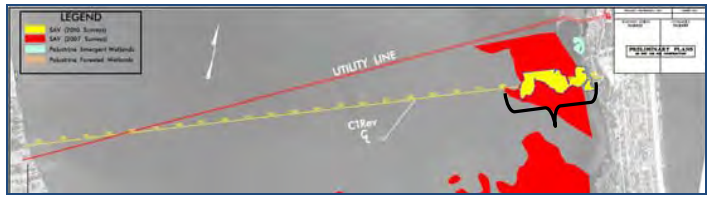
MAPLE SWAMP BRIDGE

Similar issues arise for the 1.5 mile long bridge over Maple Swamp. Because of this length, capturing and treating stormwater along the entire bridge deck as in Option 1 would be impracticable. Likewise, the cost and maintenance issues associated with Option 2 would make the use of the inlet-based capture and treatment system impracticable. The same approach of partial stormwater capture and treatment (as in the Option 3 approach) at the bridge ends (500 feet) in conjunction frequent deck cleaning and direct discharge into Maple Swamp is proposed.

For stormwater from non-bridge impervious surfaces, traditional roadway BMPs would be used. Alternative pavement materials such as pervious pavements may be used in parking areas and other areas. Additionally, a rooftop runoff system may be used for buildings and/or toll plaza awnings to capture and use water on site or to infiltrate.

CONCEPT OF BRIDGE DRAINAGE SYSTEM OVER SAV AREAS:

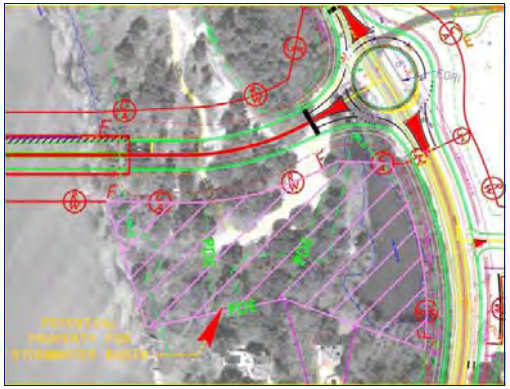
In accordance with the NCDOT Stormwater Best Management Practices Toolbox, **a bridge stormwater control system** would be provided **over the portion of Currituck Sound on the east end of the bridge where there are SAV areas**. This system would be designed to capture the first 1.5 inches of runoff and channel it to a treatment basin.



The preliminary design concept utilizes:

- A 0.3 percent grade on the bridge over this 4,000 foot length.
- Over this 4,000 feet, six-inch scuppers would be provided at approximately 12-foot spacing and would discharge into a single 30-inch pipe attached under the bridge.
- This 30-inch pipe would discharge through a control structure to send the initial flush (1.5 inches) into the stormwater treatment basin with the remaining stormwater diverted to the sound.
- The **stormwater treatment basin** would need to be located near the east end of the bridge on the Outer Banks. There is an undeveloped four acre parcel at this location that is part wetland and part upland. Approximately half of the four acre site is upland. Preliminary calculations indicate that either a stormwater wetland of 0.75 to 1.0 acre or a wet detention basin of 0.50 to 0.75 acres would be required to handle this amount of stormwater.

  The potential location of the proposed treatment basin is showed below. This area contains an existing stormwater pond for the adjacent development (Corolla Bay). Additionally, a portion of this property is used by the development to meet open space requirements of Currituck County. The use of a portion of this parcel for the bridge stormwater treatment pond would be coordinated with the property owner to ensure compliance with stormwater and open space requirements.



As the project progresses, a final design will be prepared for the concept described above. Likewise, more details on the site specifics of the detention basin will be provided as the design progresses.

POLLUTANT REMOVAL:

In the project area, the total impervious surface area (existing plus proposed) will be approximately 90 acres. Of the approximately 72 acres of proposed additional impervious surface (new built upon area), about 28 acres are associated with the bridge over Currituck Sound and roughly 11 acres are associated with the bridge over Maple Swamp. The remaining approximately 33 acres are associated with US 158

improvements, interchange ramps/bridges, toll facilities, local road connections, parking areas, and NC 12 widening. In addition to the additional impervious surface area, there are about 18 acres of existing impervious surface in the project improvement limits associated with existing US 158 and the portions of existing NC 12 to be widened. These pavement areas currently exist within the limits of the project improvements and would be maintained for the project.

Compliance with the stormwater regulations to capture and treat the first 1.5 inches of runoff from additional impervious areas will be met, to the maximum extent practicable, through a combination of pollutant source control and capture and treatment. Source control would be through the use of pavement vacuum/sweeping on bridge decks. Capture and treatment would be through the use of bridge closed drainage systems, stormwater wetlands, wet detention basins, rooftop rainwater harvesting, and other traditional roadway BMPs, to the maximum extent practicable.

Modern pavement vacuum/sweeping technology has been shown to effectively remove upwards of 97.5 percent of materials (Real World Street Cleaner Pickup Performance Testing, Roger C. Sutherland, PE, Pacific Water Resources, Inc., July 2008). Even when graduated by particle size, this technology removes over 90 percent of the smallest particles and nearly all of the larger particles. Use of this technology prior to a storm event would substantially improve the quality of the runoff from the bridge deck since the pollutants would not have entered the water column. Storm events would be monitored and proactive vacuum/sweeping would take place prior to major storm events. **Therefore, the vacuum/sweeping approach could be considered as a pre-stormwater treatment**.

In addition to vacuum/sweeping the bridge decks, stormwater capture and treatment of the first 1.5 inches of runoff is planned for 4,000 feet (4 acres) of the bridge over Currituck Sound where there are SAV areas. For the Maple Swamp bridge, 500 feet (0.5 acre) on each end of the 1.5 mile bridge would be captured and treated. This would result in an uncaptured bridge area of 24 acres on the bridge over Currituck Sound and 10 acres on the bridge over Maple Swamp. Stormwater in these areas would be directly discharged into their receiving water bodies **with the exception of greater than 90% or more** of the pollutants would have been removed through deck cleaning via vacuum/sweeping.

Comparison of Various Stormwater Treatment Methods

The table included in Attachment I shows that the proposed bridge stormwater treatment method with vacuum/sweeping and stormwater collection would be at least 40 percent more effective than conventional stormwater capture and treatment alone. The table shows the pollutants entering the receiving bodies of Currituck Sound and Maple Swamp with different treatment strategies. Traditional bridge collection and stormwater wetland treatment systems are thought to achieve about 85 percent removal of Total Suspended Solids and 40 percent removal of Total Nitrogen and Total Phosphorus. This results in a 15 to 60 percent of the pollutants being discharged into receiving waters even with treatment. The combination of deck vacuum/sweeping with

partial capture and treatment of 5,000 feet of the two bridges would reduce the release of untreated pollutants by more than 40 percent. This means that only about 9 percent of these pollutants would be discharged into receiving waters.

To the maximum extent practicable, all 33 acres of non-bridge additional impervious surface area plus all 18 acres of existing impervious surface would have the first 1.5 inches of runoff captured and either treated or used on the project site. The net effect of this approach would be to offset the 34 acres of uncaptured (yet greater than 90% treated) bridge area with the 18 acres of treatment for existing impervious surface. This results in a net of 16 acres of uncaptured (yet greater than 90% treated) bridge area.

STORMWATER MANAGEMENT PLAN (SWMP):
The following are the components of the proposed stormwater management plan (SWMP) for the Mid-Currituck Bridge project:

1. In uplands areas on the mainland and the Outer Banks, stormwater capture and treatment would be through typical roadway best management practices using infiltration trenches and basins.
2. Source control would be used on the bridge over Maple Swamp and the bridge over Currituck Sound. Source control would be provided by **frequent deck cleaning** using state of the art multi-function cleaning equipment that employs mechanical, vacuum, and regenerative air systems. Weather conditions would be monitored on site and additional deck cleaning would be done in advance of anticipated significant storm events. Source control through deck cleaning would be a contractual element of the agreement between NCTA and the concessionaire operating and maintaining the toll bridge. Failure to comply with contractual terms could result in a financial penalty.
3. For the bridge over Currituck Sound, the first 1.5 inches of stormwater would be captured from the east end of the bridge (4,000 feet) and piped to either a stormwater wetland or a wet detention basin for treatment. This would **capture the first 1.5 inches of stormwater over the SAV areas along the east end of the C1Revised bridge alignment**. The bridge deck drainage system and the stormwater wetland or wet detention basin would be subject to:

   a. Regular maintenance (including debris and litter removal)
   b. Inspections
   c. Periodic removal and disposal of sediments in the wet detention basin

   The remaining length of this 4.7 mile bridge would have no stormwater capture and would have pre-treated discharge (via frequent vacuum/sweeping deck cleaning) through bridge scuppers into Currituck Sound.
4. According to FHWA research (Design of Bridge Deck Drainage, HEC 21, May 1993), stormwater from bridge scuppers that are ***25 feet or greater above the ground have no erosive force***. Because of wind and normal conditions encountered during rain and storm events, this water returns to a state similar to rain that would have no impact on the ground surface. For the bridge over Currituck Sound, the scupper height would be roughly 22 feet above the water. Typically the bottom of beam elevation would be around 16 feet. However, the beams are around 6 feet in depth. Therefore, the bottom of the deck would be at about 22 feet. Typically scuppers for a concrete bridge in North Carolina do

not have the scupper pipe below the bottom of the deck. So the height from the bottom of the scupper would be 22 feet. The result would be scupper stormwater that would be similar to rain hitting the water surface. Therefore, concerns about impacts to SAV due to stormwater concentrations from scuppers would be minimal. CDG will conduct annual inspections to verify that erosion is not occurring in SAV areas in Currituck Sound or in Maple Swamp due to stormwater discharge from scuppers.

5. For the bridge over Maple Swamp, stormwater would be captured from each end of the bridge (500 feet length) and piped to infiltration basins for treatment. The remaining length of this 1.5 mile long bridge would have pre-treated discharge (via frequent vacuum/sweeping deck cleaning) through scuppers to the Maple Swamp wetland system. The height of the scuppers over Maple Swamp would vary because of the grade on the bridge and the ground elevations in Maple Swamp. Based on the preliminary design plans, the bottom of the scuppers would be between 7 feet and 18 feet above the ground of Maple Swamp. If the energy of the water exiting the scupper is determined to be a problem, dissipation would be provided either at the pipe outlet or on the ground.
6. Support for water quality monitoring and research would be included in the SWMP. The water quality monitoring program (WQMP) would be important to understand the effectiveness of the deck cleaning program and to make adjustments to the program as needed.
7. Part of the requirement for the WQMP would be to establish (test) existing water quality levels, including turbidity levels. Research could be supported for better understanding of the effect of bridge deck cleaning and/or the effect of bridge deck stormwater runoff on SAV receiving waters.

Attachment I

Comparison of Various Stormwater Treatment Methods

Meeting Summary

Date: April 6, 2011 at 10:00 AM

Subject: **Moratorium and Submerged Aquatic Vegetation (SAV) – Mid-Currituck Bridge**

Place: North Carolina Turnpike Authority
5400 Glenwood Avenue, Suite 400
Raleigh, NC

Participants: George Hoops, Federal Highway Administration (FHWA)
Jennifer Harris, North Carolina Turnpike Authority (NCTA)
David Wainwright, North Carolina Department of Environment and Natural Resources, Division of Water Quality (NCDENR-DWQ)
Bill Biddlecome, US Army Corps of Engineers (USACE)
Ron Sechler, National Marine Fisheries Service (NMFS)
Travis Wilson, North Carolina Department of Environment and Natural Resources, Wildlife Resources Commission (NCDENR-WRC)
Kevin Hart, North Carolina Department of Environment and Natural Resources, Division of Marine Fisheries (NCDENR-DMF)
Cathy Brittingham, North Carolina Department of Environment and Natural Resources, Division of Coastal Management (NCDENR-DCM)
Tracy Roberts, HNTB/NCTA
Spencer Franklin, HNTB/NCTA
Jose' Luque, Currituck Development Group (CDG)/ACS Infrastructure Development
Jim Hinda, CDG/Dragados-USA
Ron Ferrell, CDG/Atkins
Roy Bruce, CDG/Lochner MMM LLP

1. **Purpose of Meeting – Tracy Roberts**

The purpose of the meeting was to continue coordination on what could be reasonable and permitable approaches to construction of the Mid-Currituck Bridge project (MCB4/A/C1) that would minimize or mitigate impacts on fisheries and submerged aquatic vegetation (SAV). Tracy noted at the beginning of the meeting that:

a) At the January 20, 2011 Turnpike Environmental Agency Coordination (TEAC) meeting, the environmental regulatory and resource agencies (agencies) raised SAV impacts and construction related fisheries impacts as two of four potential issues of concern for the project from a permitting perspective. The two other potential issues of concern were dredging and stormwater management. Tracy noted that dredging is no longer being considered for the project. Additionally, since the last TEAC meeting, the NCTA and CDG have worked together with the NCDWQ to address agency comments relative to stormwater management.

b) In response to that meeting and based on previous discussions and correspondence relative to SAV and construction related fisheries impacts for the project, NCTA and CDG prepared two briefing papers on these subjects (copies attached). These papers were distributed in advance of the meeting and during the meeting.

MID-CURRITUCK BRIDGE STORMWATER TREATMENT

	Bridge			Stormwater		
	Length	Width	Area	Capture	Volume	Volume
	feet	feet	sq. feet	inches	cubic feet	liters
Bridge over Currituck Sound	24,700	47	1,160,900	1.5	145,112.5	4,109,128.4
Bridge over Maple Swamp	7,950	47	373,650	1.5	46,706.3	1,322,573.7

	Concentration	Amount	Amount
Pollutant	mg/l	mg	Lbs
TSS (Total Suspended Solids)	8.00	43,453,616.94	95.80
T-N (Total Nitrogen)	0.68	3,693,557.44	8.14
T-P (Total Phosphorus)	0.16	869,072.34	1.92

Concentration Source:

US Geological Survey, Provisional 2011

Characterization of Stormwater Runoff Constituent Loads from Bridge Decks in North Carolina and Determination of Effects of Bridge Stormwater Runoff on Selected Receiving Waters

		Pollutant Removed			Untreated Pollutant		
		TSS	T-N	T-P	TSS	T-N	T-P
Treatment Method	Efficiency	Lbs	Lbs	Lbs	Lbs	Lbs	Lbs
Deck Drainage System (all of both bridges) with Stormwater Wetland	85% TSS - 40 % T-N & T-P	81.43	3.26	0.77	14.37	4.89	1.15
Sweeping Two Bridges Only	90% TSS, T-N, & T-P	86.22	7.33	1.72	9.58	0.81	0.19
Deck Drainage System Only (5000 total feet on two bridges)	13% TSS - 6 % T-N & T-P	12.47	0.50	0.12	83.33	7.64	1.80
Combined Sweeping & Deck Drainage System (5000 feet)	91% TSS, T-N, & T-P	87.47	7.38	1.74	8.33	0.76	0.18

Efficiency Sources: NCDENR Stormwater Best Management Practices Manual, July 2007
Real World Street Cleaner Pickup Performance Testing, Roger C. Sutherland, PE, Pacific Water Resources, Inc., July 2008

c) The goal of the meeting was to review the briefing papers, receive agency comments on the general construction plans, have a clear understanding of the fisheries moratorium for the project, confirm SAV impact calculation methods, discuss preferred methods for SAV mitigation, and identify any remaining issues that might substantially delay or result in denial of issuance of permits.

2. Definition of Terms – Roy Bruce

The two briefing papers and the meeting discussions used the following definitions:

a) "SAV Habitat" is as defined by the NC Marine Fisheries Commission (15A NCAC 03I .0101(4)(i)) as submerged lands that are vegetated with one or more species of submerged aquatic vegetation or have been vegetated by one or more species of submerged aquatic vegetation within the past 10 annual growing seasons, and that meet the average physical requirements of water depth (six feet or less), average light availability (secchi depth of one foot or more), and limited wave exposure that characterize the environment suitable for growth of SAV.

b) "Potential SAV Habitat" is defined as expanses with six (6) foot water depth or less including suitable bottom for SAV growth and are not included in "SAV Habitat" as defined by the NC Marine Fisheries Commission (15A NCAC 03I .0101(4)(i)).

c) "Unsuitable SAV Habitat" is defined as expanses with greater than six (6) foot water depth or has unsuitable bottom characteristics for SAV growth.

d) "SAV Beds" is defined as submerged lands that are currently vegetated with one or more species of SAV in sufficient density to warrant classification. In other words, the first portion of the NC Marine Fisheries Commission definition of SAV habitat.

3. Moratorium

a. Roy reviewed the briefing paper that related to construction related fisheries impacts and the potential for a time of year moratorium on bottom disturbing activities. He pointed out the two Primary Nursery Areas in Currituck Sound, both over 15 miles away from the bridge construction area.

b. The east side of Currituck Sound has SAV beds and SAV habitat. This extends from the shoreline of the Outer Banks into the sound for a distance of roughly 4,000 feet. There is a small area of potential SAV habitat (about 500 feet in length) to the west of the SAV Habitat. The construction plan is to use an open-deck (to allow light penetration) temporary construction trestle in the SAV habitat on the east side. The piles for both the trestle and the permanent bridge in this area would be installed in three non-moratorium periods. The trestle would be removed during the fourth non-moratorium period. This means that the construction trestle would be in place for up to three moratorium periods.

c. NCDENR-WRC inquired as to the construction time needed to build the permanent bridge on the east side of the sound if there was no moratorium. This would need to be investigated but the likely time frame could be 18 to 24 months.

d. NCDENR-WRC asked if the east side trestle would be needed for materials delivery for the entire duration of the bridge construction over Currituck Sound. The response was that it would not be needed for materials delivery and that the temporary trestle would be used only for construction of the adjacent permanent bridge on the east side. Materials would be delivered

from the east side only for building this portion of the bridge because of delivery logistics. The remainder of the bridge materials are anticipated to be delivered from the west side.

e. The west side of Currituck Sound has potential SAV habitat only. This extends eastwardly from the shoreline for roughly 1,900 feet. Because of the lack of SAV beds and SAV habitat over the past 10 years, NCTA/CDG does not believe that a fisheries moratorium should be imposed for this location. NMFS will need to discuss this internally and with the other resource agencies before agreeing with this interpretation.

f. A closed-deck temporary trestle would be used for construction of the permanent bridge on the west side and for delivery of materials to barges for the center section of the bridge. It is estimated that this trestle and the adjacent piles for the permanent bridge would take approximately 12 months to install. The trestle would need to stay in place for the duration of the permanent bridge construction across Currituck Sound. The trestle could be removed during a single non-moratorium period.

g. A new SAV survey would be performed in advance of beginning construction to have a clear understanding of existing SAV beds across the sound.

h. The specifics of the 2010 SAV survey that was done by East Carolina University and the 2007 survey performed by the USACE for this area was discussed. The only SAV found on the west side were isolated plants immediately adjacent to the shoreline that were not of sufficient density to be called an SAV bed.

i. There is a small area of Currituck Sound in the center to east side (about 8,000 feet from the eastern shore) that may be interpreted as potential SAV habitat since the water depth is between 5 and 6 feet. Barges would be used in this area since the water is deep enough. NCTA/CDG does not believe that a fisheries moratorium should be imposed for this location because of the lack of SAV present now or during the past 10 years. NMFS will also need to discuss this issue internally and with the other agencies.

j. The remainder of the bridge crossing area is unsuitable SAV habitat. NCTA/CDG does not believe that a fisheries moratorium should be imposed for these locations. There was no concern raised by the agencies about not applying a moratorium in these relatively deeper areas.

k. Because dredging is no longer being considered for the project, the only anticipated bottom disturbing activity would be pile driving. Efforts would be made to minimize the impacts of this activity. There would be no jetting of piles. A combination of vibratory driven and hammer driven pile installation would be required, pending further subsurface geotechnical investigations. Turbidity curtains would be used in potential SAV habitat as necessary during pile driving.

l. NCDENR-WRC indicated that there could be some relic stumps in the sound that might require removal that would result in bottom disturbance. This possibility was acknowledged and would be investigated to the extent possible during geotechnical studies. In the end, if this is discovered at some point, it would be an unforeseen condition that would need to be addressed at that time.

m. NCDENR-WRC expressed concern about noise impacts from pile installation and stated that turbidity curtains do not attenuate noise. Because of the shallow water depths, traditional noise attenuation methods such as bubble curtains would not practicable. The primary concern is not with fish impacts but with avoidance (i.e. fish would avoid the construction area). There is only limited research on this subject and the impacts are different for different fish species. North Carolina has had limited experience with controlling impacts of noise on fisheries. The Wilmington Bypass bridge over the Northeast Cape Fear River had short-nose sturgeon concerns relative to noise; consequently, pile driving was prohibited during certain periods to allow for fish passage. The conditions in Currituck Sound are different.

n. USACE raised a question regarding pile noise impacts in SAV habitat that might also occur in adjacent areas that are unsuitable SAV habitat and whether this would be a concern. NCDENR-WRC indicated that this was a concern but that a line had to be drawn somewhere for the moratorium and the edge of the SAV habitat is practicable.

o. The agencies will confer over the next few days and will get back to NCTA relative to the likely imposition of a fisheries moratorium for the project, including when and where it would apply. There was agreement that the moratorium would apply in SAV habitat and SAV beds on the east side of the sound, but the agencies were unsure of the application of a moratorium in potential SAV habitat in the middle and west side of the sound.

4. Top Down Construction

a. NCDENR-WRC wanted to know if top down construction was deemed impractical due to the moratorium or whether there were other reasons. While the potential fisheries moratorium does add to the impracticability of top down construction, there are other factors that make this construction method impracticable for this location and project. These include the subsurface geology of the area, the assembly line nature of the construction method, and the limited width of the proposed bridge. Top down construction is no longer being considered for this project.

5. Submerged Aquatic Vegetation (SAV)

a. Roy reviewed the briefing paper that related to construction related impacts on SAV. He noted permanent impacts due to shading were calculated based on the drip line of the bridge. There would be 4.8 acres of permanent SAV impacts on the east side of Currituck Sound for SAV beds, SAV habitat, and potential SAV habitat. One the west side, the permanent impact would be 3.9 acres of potential SAV habitat. This is a total of 8.7 acres that would require mitigation.

b. The temporary trestle on the east would be an open-deck to allow light to reach the water. This open trestle would also be about 10 feet above the water. The trestle would have two beams about 25 feet apart for the crane to crawl along. There would be material delivery beams adjacent to the crane support rails. The piles for the temporary trestle would be considered a temporary impact that would be mitigated in the event that SAV do not re-establish in the pile areas after the piles are removed. This is estimated to be 0.08 acres based on an impact area 1.5 times the pile width.

c. NCDMF was concerned about limiting impacts to piles only (and not for shading) for the east side trestle. Kevin Hart will consider this issue and advise NCTA on the acceptability of this impact determination.

d. The temporary trestle on the west would be a closed-deck approximately 40 feet wide to support cranes and material passage. Because this area does not support SAV beds or SAV habitat, NCTA/CDG felt that the temporary impacts of this trestle should not require impact mitigation. There was no concern raised by the agencies relative to this approach.

e. The first question asked related to the means of calculating the impact quantities. There was agreement that the drip line of the permanent bridge was the correct measure for determining permanent SAV impacts. NMFS expressed that potential SAV habitat had to be treated the same as SAV habitat. The mitigation ratios could be different, but both would be permanent impacts.

f. The next question centered on mitigation ratios and the possible use of a 2:1 ratio for mitigation. This should be considered as the lowest ratio for impacts to SAV habitat. Impacts to potential SAV habitat may be a lower ratio.

g. The preferred mitigation method for SAV impacts was the next question. The agencies prefer in-kind mitigation close to the impacted area, particularly impacts to SAV habitat. Other mitigation options could be considered for some portion of the mitigation. Some of the other methods could have larger ratios for mitigation.

h. Methods to create SAV habitat through wave energy dissipation and planting could be a method to convert potential SAV habitat to SAV habitat.

i. USACE suggested that the USACE group handling the Currituck Sound Ecosystem Restoration Project should be contacted about possible SAV mitigation. The problem is that this group may be several years from having active projects in Currituck Sound for SAV restoration. However, early discussions could still take place.

j. It was noted by the agencies that Bonner Bridge would have about 3 acres of SAV impacts to mitigate. Coordination with NCDOT would be appropriate on SAV mitigation approaches as both projects are considering options at this time.

k. Liz Brinker at Elizabeth City State University has done some work in the area of SAV restoration. Joe Luskavitch at East Carolina University may be another source for SAV restoration ideas.

l. The question was asked about the location of mitigation in reference to the project area. Generally the mitigation should be within Currituck Sound. The closer to the project site, the better. A reasonable expectation for success is most important.

m. NCDENR-WRC indicated that SAV are important for waterfowl usage in Currituck Sound. For this reason, NCDENR-WRC would prefer in-kind mitigation rather than other possible mitigation that would not benefit waterfowl.

n. NCDENR-WRC asked if potential in-kind SAV mitigation sites had been identified. This effort has not been undertaken at this time. The agencies prefer larger sites over several smaller sites.

o. NMFS noted that there is a time lag between when an impact occurs and when mitigation sites would be fully functioning. Ron Sechler offered the assistance of NMFS experts at the Beaufort Lab in discussing possible approaches for in-kind mitigation.

6. **Remaining Issues**

   a. Based on the discussion, the fisheries moratorium and SAV impacts are no longer potential issues of concern. There are additional details that need to be resolved (such as identifying appropriate SAV mitigation methods and sites) as the project proceeds through design and permitting, but the agencies agreed that the project is heading in the right direction in order to be able to receive permits.

   b. NCDENR-DCM indicated that these areas could become issues of concern in the future depending on the resolution of details. These issues could affect a LEDPA (least environmentally damaging practicable alternative) decision.

   c. NMFS wants to review the revised Essential Fish Habitat Technical Report that will accompany the Final EIS before agreeing on a LEDPA for the project. NMFS does not anticipate having to elevate the project but does reserve that possibility. NMFS realizes that there would be impacts to SAV and fisheries.

   d. USACE and NCDENR-WRC acknowledged that eliminating dredging as a construction technique and agreeing to bridge Maple Swamp were major concessions by NCTA.

   e. USACE indicated that the Section 6002 process does not include a LEDPA decision point as is the case with the Merger 01 process.

   f. CDG clarified that the goal of the two meetings that have taken place with the agencies since the January 20, 2011 TEAC meeting is to discuss and agree with the agencies whether the Mid-Currituck Bridge is a permitable project by resolving the four potential issues of concern. These efforts will continue throughout the permitting process.

   g. NCDENR-WRC asked how the bridge over Maple Swamp would be built. The current plan is to use a temporary trestle. The use of construction mats for some portions of Maple Swamp may be a possibility. Travis noted that there would be concern with utilizing a temporary causeway (haul road) in being able to remove the causeway materials for wetland restoration of the temporary impact.

7. **Action Items:**

   a. Ron Sechler needs to discuss with his supervisor whether the fisheries moratorium would apply on the west side of Currituck Sound where the water depth is 6 feet or less but there are no existing SAV beds now nor have there been in the past 10 years.

   b. The agencies need to advise NCTA on the application of the fisheries moratorium for the east and west sides of Currituck Sound plus the small area (5 feet water depth or more) in the eastern portion of Currituck Sound where water depths are 6 feet or less. Only the east side of Currituck Sound has had SAV beds during the past 10 years.

      Update: In an email to NCTA dated April 15, 2011 (attached), Travis Wilson stated that NCDENR-WRC requests the in-water work moratorium be applicable to SAV habitat as defined by NCDENR-DMF and that based on current information the moratorium would only apply to the east side of the sound. Should additional SAV beds develop prior to permitting and therefore increase the area defined as SAV habitat, the moratorium would also apply to the newly

delineated SAV habitat. In an email to NCTA dated May 4, 2011 (attached), Kevin Hart stated that NCDENR-DMF agreed with NCDENR-WRC's position on the moratorium.

   c. Kevin Hart will provide additional guidance to NCTA on SAV impacts for the open trestle on the east side of Currituck Sound. Currently impacts are based on the trestle piles only with no shading impacts since an open trestle is being proposed to allow light to reach the water. *Update: In an email to NCTA dated April 11, 2011 (attached), Kevin stated NCDENR-DMF's position that a buffer equal to ½ the diameter of the piles should be added to the pile footprint impacts to account for scouring and other disturbances around the piles during installation. Furthermore, in an email to NCTA dated April 15, 2011 (attached), Travis Wilson added that NCDENR-WRC suggests that NCTA coordinate with the resource agencies to develop criteria for post-construction monitoring of the SAV habitat under the temporary work trestle to identify permanent impacts (if any) due to the trestle.*

LEDPA Achievement Process

Moratorium Considerations

Based on comments made by the environmental regulatory and resource agencies during the January 20, 2011 Turnpike Environmental Agency Coordination (TEAC) meeting to review the Preferred Alternative of MCB4/A/C1 (with refinements), it is the understanding of the North Carolina Turnpike Authority (NCTA) and Currituck Development Group (CDG) that a condition of any permit issued for the construction of the Mid-Currituck Bridge would include a moratorium on in-water work (i.e. bottom-disturbing activities) in areas of existing submerged aquatic vegetation (SAV). For the purposes of this document, the following SAV-related definitions are used:

- "SAV Habitat" is as defined by the NC Marine Fisheries Commission (15A NCAC 03I .0101(4)(i)) as submerged lands that are vegetated with one or more species of submerged aquatic vegetation or have been vegetated by one or more species of submerged aquatic vegetation within the past 10 annual growing seasons, and that meet the average physical requirements of water depth (six feet or less), average light availability (secchi depth of one foot or more), and limited wave exposure that characterize the environment suitable for growth of SAV.
- "Potential SAV Habitat" is defined as expanses with six (6) foot water depth or less including suitable bottom for SAV growth and are not included in "SAV Habitat" as defined by the NC Marine Fisheries Commission (15A NCAC 03I .0101(4)(i)).
- "Unsuitable SAV Habitat" is defined as expanses with greater than six (6) foot water depth or has unsuitable bottom characteristics for SAV growth.
- "SAV Beds" is defined as submerged lands that are currently vegetated with one or more species of SAV in sufficient density to warrant classification. In other words, the first portion of the NC Marine Fisheries Commission definition of SAV habitat.

Pile driving would be the only bottom-disturbing activity. The use of shallow draft boats and barges near, around and within SAV beds and habitat would be permitted during the moratorium. The period of the moratorium would likely be February 15 through October 1.

As described in the *North Carolina Division of Marine Fisheries Habitat Alteration Permit Review Guidelines*, the purpose of the moratorium for in-water work is "to reduce negative effects on critical fish life history activities, including anadromous fish spawning migrations and nursery functions, and primary nursery area functions." General criteria that should be considered when establishing specific moratorium periods for a project include "location and time of project relative to life stage of fish and seasonal and environmental conditions."

The project area is not located close to any of the primary nursery areas identified in Currituck Sound. The two most important areas associated with Currituck Sound for the possible application of the fisheries-related construction moratorium are the Jean Guite Creek primary nursery area (located 18 miles south of the proposed bridge crossing) and the Tulls Bay fish spawning area (located 15 miles north of the proposed bridge crossing). These areas are shown on the attached graphic along with the bridge location (see Attachment I).

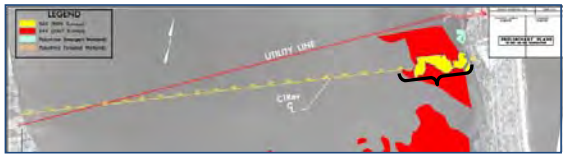
There are no other primary nursery areas, anadromous fish spawning areas, or oyster beds within the project area. Anadromous fish from the Tulls Bay fish spawning area that are seeking ocean waters can access the ocean to the north and to the south of the project area. To the north, access is through the Intracoastal Waterway to Chesapeake Bay and into the Atlantic Ocean. To the south there are two routes to the ocean, one along the Intracoastal Waterway to Albemarle Sound and the other through Currituck Sound to Albemarle Sound and then to the Atlantic Ocean.

The *Guidelines* further state that in-water work can occur during the moratorium period when appropriate conditions apply. Those conditions include:

- The project is not located in a PNA, and
- The work site will be surrounded by a turbidity curtain (or similar structure) to prevent dispersal of sediment or other pollutants from the project site onto adjacent habitats, and the protective structure will remain in place until sediment/pollutant concentrations are restored to previously existing levels, or for at least 72 hours following completion of the work, whichever is longer.

Based on comments made at the TEAC meeting and the *North Carolina Division of Marine Fisheries Habitat Alteration Permit Review Guidelines,* it is the understanding of NCTA/CDG that the moratorium for the Mid-Currituck Bridge project would apply as follows:

1. **A February 15 to September 30 moratorium on in-water work (bottom-disturbing activities) would apply only to the SAV habitat on the eastern end of the project at the moment the construction is initiated (the graphic below shows SAV beds delineated by the 2007 survey (Forte and Martz, 2007) and the 2010 survey (Luczkovich, 2010)**. These former and existing beds constitute the SAV habitat on the eastern end of the project. A pre-construction survey would be conducted to determine the location of SAV beds and such beds would be subject to the moratorium (even if they have expanded beyond the SAV habitat shown in the figure below) during construction of the Mid-Currituck Bridge.



   a. Justification: Although the existing SAV beds have not been designated as Primary Nursery Areas (PNA), the importance of these areas to fishery resources is well documented and avoidance of in-water work during the moratorium period is essential to protecting these beds.
   b. Agency interpretation of activities considered bottom disturbing within SAV habitat includes pile driving. Barging and shallow boating near, around and within SAV beds or habitat would be permitted during the moratorium.

c. All other work activities outside the SAV habitat could occur anytime during the year (this includes working above the water within SAV habitat). Also, any bridge work, pile installation, barge work, etc. could and would occur from points west of the SAV habitat, across Currituck Sound, over to the western shoreline anytime during the year.

2. **The moratorium would not apply to those areas that are considered as potential SAV habitat** (water depth 6 feet or less with suitable bottom) **and do not have SAV vegetation at the time that construction is initiated**. However, as noted in 2.b. and 2.c., work in potential SAV habitat would be limited and measures would be taken to minimize disturbance.

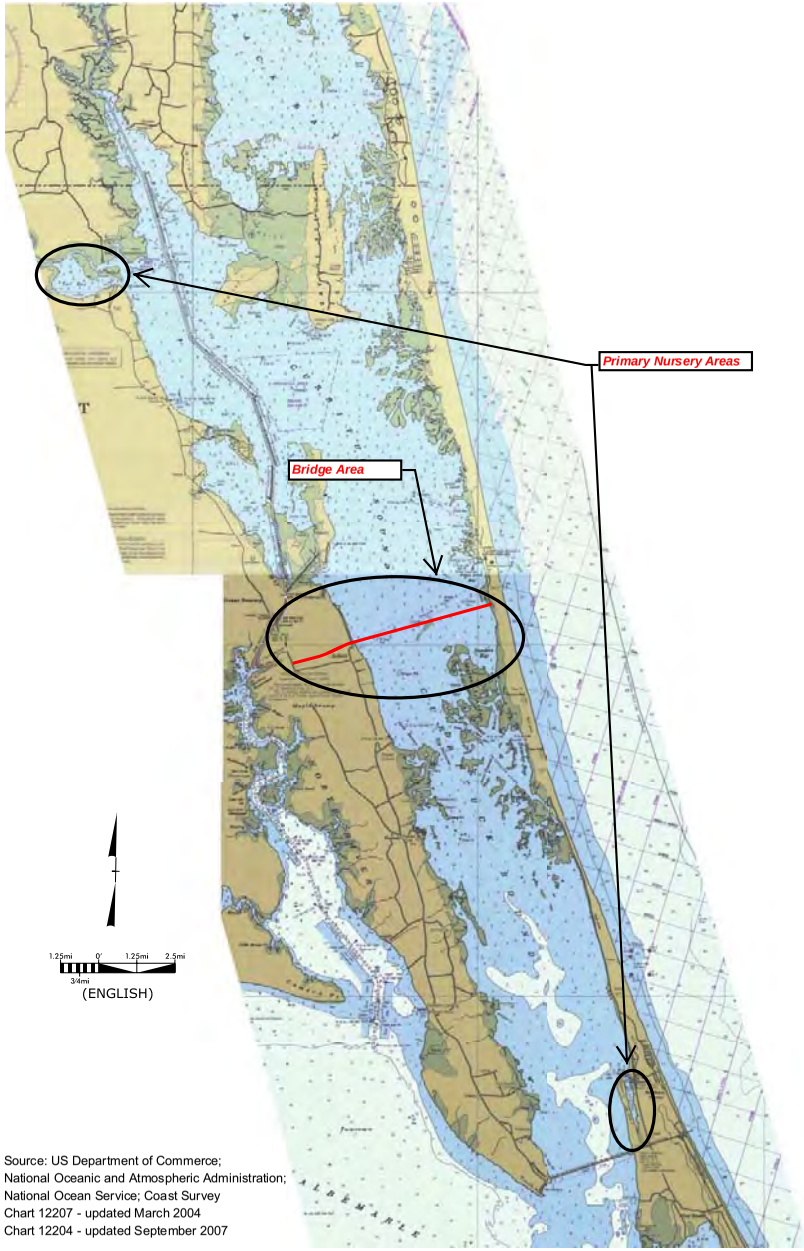
a. Justification: These areas have not been designated as PNA and the absence of SAV vegetation decreases the probability that these areas would be used by fish.

b. In-water work in the potential SAV habitat on the west side of the sound would be performed only during Year 1 for construction of the permanent bridge and temporary trestle and during Year 3 or 4 (schedule dependant) for removal of the temporary trestle. Once this trestle removal work commences, it is anticipated to take only 4-6 months.

c. Turbidity curtains would be utilized during pile installation (permanent and temporary bridges) and pile removal (temporary bridge) to prevent dispersal of sediment or other pollutants as described above.

3. **The moratorium would not apply to areas considered unsuitable SAV habitat with a water depth greater than 6 feet.**

Justification: These areas are not likely to support SAV beds, therefore, decreasing the probability that these areas would be used by fish.



Source: US Department of Commerce;
National Oceanic and Atmospheric Administration;
National Ocean Service; Coast Survey
Chart 12207 - updated March 2004
Chart 12204 - updated September 2007

Supplement I

CONSTRUCTION SCHEDULE (for east side of the sound):

- Season 1. The October 1-February 14 window would allow installation of approximately 35% of both work trestle and permanent bridge pilings on the east side of the sound along with deck construction.
- Seasons 2 and 3 (October 1-February 14). During these two seasons, the remaining temporary work trestle and permanent bridge construction on the east side of the sound would be completed.
- Season 4 (October 1-February 14). During this season, the temporary work trestle would be removed/dismantled on the east side of the sound.
- No in-water schedule restrictions (other than described in item 2B and within SAV beds and habitat) would occur on other sections of the Mid-Currituck Bridge.

Supplement II

Construction Methodology. Considering the restrictions posed by an in-water work moratorium in SAV habitat, it is understood that any top-down construction methodology would be schedule prohibitive, and should not be considered as a practical option for constructing the Mid-Currituck Bridge project.

High Risk Factors for Top-Down Construction:

- Unmanageable pile set up times
- Linear structured work methods
- Limiting factors in waiting for the next step of each activity, while consuming valuable time during the off-moratorium season
- Restricts material delivery to the east or west side only for single top down erection system, resulting in unnecessarily long construction activity within east side SAV beds and habitat than if materials could be delivered from both the east and west side of the sound with the construction trestles and barges
- Timing restrictions due to the moratorium further contribute to this impracticality

The opportunity for multiple construction activities would be limited with the top-down construction method and the bridge elements (piles, caps, beams, deck, and railing) would have to be constructed in a set linear sequence, a single span at a time prior to advancing construction operations to the next span. In addition, this method would result in shorter spans with more piles in the water affecting more SAV beds and habitat. SAV beds and habitat would be exposed to construction activities longer in duration than would be the case with the temporary work trestle approach.

NCTA/CDG do not consider a top-down construction methodology practical for this project. Therefore, the bridge over the SAV beds and habitat would be built using a temporary trestle.

LEDPA Achievement Process

Submerged Aquatic Vegetation

The North Carolina Turnpike Authority (NCTA) held the January 20, 2011 Turnpike Environmental Agency Coordination (TEAC) meeting to review the Preferred Alternative of MCB4/C1 with Design Option A (MCB4/A/C1) and to reach an agreement with the environmental regulatory and resource agencies (agencies) to consider this alternative as the Least Environmentally Damaging Practicable Alternative (LEDPA). At the conclusion of the meeting, the agencies did not solidly confirm MCB4/A/C1 as the LEDPA. However, the agencies expressed their intention to consider MCB4/A/C1 as the LEDPA instead of ER2 once four environmental permitting issues are resolved to the agencies' satisfaction.

The four environmental permitting issues are: moratorium for in-water construction activities (specifically, bottom-disturbing activities) in submerged aquatic vegetation (SAV) habitat, dredging, stormwater management, and impacts to SAV from bridge shading and pile driving.

SAV Shading and Pile Impacts

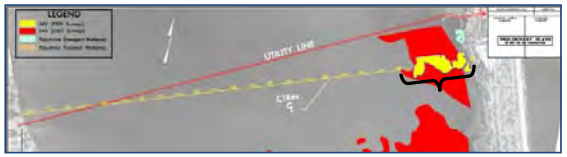
This document's focus is on SAV impacts and potential mitigation options. For the purposes of this document, the following SAV-related definitions are used:

- "SAV Habitat" is as defined by the NC Marine Fisheries Commission (15A NCAC 03I .0101(4)(i)) as submerged lands that are vegetated with one or more species of submerged aquatic vegetation or have been vegetated by one or more species of submerged aquatic vegetation within the past 10 annual growing seasons, and that meet the average physical requirements of water depth (six feet or less), average light availability (secchi depth of one foot or more), and limited wave exposure that characterize the environment suitable for growth of SAV.
- "Potential SAV Habitat" is defined as expanses with six (6) foot water depth or less including suitable bottom for SAV growth and are not included in "SAV Habitat" as defined by the NC Marine Fisheries Commission (15A NCAC 03I .0101(4)(i)).
- "Unsuitable SAV Habitat" is defined as expanses with greater than six (6) foot water depth or has unsuitable bottom characteristics for SAV growth.
- "SAV Beds" is defined as submerged lands that are currently vegetated with one or more species of SAV in sufficient density to warrant classification. In other words, the first portion of the NC Marine Fisheries Commission definition of SAV habitat.

CONTEXT/BACKGROUND:

Permanent and temporary impacts to SAV from shading related to the Mid-Currituck Bridge are a concern by the agencies. NCTA and CDG recognize this concern and are proposing measures to avoid, minimize, and mitigate these impacts.

SAV Location: In Currituck Sound along the C1 Rev alignment (straight bridge), SAV beds are located or have been located during the past ten years on the east side of Currituck Sound and extend roughly 4,000 feet from the eastern shore of the Outer Banks into Currituck Sound. SAV habitat exists on the east side of Currituck Sound. Potential SAV habitat exists on the west side of Currituck Sound.



1) Permanent Bridge Shading

The Mid-Currituck Bridge could result in permanent shading impacts to **SAV habitat**. These impacts would occur near the eastern shore of the sound where SAV beds are most prevalent now and in the past.

This permanent impact is estimated to equal the area of the bridge deck over SAV habitat. Given the width of the bridge deck at 47 feet, this would result in approximately 4.8 acres of SAV habitat that potentially could be permanently shaded by the bridge deck.

Potential SAV habitat is also known to exist in water depths six feet or less with suitable substrate for SAV development. For the C1 Rev alignment this would result in approximately 3.9 acres of potential SAV habitat shaded by the bridge. These SAV habitat areas are generally located on the east/center portion and west sides of Currituck Sound. If both conditions are taken into account, there could potentially be 8.7 acres of SAV impact (SAV habitat and potential SAV habitat).

Resultant Impact (permanent bridge shading):

- Permanent bridge shading of SAV habitat (exists on east side only) -- 4.8 acres
- Permanent bridge shading of potential SAV habitat (6 foot depth or less) -- 3.9 acres
- Combined permanent bridge shading both SAV habitat and potential SAV habitat -- 8.7 acres

2) Temporary Trestle Shading of SAV Habitat

The temporary construction trestle on the east side of Currituck Sound is expected to remain in place for **only two growing seasons (three non-moratorium seasons).** In an effort to minimize temporary shading, **CDG is proposing to use an open trestle design in this sensitive area to maximize the light reaching the water during the time the trestle would be in place**. The temporary construction trestle would be approximately **10-12 feet above the water surface**. The trestle would have two 4 foot wide runners to support the construction equipment. The approximate 20 feet between the runners would be open to the water reducing the shading effect of the trestle. This trestle would be about 4,500 feet long in order to reach water depths of six feet. With the open trestle design, it would minimize any potential shading effect from the trestle on SAV habitat. The only temporary impacts would relate to the installation and removal of the piles for the trestle. This area would be monitored before, during, and after construction to gauge the effect of the trestle on SAV habitat.

On the west side of Currituck Sound a temporary construction trestle would also be required for approximately 1,900 feet until reaching water depths of six feet. Since this area is potential SAV habitat but has not had sufficient SAV plants in the past 10 years, an open trestle design is not necessary. This trestle would cover roughly 1.8 acres of potential SAV habitat. However, this would only be temporary during construction of the permanent bridge.

There is a small area of the sound with water depths less than six feet between the east and west shores of Currituck Sound. This water in this area is generally five to six feet

deep and supports no SAV beds at this time nor has supported SAV beds over the past 10 years. No trestle is needed in this area as the barges could operate in five foot water depth.

3) Temporary Trestle Piling

- The anticipated piles for the temporary construction trestles would be **30- 36 inch steel pipe piles**.
- Pile installation would be both by **vibratory and impact hammers**, with **no jetting of piles**.
- The temporary trestle on the east side of the sound would be left in place for approximately three non-moratorium seasons (two growing seasons).
- The **impact to SAV habitat** associated with the installation and removal of these piles is estimated to be **5-7 square feet per pile**. The 4,500 foot-long east side temporary construction trestle is assumed to have spans of 50 feet in length with two piles per bent.
- The temporary impact resulting from the pile installation and removal on the east side of Currituck Sound would be **0.03+/- acres (900-1,260 square feet)**.
- For the west side construction trestle the piles would have no impact on SAV beds since none exist now and none have existed during the past 10 years.

Resultant Impact (temporary trestle):

East: The result of this calculation is a temporary SAV impact of 900-1,260 square feet or 0.03 acres of SAV habitat because of pile placement along the temporary open trestle on the east side of Currituck Sound. Mitigation would be provided for the trestle pile impact on the east side in the event that SAV do not reestablish in the pile area following removal.

West: The trestle on the west side of Currituck Sound could shade 1.8 acres of potential SAV habitat. Since this area does not currently contain SAV beds, this impact would be temporary and once the trestle is removed the area would be once again be suitable for SAV just as it is currently. Therefore, mitigation of potential SAV habitat shading impacts on the west side of the sound is not considered in the summary calculations below.

SOLUTIONS/APPROACH:

Mitigation Options. The conceptual mitigation plan for permanent impacts to SAV habitat could include the options listed below. While the intent is to list options that may have been tried on past projects, any options selected for implementation would have to consider a balance of the best value of the mitigation approach in conjunction with the project budget constraints.

- **Efforts to improve conditions for SAV propagation and survival within Currituck Sound**. This option involves protection and establishment of riparian buffers,

contribution of funds to promote agricultural best management practices (BMPs), stormwater management improvement projects, acquisition of properties identified as important for the protection of water quality (as reported in the November 2006 *Countywide Land Parcel Prioritization Strategy for Water Quality Enhancement*), and other measures that would reduce the turbidity of water in Currituck Sound.

- **Construction of oyster habitat.**
- **In-kind restoration in the project area at a suitable site at a 2:1 ratio** (if feasible). This restoration activity would follow the currently adopted SAV protocols in North Carolina, best practices from recent successful SAV restoration efforts such as the Sandy Point development in Edenton, and research from local universities. These efforts could be performed by others such as Elizabeth City State University or East Carolina University.

  NCDOT SAV protocols can be found at: http://www.ncdot.org/doh/preconstruct/pe/neu/NEUProcedures/SpecialTopics.html

- **Support for SAV research**
- **Participation in the Currituck Sound Ecosystem Restoration Project coordinated by the US Army Corps of Engineers**

Coordination of any of these activities with East Carolina University and/or Elizabeth City State University on the SAV mitigation strategy would be advantageous.

Finally, pre-construction and post-construction SAV surveys would be conducted for the project. Temporary impacts to existing SAV beds on the east side of Currituck Sound would be assessed before, during, and after construction to ensure that anticipated temporary impacts do not become permanent and require mitigation.

SUMMARY OF IMPACTS

The following table summarizes the potential SAV impacts from both a shading and piling perspective of the permanent bridge and temporary trestle

Scenario	Bridge Impacts on SAV	Compensatory Mitigation using 2:1 ratio
SAV habitat disturbed by temporary piling activities for east side trestle	0.03 acres	.06 acres
Case 1 (SAV habitat only) SAV habitat for entire bridge width impact calculation	4.8 acres	9.6 Acres
Case 2 (SAV habitat + potential SAV habitat) SAV habitat and potential SAV habitat calculation for entire bridge width impact	8.7 acres	17.4 Acres
Total including Case 1		9.66 Acres
Total including Case 2		17.46 Acres

Roberts, Tracy

From:	Wilson, Travis W.
Sent:	Friday, April 15, 2011 1:58 PM
To:	Roberts, Tracy; Biddlecome, William J SAW; smtp-Sechler, Ron; Hart, Kevin; Brittingham, Cathy; Wainwright, David
Cc:	Harris, Jennifer; Franklin, Spencer T; Hoops, George; 'Jose Luque (jluque@acsinfra.com)'; Roy Bruce; 'Ferrell, Ronald E (REFerrell@pbsj.com)'; Jim Hinda (jhinda@dragados-usa.com)
Subject:	RE: Action Items From Yesterday's Meeting

Tracy WRC is requesting the in water work moratorium to be applicable to areas delineated as SAV Habitat as defined by DMF. From the information provided that would mean the east shoreline would be the only area currently applicable to the moratorium. However, it should be noted that if SAV beds develop prior to permitting, and therefore increase the area defined as habitat, the moratorium will apply to the newly delineated SAV habitat. Also for action item #3 I would suggest NCTA and the resource agency consider criteria for post project monitoring of the SAV habitat under the temporary work trestle. Much like temporary wetland impacts, a simple and minimal monitoring protocol would likely suffice. It will be necessary to develop reasonable criteria to distinguish natural fluctuation in coverage versus permanent impacts, but this is the only method of determining if there are truly no impacts from the work trestle.

Travis W. Wilson
Eastern Region Highway Project Coordinator Habitat Conservation Program NC Wildlife Resources Commission
1142 I-85 Service Rd.
Creedmoor, NC 27522
Phone: 919-528-9886 ext. 6
Fax: 919-528-9839
Travis.Wilson@ncwildlife.org

-----Original Message-----
From: Roberts, Tracy
Sent: Thursday, April 07, 2011 9:53 AM
To: Biddlecome, William J SAW; smtp-Sechler, Ron; Hart, Kevin; Brittingham, Cathy; Wilson, Travis W.; Wainwright, David
Cc: Harris, Jennifer; Franklin, Spencer T; Hoops, George; 'Jose Luque (jluque@acsinfra.com)'; Roy Bruce; 'Ferrell, Ronald E (REFerrell@pbsj.com)'; Jim Hinda (jhinda@dragados-usa.com)
Subject: Action Items From Yesterday's Meeting

All,

Thank you for your participation in yesterday's meeting. A meeting summary is being prepared and will be sent to you later for review. In the mean time, I've listed the Action Items below that we'd like your feedback on by EOB tomorrow, if possible.

1. Ron Sechler needs to discuss with his supervisor whether the fisheries moratorium would apply on the west side of Currituck Sound where the water depth is 6 feet or less but there are no existing SAV beds now or in the past 10 years. NCTA's proposal was that there would be no moratorium in this area.
2. The agencies need to confer and advise NCTA on the application of the fisheries moratorium for the east and west sides of Currituck Sound plus the small area (5 feet water depth or more) in the eastern portion of Currituck Sound where water depths are 6 feet or less. Only the east side of Currituck Sound has had SAV beds during the past 10 years.
3. Kevin Hart will advise NCTA on the applicability of SAV impact determinations for the open trestle on the east side of Currituck Sound. Currently impacts are based on the trestle piles only since an open trestle is being proposed to allow light to reach the water. Due to the open (and temporary) nature of the trestle design, NCTA's position is that there would be no shading impacts.

Tracy

Please note the change in email address teroberts1@ncdot.gov
****

Tracy Roberts, AICP
Consultant
North Carolina Turnpike Authority
(919) 788-7147 office phone

Email correspondence to and from this sender is subject to the N.C. Public Records Law and may be disclosed to third parties.

Roberts, Tracy

From: Hart, Kevin
Sent: Wednesday, May 04, 2011 11:48 AM
To: Wilson, Travis W.; Roberts, Tracy; Biddlecome, William J SAW; smtp-Sechler, Ron; Brittingham, Cathy; Wainwright, David
Cc: Harris, Jennifer; Franklin, Spencer T; Hoops, George; 'Jose Luque (jluque@acsinfra.com)'; Roy Bruce; 'Ferrell, Ronald E (REFerrell@pbsj.com)'; Jim Hinda (jhinda@dragados-usa.com); Deaton, Anne
Subject: RE: Action Items From Yesterday's Meeting

Tracy,
DMF is in agreement with WRC as to the in water work moratorium be extended to the areas delineated as SAV and SAV habitat by the NCMFC. At this time with the information that has been provided to date the eastern shoreline SAV and SAV habitat would be the only area that the in water work moratorium would apply to. As WRC states if SAV and SAV habitat develops and expands prior to permitting the in water work moratorium would expand into all SAV and SAV habitat as defined by the NCMFC.
If you have further questions please let me know.
Kevin

-----Original Message-----
From: Wilson, Travis W.
Sent: Friday, April 15, 2011 1:58 PM
To: Roberts, Tracy; Biddlecome, William J SAW; smtp-Sechler, Ron; Hart, Kevin; Brittingham, Cathy; Wainwright, David
Cc: Harris, Jennifer; Franklin, Spencer T; Hoops, George; 'Jose Luque (jluque@acsinfra.com)'; Roy Bruce; 'Ferrell, Ronald E (REFerrell@pbsj.com)'; Jim Hinda (jhinda@dragados-usa.com)
Subject: RE: Action Items From Yesterday's Meeting

Tracy WRC is requesting the in water work moratorium to be applicable to areas delineated as SAV Habitat as defined by DMF. From the information provided that would mean the east shoreline would be the only area currently applicable to the moratorium. However, it should be noted that if SAV beds develop prior to permitting, and therefore increase the area defined as habitat, the moratorium will apply to the newly delineated SAV habitat. Also for action item #3 I would suggest NCTA and the resource agency consider criteria for post project monitoring of the SAV habitat under the temporary work trestle. Much like temporary wetland impacts, a simple and minimal monitoring protocol would likely suffice. It will be necessary to develop reasonable criteria to distinguish natural fluctuation in coverage versus permanent impacts, but this is the only method of determining if there are truly no impacts from the work trestle.

Travis W. Wilson

Eastern Region Highway Project Coordinator Habitat Conservation Program NC Wildlife Resources Commission
1142 I-85 Service Rd.
Creedmoor, NC 27522
Phone: 919-528-9886 ext. 6
Fax: 919-528-9839
Travis.Wilson@ncwildlife.org

-----Original Message-----
From: Roberts, Tracy
Sent: Thursday, April 07, 2011 9:53 AM
To: Biddlecome, William J SAW; smtp-Sechler, Ron; Hart, Kevin; Brittingham, Cathy; Wilson, Travis W.; Wainwright, David
Cc: Harris, Jennifer; Franklin, Spencer T; Hoops, George; 'Jose Luque (jluque@acsinfra.com)'; Roy Bruce; 'Ferrell, Ronald E (REFerrell@pbsj.com)'; Jim Hinda (jhinda@dragados-usa.com)
Subject: Action Items From Yesterday's Meeting

All,

Thank you for your participation in yesterday's meeting. A meeting summary is being prepared and will be sent to you later for review. In the mean time, I've listed the Action Items below that we'd like your feedback on by EOB tomorrow, if possible.

1. Ron Sechler needs to discuss with his supervisor whether the fisheries moratorium would apply on the west side of Currituck Sound where the water depth is 6 feet or less but there are no existing SAV beds now or in the past 10 years. NCTA's proposal was that there would be no moratorium in this area.
2. The agencies need to confer and advise NCTA on the application of the fisheries moratorium for the east and west sides of Currituck Sound plus the small area (5 feet water depth or more) in the eastern portion of Currituck Sound where water depths are 6 feet or less. Only the east side of Currituck Sound has had SAV beds during the past 10 years.
3. Kevin Hart will advise NCTA on the applicability of SAV impact determinations for the open trestle on the east side of Currituck Sound. Currently impacts are based on the trestle piles only since an open trestle is being proposed to allow light to reach the water. Due to the open (and temporary) nature of the trestle design, NCTA's position is that there would be no shading impacts.

Tracy

Please note the change in email address teroberts1@ncdot.gov
****

Tracy Roberts, AICP
Consultant
North Carolina Turnpike Authority
(919) 788-7147 office phone

Email correspondence to and from this sender is subject to the N.C. Public Records Law and may be disclosed to third parties.

Roberts, Tracy

From: Hart, Kevin
Sent: Monday, April 11, 2011 8:10 AM
To: Roberts, Tracy; Biddlecome, William J SAW; smtp-Sechler, Ron; Brittingham, Cathy; Wilson, Travis W.; Wainwright, David; Deaton, Anne; Hardy, Jeanne
Cc: Harris, Jennifer; Franklin, Spencer T; Hoops, George; 'Jose Luque (jluque@acsinfra.com)'; Roy Bruce; 'Ferrell, Ronald E (REFerrell@pbsj.com)'; Jim Hinda (jhinda@dragados-usa.com)
Subject: RE: Action Items From Yesterday's Meeting

Tracy,
After speaking with my supervisor and thinking over the issue of temporary impacts by the temporary trestle, the NCDMF still has some concerns. Although the trestle is open and there will be limited shading we are also concerned regarding the disturbances around the pilings. These disturbances include scouring and disturbances around the pilings during installation. These disturbances include covering of the SAV by sediments displaced during installation. The NCDMF requests that the Turnpike Authority accounts for these impacts by including a buffer around the pilings as well as the footprint of the pilings. The NCDMF feels that including 1/2 the diameter or width of the pilings (I'm unsure of the design of the trestle pilings) would account for these impacts. If you have any questions please let me know.
Kevin

-----Original Message-----
From: Roberts, Tracy
Sent: Thursday, April 07, 2011 9:53 AM
To: Biddlecome, William J SAW; smtp-Sechler, Ron; Hart, Kevin; Brittingham, Cathy; Wilson, Travis W.; Wainwright, David
Cc: Harris, Jennifer; Franklin, Spencer T; Hoops, George; 'Jose Luque (jluque@acsinfra.com)'; Roy Bruce; 'Ferrell, Ronald E (REFerrell@pbsj.com)'; Jim Hinda (jhinda@dragados-usa.com)
Subject: Action Items From Yesterday's Meeting

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Tracy

Please note the change in email address teroberts1@ncdot.gov
****

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Email correspondence to and from this sender is subject to the N.C. Public Records Law and may be disclosed to third parties.

Appendix B

Agency Comments on the DEIS

B. Agency Comments on the DEIS

FEDERAL AGENCY COMMENT LETTERS **B-2**

US Army Corps of Engineers – June 7, 2010 ..... **B-2**

US Department of Agriculture – Natural Resources Conservation Service – April 6, 2010 ..... **B-6**

US Department of Commerce – National Oeanic and Atmospheric Administration, National Marine Fisheries Service – June 4, 2010 ..... **B-6**

US Department of the Interior – Office of the Secretary – May 25, 2010 ..... **B-10**

US Environmental Protection Agency – June 4, 2010 ..... **B-16**

STATE AGENCY COMMENT LETTERS **B-21**

North Carolina Department of Administration – June 10, 2010 ..... **B-21**

North Carolina Department of Agriculture and Consumer Services – Agricultural Services – April 27, 2010 ..... **B-22**

North Carolina Department of Cultural Resources – State Historic Preservation Office – April 16, 2010 ..... **B-23**

North Carolina Department of Environment and Natural Resources

General – June 9, 2010 ..... B-23

Division of Coastal Management – June 4, 2010 ..... B-24

Division of Environmental Health – April 8, 2010 ..... B-44

Division of Marine Fisheries – May 14, 2010 ..... B-45

Division of Water Quality – June 1, 2010 ..... B-47

Division of Water Quality – October 5, 2010 ..... B-50

Natural Heritage Program – May 26, 2010 ..... B-51

Washington Regional Office – May 27, 2010 ..... B-52

Washington Regional Office, Aquifer Protection Section – April 19, 2010 ..... B-53

Wildlife Resources Commission – May 21, 2010 ..... B-53

LOCAL GOVERNMENT COMMENT LETTERS **B-55**

Town of Duck – May 21, 2010 ..... **B-55**

Town of Nags Head – May 20, 2010 ..... **B-58**

Town of Southern Shores – May 5, 2010 ..... **B-59**

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
Washington Regulatory Field Office
Post Office Box 1000
Washington, North Carolina 27889-1000

IN REPLY REFER TO

June 7, 2010

Regulatory Division

Subject: Action ID. 199502242

Ms. Jennifer Harris, P.E.
North Carolina Turnpike Authority
1578 Mail Service Center
Raleigh, North Carolina 27699-1578

Dear Ms. Harris:

Please reference your April 2, 2010, correspondence requesting our review and comments concerning the Draft Environmental Impact Statement (DEIS) for the Mid-Currituck Bridge Study Project, TIP No. 2576, Currituck and Dare Counties, North Carolina. In response to your request we have the following comments:

1. Page xx, Table S-1, **Indirect and Cumulative Effects**. With all the bridge alternatives it states "the extent of development on the Outer Banks by 2035 would be the same with or without the bridge." In reviewing the 1998 DEIS signed on January 28, 1998 for the same project it states "without the bridge, traffic congestion would cause development on the Outer Banks to taper off at 60 percent of planned development (from Southern Shores to the Virginia line) and in the road-accessible portion of the Currituck Outer Banks, 39 percent of planned development would occur." It also states "the additional road capacity provided by the bridge would allow about 3,000 additional housing units on the Outer Banks, primarily occurring along the road-accessible portion of NC 12 in Currituck County and that it would equate on the Currituck Outer Banks to 72 percent of planned development in the road-accessible areas." Why are the two analyses for the same project saying two different things?

2. Page xxii, **What State and Federal Regulatory Requirements must be Considered when Comparing the Alternatives.** Need to add a section and discussion about Essential Fish Habitat in regards to the Magnuson-Stevens Fishery Conservation and Management Act.

3. Page xxv, **What Alternative do NCTA and FHWA Recommend at this Time**. Need to change the language in this section that this recommendation is made by taking into account "funding mechanisms (or the term financing mechanisms)" instead of the word "cost" for the project as it is anticipated and discussed later in the DEIS that the only way the project can be financed is through North Carolina's first venture into the world of Public Private Partnerships (PPP). If cost alone were considered, ER 2 costs 269.2 to 292.8 million less than the MCB4 alternative and it meets the purpose and need of the project. ER 2 also has less impact to the natural environment and its community impacts are comparable to the MCB4 alternatives. Later in the DEIS it states "if ER2 were selected as the Preferred Alternative, the project would be implemented by NCDOT with traditional financing, as indicated in Section 2.3. If this were done, it is not known when the project would be implemented because there is no state funding for construction of road improvements in the project area listed in the 2009 to 2015 State Transportation Improvement Program (STIP)." Based on recent trends in funding shortages and the need for NCDOT to replace two (Bonner Bridge and Alligator River Bridge) currently existing deficient bridges in Division 1, it seems highly unlikely that any excess funding will be available in the near future to fund the Mid-Currituck project.

4. Page 2-15, Number 1. Paragraph states "as discussed in Section 2.2, three lanes on NC 12 (ER2 and MCB2) would not eliminate congestion on the summer weekday." There is no discussion of this in Section 2.2 that we could find. However, there is a Table (2-3) that shows data relating to travel benefits of detailed study alternatives. It appears based on Table 2-3 in the congested annual millions of vehicle-miles traveled (VMT) that MCB4 is also congested. Should MCB4 be included in the parentheses along with ER2 and MCB2 in this section? If you look at the miles of road operating with traffic demand at or above road capacity during the summer weekday (SWD) in the table, it appears ER 2 and MCB4 exceed zero but MCB2 is zero. So if this is the case should MCB2 not be in parentheses in this section and MCB4 be included in parentheses?

5. Page 2-17, Section 2.1.3, **How many lanes would a Mid-Currituck Bridge include, and how tall would the bridge be?** This section states "the preliminary designs, however, assume the purchase of sufficient right-of-way to allow additional lanes to be constructed, if needed, at some future date. Why would NCDOT buy additional right of way when it states that the time saved by a three or four lane bridge is not substantial enough (based on year 2035) to warrant the cost and effort required? This question is based on the facts presented in the Indirect and Commutative Effects Report where it states on page 1-5, "The design year for Mid-Currituck Bridge improvements is 2035, so the year 2035 will generally be used as the outer limit of the indirect and cumulative effects assessment. The population forecasts used in the traffic forecasts for 2035 assume full build out of the road accessible portion of the Outer Banks in the project area." Additionally, on page 7-2 of the report it states, "section 6.1 indicates that Currituck County has 34,435 acres of available high and medium suitability rated land, with 32,988 acres that are anticipated for development by 2035. On the Outer Banks, assumptions used in the impact assessment were that full build-out would occur before 2025 in the NC 12-accessible areas, with some development continuing to occur in the non-road accessible areas."

6. Page 2-35, Table 2-3, **Travel Benefits of Detailed Study Alternatives**. Based on the table, the 2035 travel time benefit traveling from Aydlett Road to Albacore Street on existing highway, MCB4 would only save someone 18 minutes when compared to ER2 for someone who could not afford or chose not to pay the necessary toll to use the bridge. Additionally, the

difference between MCB4 and ER2 in miles of road operating with traffic demand at or above road capacity on a summer weekday is insignificant (5.7 miles vs. 5.9 miles) and does not substantially improve traffic flow on the project area's thoroughfares (US 158 and NC 12) when compared against each other. Both alternatives however substantially improve summer weekday travel versus the No-Build alternative. When you take the weighted average of summer weekday and weekend the difference becomes more significant between the two alternatives.

7. Page 2-39, Section 2.4, **Explain how each Alternative will be built**. We have major concerns should dredging be necessary during Mid-Currituck Bridge construction in areas with less than 6 feet of water depth in the Currituck Sound. Based on past history of projects proposed for the Currituck Sound, dredging has been a major concern of the resource agencies and typically permits have been difficult to obtain for such activities. The DEIS states that anywhere from 21 to 29 acres would be proposed to be dredged so low draft barges could be used to construct the bridge where less than 6 feet of water exists. These impacts are significant and this type of activity could weigh heavily in how each alternative is evaluated in the ultimate selection of the Least Environmentally Damaging Practicable Alternative (LEDPA)/Preferred Alternative. It is imperative that this issue be discussed with the resource and permitting agencies so all parties involved know the possible consequences and expectations before the selection of the LEDPA and ultimately before a permit is applied for. It is recommended that the Preferred Alternative be developed to a higher level of detail (construction details known) in the Final Environmental Impact Statement (FEIS), in accordance with procedures specified in FHWA/FTA guidance for the Section 6002 process. As allowed under Section 6002, the higher level of design may be prepared for the purpose of developing mitigation measures and for complying with permitting requirements.

8. Page 2-41 – 2-42, Section 2.6, **What Alternative is Recommended by NCTA and FHWA at this Time.** Same comment as item # 3 above. Replace the word "cost" with the term "funding mechanisms or financing mechanisms" in the first paragraph. On page 2-42 in the section titled "Cost and Design Considerations" change the title to the same. In the section titled cost and design considerations, bullet number 3, we don't agree with the last part of the statement that it reduces cost and environmental impact. Even with 25 miles of improvements to NC 158, alternative ER2 still costs less and has less environmental impacts than alternative MCB4.

9. Page 2-42, **Community Impact Considerations.** The 1st bullet states MCB4/C1 would physically divide the Corolla Bay subdivision. While we agree it will divide what are currently platted lots in Corolla Bay subdivision, we disagree at this time that it should be listed as a community impact because technically a community does not exist in this location. The potential exists that there could be community impacts in the future if the lots are developed prior to construction of the proposed project. Bullet # 2 states that MCB4 would have the fewest displacements and relocations. While we agree with the statement, it should be noted that permanent resident displacements for alternatives ER2 and MCB4 are similar (6 versus 5 or 7)

and that the major difference between the 2 alternatives are the displacement of 10 vacation rental units for alternative ER2.

10. Page 2-42, **Natural Resource Impact Considerations.** In this section it should also be noted that MCB4 would have the greatest potential impacts to environmental fragile areas, have the greatest potential to cause impacts to critical natural areas which would impact the productivity of the county's ocean and estuarine environments, and would have the greatest potential to effect water quality in the coastal waters of Currituck County. Three of Currituck Counties Land Use Planning Goals include: to avoid taking or approving actions related to infrastructure and the provision of services that could induce intensive development in environmental fragile areas; to preserve critical natural areas as the source of biological diversity and productivity of the county's ocean and estuarine environments; and to preserve and improve water quality in the coastal waters of Currituck County. MCB4 has the greatest potential to conflict with these goals.

11. Page 3-11, Section 3.1.4.1, **Relocations.** 1st paragraph states "the relocations associated with MCB2 and MCB4 would be associated with the US 158/NC 12 interchange. The MCB4 alternative doesn't include an interchange at US 158/NC 12. ER2 and MCB2 are the two alternatives that involve an interchange at that location.

14. Page 3-14, Section 3.1.6, **Would the Detailed Study Alternative be Compatible with Local Land Use Plans**. In the first paragraph remove the town of Duck from the second sentence. ER2 and MCB2 don't include provisions to widen NC 12 through Duck. Add a bullet that MCB2 and MCB4 would be inconsistent with Currituck County's Land Use Plan as described in # 10 above.

15. Page 3-17 and 3-18, Section 3.1.11, **Could Crime Rates Increase**. This section states that "crime rates are not anticipated to increase with any of the detailed study alternatives, including MCB2 and MCB4, which would provide a direct connection between the mainland and the Currituck County Outer Banks." In the 1998 DEIS it states "despite the shortcomings of crime rate analysis, a reasonable conclusion remains that Currituck County would experience an increase in crime under both the No-Build and Bridge Alternatives. Because of the higher level of development under the Bridge Alternative, the crime rate would be expected to be higher than the No-Build." According to the 1998 DEIS, the problem with crime rate statistics is that the method of calculating crime rates does not include seasonal populations and therefore this omission skews results for areas with a substantial seasonal population towards higher crime rates. Why are the two analyses saying two different things?

16. Page 3-32, Section 3.3.2.4, **Impacts to Biotic Communities**. The last bullet on the page appears to have information missing. It says and … but there is nothing written after the word "and." Can we assume "dredging" was inadvertently left out of the sentence as dredging is discussed later in the section?

17. Page 3-38, Section 3.3.2.4, third paragraph, **Impacts to Biotic Communities.** In the first sentence add "/ and or permanent" after the word additional. Dredging impacts may be considered permanent or temporary based on the restoration methods utilized in these areas.

18. Page 3-48, Section 3.3.7, **Would Coastal Area Management Act Areas of Environmental Concern or Essential Fish habitat be Affected**. Need to add "dredging" along with shading as an impact in this section if dredging is going to be considered in the construction of this project.

19. Page 3-79, Section 3.5.3, **How Would Waste be Disposed**. Add a sentence to 2nd paragraph saying waste disposal in US Army Corps of Engineers jurisdiction areas would most likely not be authorized and any such impacts for this type of activity would be considered in the overall impacts for the project.

20. Pages 3-81 - 3-99, **Indirect and Cumulative Effects.** When comparing the Indirect and Cumulative Effects analyses of 1998 DEIS (called secondary actions in this document) to the 2010 DEIS, it appears there are substantial differences and differing conclusions between the two documents. Some of the major differences are the 1998 analysis states: a) the average rate of development on the Outer banks would continue under the assumption that the bridge is going to be built and in the No-Build alternative, the rate of development would slow down and taper off as the Outer Banks road system approached capacity. b) The road-accessible Currituck Outer Banks would reach 72 percent of full build-out if the bridge were built, compared to 39 percent of build-out if the bridge were not built. c) The bridge, at least initially would attract potentially thousands of day-visitors to the Currituck Outer Banks and that availability of parking, restrooms, and support facilities could limit this potential. A bridge that would provide quick access to un-crowded (or otherwise desirable) beaches potentially could attract many day trips. The bridge alternative would provide an opportunity for resident of Hampton Roads metropolitan area to visit the Currituck County Beaches in a reasonable amount of travel time for a day trip. Based on the share of persons making day trips to Wrightsville Beach from metropolitan areas one to two hours away, an estimate of 10,000 to 15,000 day trips to Currituck County can be derived. As the Outer Banks approaches build-out, congestion would increase on the new bridge and along NC 12. Thus, the total number of day trips would likely decline over time, because they would have less tolerance for congestion and a longer travel time to the beach than weekly renters. The 2010 analysis states: a) The potential for increase in the number of day trips to the Outer Banks would be no increase or negligible increase for ER2 and some potential for an increase over the No-Build Alternative with the potential higher in the non-road accessible area for MCB2 and MCB4. b) Today, given the complex network of streets and roads that now exists, and that much of the NC 12 accessible Outer Banks has been subdivided, transportation improvements have little effect on the demand for and rate of development. Transportation improvements could, however, influence the location of development that occurs first. c) The lack of transportation improvements and associated growing congestion could constrain

development under the No-Build Alternative. What factors have changed since the 1998 document that has altered the conclusions contained in this section of the 2010 DEIS?

As we progress in determining the Least Environmentally Damaging Practicable Alternative (LEDPA)/Preferred Alternative for this proposed project, there are many factors that are considered in determining such. Several issues dealing with practicability (cost, logistics, technology) will factor in this decision process. Two issues pertaining to practicability that will weigh heavily in this decision process are the funding aspect for this project and the construction techniques discussed in number 7 above. Please be aware that these issues will need to be discussed and resolved before we can proceed with the selection of the LEDPA. It will be incumbent upon you to demonstrate that using non-toll financing is infeasible if during the process for identifying the Preferred Alternative, NCTA wishes to select an alternative that involves tolling based on the mere fact that non-tolling alternatives cannot be financed or funded in the short or long term. Simply stating a preference for constructing toll roads instead of public roads will not be adequate to meet NEPA or Section 404 b (1) guideline standards. This information can be included as part of the preferred alternative report that NCTA will prepare in accordance with Section 10 (Selection of Preferred Alternative/LEDPA) of the Section 6002 Coordination Plan for the STIP R-2576.

As a major permitting and cooperating agency, we appreciate the opportunity to coordinate with you prior to the finalization of the DEIS. This DEIS is an excellent effort to address and illustrate all facets of this proposed project. The Wilmington District is committed to providing the highest level of support to the public. To help us ensure we continue to do so, please complete the Customer Satisfaction Survey located at http://per2.nwp.usace.army.mil/survey.html to complete the survey online. If you have any questions regarding our comments, please do not hesitate to me at the Washington Regulatory Field Office, telephone (910) 251-4558.

Sincerely,

William J. Biddlecome

William J. Biddlecome
Regulatory Project Manager

Copies Furnished:

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Division of Coastal Management
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National Marine Fisheries Service
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Beaufort, North Carolina 28516

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U.S. Fish and Wildlife Service
Fish and Wildlife Enhancement
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Mr. Chris Militscher
U.S. Environmental Protection Agency
C/O FHWA, Raleigh Area Office
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Mr. Travis Wilson
Eastern Region Highway Project Coordinator
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Mr. David Wainwright
Water Quality Section
North Carolina Division of Environment
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NRCS

Natural Resources Conservation Service
4407 Bland Road, Suite 117
Raleigh, North Carolina 27609

Phone: (919) 873-2134
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April 6, 2010

Ms. Jennifer Harris, P. E.
NC Turnpike Authority
1578 Mail Service Center
Raleigh, NC 27699-1578

Dear Ms. Harris:

Thank you for the opportunity to provide comments on the Federal Draft Environmental Impact Statement STIP Project No: R-2576 for Mid-Currituck Bridge Study in Currituck and Dare Counties, North Carolina.

The Natural Resources Conservation Service does not have any comments at this time.

If you need additional information, please feel free to contact me at (919) 873-2134.

Sincerely,

Michael J. Hinton
ASTC for Easements & Water Resources

APR 8 2010

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
(727) 824-5317; FAX (727) 824-5300
http://sero.nmfs.noaa.gov/

June 4, 2010 F/SER4: RS/pw

(Sent via electronic mail)

Ms. Jennifer H. Harris, P.E.
North Carolina Turnpike Authority
1578 Mail Service Center
Raleigh, North Carolina 27699-1578

Dear Ms. Harris:

NOAA's National Marine Fisheries Service (NMFS) reviewed the Draft Environmental Impact Statement (DEIS) dated March 2010 and titled "Mid-Currituck Bridge Study" that examines potential transportation improvements in the Currituck Sound area with a focus on consideration of a new Mid-Currituck Bridge over Currituck Sound, Currituck County. The North Carolina Turnpike Authority (NCTA) and Federal Highway Administration (FHWA) prepared the DEIS, which includes an assessment of impacts to essential fish habitat (EFH). The initial determination by NCTA and FHWA in the DEIS is that the transportation options under consideration would not have a substantial adverse impact on EFH or federally managed fishery species. In contrast, the U.S. Army Corps of Engineers Wilmington District, which is a cooperating agency in development of the DEIS and has released their own public notice for the project (Action ID SAW-1995-02242 dated April 21, 2010), has made an initial determination in the public notice that the project may adversely impact EFH or associated fisheries. As the nation's federal trustee for the conservation and management of marine, estuarine, and anadromous fishery resources, the following comments and recommendations are provided pursuant to authorities of the National Environmental Policy Act, Fish and Wildlife Coordination Act, and Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act).

Project Description

The project area encompasses US 158 between its intersection with NC 168 and its intersection with NC 12, and NC 12 from its intersection with US 158 north to where it terminates in the community of Corolla. The purpose of the projects would be to: improve traffic flow on NC 12 and US 158, reduce travel time for persons traveling between the Currituck County mainland and the Currituck County Outer Banks, and reduce hurricane clearance time for residents and visitors who use US 158 and NC 168 during a coastal evacuation.

The DEIS describes "five" alternatives each with several variations, so the number of potential plans under consideration is much higher than five. Rather than examining each potential project combination, the DEIS focuses on four decisions that result in the various combinations:

- *Is a new bridge across Currituck Sound required?* The DEIS examines a set of alternatives (referred to as "ER2," which stands for "existing roads 2") that do not require a new bridge and several sets of alternatives (referred to as "MCB2" and "MCB4," which respectively stand for "Mid-Currituck Bridge 2" and "Mid-Currituck Bridge 4") that do require a new bridge. MCB2 and MCB4 differ in the amount of improvement to US 158 and NC 12, not to differences in bridge location or design.

- *For alternatives that include a new bridge, where would the bridge be located?* On the Outer Banks, both MCB2 and MCB4 consider two locations ("C1" and "C2") for the bridge terminus; C1 would connect with NC 12 at an intersection approximately 2 miles north of the Albacore Street retail area, and C2 would connect with NC 12 approximately 0.5 miles south of this area. These alternative termini result in different bridge corridors for the eastern portion of the crossing of Currituck Sound. On the mainland for both MCB2 and MCB4, two design options also are under consideration for the approach to the new bridge (between US 158 and Currituck Sound), referred to as "Option A" and "Option B" in the DEIS. The design options differ in regards to the location of the toll plaza, whether drivers traveling between US 158 and the community of Aydlett would use the existing Aydlett Road or the bridge approach road, but most significantly, Option A and Option B differ in whether Maple Swamp is crossed by a bridge (Option A) or fill (Option B). While the DEIS does not consider the differences between Option A and Option B to warrant classification as different alternatives, they nonetheless result in eight combinations for consideration.
- *How will existing roads be improved to substantially reduce hurricane clearance time?* Two hurricane evacuation options are under consideration for all of the ER2, MCB2, and MCB4 variations. The first hurricane evacuation option is to add a third outbound lane to US 158 for evacuation use only. The second hurricane evacuation option is to reverse the existing center turn lane on US 158 to create a third outbound lane during an evacuation. When a third outbound lane is needed on the Wright Memorial Bridge or Knapp (Intracoastal Waterway) Bridge, one existing inbound lane would be reversed.
- *What methods will be used to construct the project?* Construction strategies need to be considered when evaluating overall impacts from the proposed project. For example, strategies that require dredging access channels or barges that would frequently contact the sea bottom may result in more impacts to EFH than would occur from the bridge structure itself and associated access ways.

NCTA and FHWA recommend in the DEIS that a new bridge be constructed across Currituck Sound (i.e., while NCTA and FHWA do not support Alternative ER2, they also have not chosen between MCB2 and MCB4). Further, NCTA and FHWA neither recommend in DEIS any termini for the new bridge, an option for reducing hurricane clearance times, nor preferred construction methods. NCTA and FHWA intend to make these selections when a preferred alternative is chosen later in the NEPA process. The benefit to NCTA and FHWA from delaying key decisions until later in the NEPA process is those decisions can be made based on formal input from resource agencies and the public, rather than relying on input received during the extensive scoping process and several rounds of interagency meetings. The downside to delaying key decisions until later during the NEPA process is NCTA, FHWA, and resource agencies would have less time to address issues and unresolved issues may lead to referrals of the project to higher authorities.

Comments on the DEIS
A list of specific comments tied to particular sections of the DEIS is attached to this letter. Below, our approach to examining the impacts to coastal habitats follows the same approach used by NCTA and FHWA in laying out the various forms the project could take.

Regarding the need for a new bridge across Currituck Sound, pursuit of Alternative ER2 would damage less costal habitat than any of the alternatives that require construction of a new bridge. Alternative ER2 uses improvements to existing roads to address the purpose and need for the project rather than relying upon a new bridge over the Sound. Alternative ER2 would have the least adverse impact to EFH and other NOAA trust resources. A new bridge should be considered only if it is determined that improvements to existing highways would not meet the purpose and need for the project.

If a new bridge is required and without taking construction methods into consideration, MCB4/A/C1 would damage less costal habitat than other alternatives requiring a bridge. Alternative MCB4/A/C1

would require construction of a new section of US 158 on the mainland and use of a new bridge across Maple Swamp rather than filling wetlands. Maple Swamp is an important wetland hydrologically connected to Currituck Sound and contributes to maintenance of water quality and the estuarine food web. Bridging Maple Swamp should be a component of any bridge alternative chosen. Also, in view of the value of Maple Swamp, NMFS recommends that NCTA and FHWA develop a plan for preserving the remaining un-impacted areas of Maple Swamp, and NMFS would support appropriate inclusion of such preservation in the project's compensatory mitigation plan.

Taking construction methods into consideration, it is not clear if MCB4/A/C1 or MCB4/A/C2 would have the lesser impact on EFH. The DEIS describes four different techniques for constructing a new bridge across Currituck Sound. Of these, three would require temporary structures to facilitate construction but would only require limited dredging. However, the fourth technique involves using shallow-draft barges during construction. Minimizing disturbances to the sea bottom should be a priority; this cannot be accomplished if barges are used for construction in the manner described in the DEIS or if large amounts of dredging would be required. NCTA and FHWA estimate that the C1 alignment would require dredging 25 acres of unvegetated estuarine bottom; the C2 alignment would require dredging 17 acres of unvegetated estuarine bottom. While the C2 alignment has 8 acres less impact to the estuarine bottom from construction activities, the tradeoff of this damage versus the damage that might result from the larger footprint of the C2 alignment over SAV habitat is not clear and not discussed in the DEIS. Adverse impacts to EFH, even if temporary, require compensatory mitigation because of the diminution of ecological services to fishery resources.

Impacts to EFH
The areal extent of impacts to EFH will vary based on various decisions related to bridge design and construction techniques. From section 2.4 and tables 3-5, 3-6, 3-7, 3-8, and 3-12, the amount of EFH that could be impacted (permanently or temporarily) is on the order of 55 acres (adding the permanent impacts listed in Table 3-12 and to the construction impacts listed in section 2.4). The DEIS acknowledges the amount of SAV within these acres is not clear, but appears to a minimum of 4.3 (C1 alternatives) to 5.5 (C2 alternatives) acres. Additional study is needed of the areas the DEIS describes as probable SAV, potential SAV, and unlikely SAV to determine exact acreages based on a current survey suited to the area of the proposed bridge. Detailed surveys for SAV also should include the areas where dredging may occur and barges may impact the sea bottom.

Regardless of whether the impacts to EFH are permanent or temporary, including the impacts from shading, compensatory mitigation is required. We recommend the amount of the mitigation be based on a functional assessment. As noted elsewhere in this letter, NMFS would accept improvements to water quality as a portion of the migration strategy for offsetting impacts to estuarine habitats.

The DEIS should more thoroughly discuss the indirect and cumulative effects of the proposed highway improvements so they may be adequately addressed during the permitting process. The DEIS acknowledges that a new bridge is likely to increase the rate of development on both the mainland and barrier island. NMFS is concerned that this result would further degrade water quality, including water clarity in Currituck Sound. Changes in the Sound over the past 20 years have increased salinity resulting in expanded use of the sound as habitat for estuarine dependent fish and invertebrates. However, during this time period, overall water quality in Currituck Sound has degraded due to alterations in historical water flow patterns, increased development and associated storm water runoff from heavily populated areas in southeastern Virginia, and rapid development of Currituck County beaches. Further degradation of water quality and its associated impacts to SAV should not be accepted.

Information Needed for NMFS to Complete the EFH Consultation
The EFH Assessment provided by NCTA and FHWA, which is dated November 2009 and summarized in the DEIS, provides an adequate identification of the EFH within the project area and fishery species that utilize those habitats. The EFH Assessment, however, does not provide a sufficient discussion of the impacts to EFH from the various alternatives considered.

NMFS is unable to complete the EFH consultation based on the information provided in the DEIS. To complete our evaluation of the project, please provide an assessment of the degree to which the function of SAV and shallow-water habitat within the shadow of the proposed bridge would be impaired. NMFS recommends this assessment begin by estimating any changes in the area of SAV and the aboveground biomass of SAV within the shadow. This assessment should be done for both the C1 and C2 alternatives. NMFS also requires an evaluation of the rate that benthic communities are expected to recover from the dredging and other impacts to the sea bottom from the construction process. This assessment also should be done for both the C1 and C2 alternatives taking into account sediment textures, landscape position, and other factors that might differently affect recovery rates between the C1 and C2 alignments. This information is needed so that NMFS can assess the impacts expected from both sources and formulate a recommended terminus for the bridge on the Outer Banks.

Conservation Recommendation
While additional information is needed for NMFS to complete the EFH consultation, based on the information provided thus far, NMFS concludes that the project would result in substantial adverse impacts to EFH. Section 305(b)(4)(A) of the Magnuson-Stevens Act requires NMFS to provide EFH conservation recommendations when an activity is expected to adversely impact EFH. Based on this requirement, NMFS provides the following:

EFH Conservation Recommendations

1. The Final EIS shall provide additional justification as to why alternatives based on the ER2 strategy are not sufficient for meeting the project's purpose and need. The DEIS focuses on economic arguments to dismiss ER2, and given the low cost of this alternative the economic arguments seem addressable via changes in NCTA policy or priorities.

2. The plan selected in the Final EIS shall use bridges, rather than fill, to cross Maple Swamp.

3. A plan for compensatory mitigation shall be provided that offsets all permanent and temporary impacts to EFH, including impacts from shading and from bottom disturbances from the construction process. The plan for the compensatory mitigation shall include a functional assessment that demonstrates the amounts of mitigation proposed would fully offset the impacts expected. Given the difficulty of forecasting shading impacts to SAV and recovery rates of benthic communities, the plan also shall include a monitoring program that will assess whether forecasted impacts are in line with actual impacts and whether additional compensatory mitigation is necessary if impacts prove larger than expected or mitigation proves less effective than expected. NMFS is likely to look favorably upon mitigation plans that include preservation of Maple Swamp for impacts to forested wetlands and treatment of existing stormwater runoff into Currituck Sound for impacts to estuarine habitats. The mitigation plans shall be provided to NMFS for review and approval before the project is authorized.

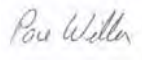
4. Authorization of the project shall be held in abeyance until the additional information required by NMFS to complete the EFH consultation is provided and reviewed. Please note that based on review of the requested information, NMFS may be obligated to provide additional EFH conservation recommendations, which may include recommendation for a seasonal moratorium for in-water work.

Section 305(b)(4)(B) of the Magnuson-Stevens Act and its implementing regulations at 50 CFR 600.920(k), requires your office to provide a written response to our EFH recommendations within 30 days of receipt. If it is not possible to provide a substantive response within 30 days, an interim response should be provided to NMFS. A detail response must then be provided prior to final approval of the action. Your detailed response must include a description of measures proposed by your agency to avoid, mitigate, or offset the adverse impacts of the activity. If your response is inconsistent with our EFH conservation recommendations, your must provide a substantive discussion justifying the reasons for not following the recommendation. The detailed response should be received by the NMFS at least ten days prior to final approval of the action.

These comments do not satisfy your consultation responsibilities under section 7 of the Endangered Species Act of 1973, as amended. If any activity "may effect" listed sea turtles and marine mammals and their habitats under NMFS purview, consultation should be initiated with our Protected Species Division at the letterhead address.

Thank you for the opportunity to provide these comments. Related questions or comments should be directed to the attention of Mr. Ronald Sechler at our Beaufort Field Office, 101 Pivers Island Road, Beaufort, North Carolina 28516-9722, or at (252) 728-5090.

Sincerely,



/ for

Miles M. Croom
Assistant Regional Administrator
Habitat Conservation Division

Attachment: Comments by DEIS section

cc:

NCTA, Jennifer.Harris@ncturnpike.org
FWHA, John.Sullivan@fhwa.dot.gov
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Specific Comments from NMFS on Mid-Currituck Bridge Study, Administrative Action Draft Environmental Impact Statement

Section 2.1.7, Pages 2-24 to 2-27, What road and bridge drainage provisions would be included in the detailed study alternatives?
This section address management of stormwater runoff associated with improvements proposed for NC 12 or the proposed bridge alternatives. Discharge of additional stormwater into Currituck Sound would further degraded water quality. Regardless of which alternative is selected, NMFS recommends that a stormwater management plan be a high priority in the project design. Further, a comprehensive stormwater management plan may afford additional avenues for compensatory mitigation that NMFS might support. A comprehensive stormwater management plan would have to provide additional treatment to a portion of the existing runoff into the Sound as well as full treatment of all new runoff from the proposed highway improvements.

Section 2.4, Pages 2-38 and 2-39, Explain how each alternative will be built
This section addresses four alternative techniques for constructing a new bridge across Currituck Sound. NMFS recommends that NCTA and FHWA use a construction approach that does not require dredging in Currituck Sound. If NCTA and FHWA determine this is not feasible and dredging is done to accommodate shallow-draft barges, this dredging may have substantial adverse impacst to NOAA trust resources. The C1 alignment would require dredging 25 acres of unvegetated estuarine bottom; the C2 alignment would require dredging 17 acres of unvegetated estuarine bottom. The assumption in the DEIS is that unvegetated areas of estuarine bottom are of less importance to fishery resources than areas vegetated with SAV is incorrect. Estuarine benthic habitats, including sandy and muddy bottoms are designated as EFH. Recovery rates of the benthic communities that would be impacted require evaluation and compensatory mitigation for the temporal loss of ecological services.

Section 3.3.1.2, Page 3-28, Classification of Water Resources
Important nursery habitats, such as SAV, shallow estuarine bottom, and emergent marsh, occur in the Sound and, more specifically, the project area. Accordingly, the South Atlantic Fishery Management Council designates SAV, shallow estuarine bottom, and emergent marsh as EFH for penaeid shrimp and estuarine species within the snapper/grouper complex. The project area also functions as an important secondary nursery area for diadromous species that utilize these waters, and this fact should be noted in the Final EIS. A seasonal restriction on in-water work may be required if extensive dredging is planned within Currituck Sound.

Section 3.3.1.3, Page 3-28, Quality of Water Resource
This section addresses the substantial degradation of water quality that has occurred in Currituck Sound over the last 10 to 20 years and provides strong justification for fully incorporating measures to avoid, minimize, and mitigate the project's impacts to water quality. Likewise water quality enhancement measures should be considered at every opportunity in the project design.

Section 3.3.1.4, Pages 3-29 to 3-30, Impacts to Water Quality
This section addresses the predictable degradation of water quality that would occur if dredging is a major component of project construction. It also notes that management of runoff from a new bridge or other upland improvement is an important project component. The DEIS should initiate a concerted effort to address this issue. We recommend consultation with the U.S. Army Corps of Engineers Wilmington District regarding their on-going study of Currituck Sound, which was authorized in 1998 and is examining the significant loss of SAV and declines in water quality that impact freshwater fisheries and waterfowl populations. This study may suggest measures that could be incorporated by NCTA and FHWA to reduce the impact to the Sound of a new bridge and other highway improvements.

Section 3.3.2.4, Page 3-32 to 3-38, Impacts to Biotic Communities
Measures to avoid, minimize and mitigate the less conspicuous impact versus Maple Swamp are lacking.

Section 3.3.4.3, Page 3-41, Water Habitat Impacts
This section notes that shading from bridge foundations would have the adverse impacts to SAV. Impacts to SAV from shading must be mitigated.

Section 3.3.4.4, Page 3-42, Impacts form Noise, Turbidity, and Siltation
NMFS will work cooperatively with the NCTA, FHWA, and NC Division of water Quality to develop specific recommendations on how to mitigate these chronic impacts. For example, upon completion of the project, NCTA and FHWA should conduct an as-built survey of major habitats impacted by the project (e.g., SAV re-mapping). This post-construction survey would be conducted annually for at least 5 years to determine if sufficient mitigation has been provided to offset project impacts to EFH.

Section 3.3.6, Pages 3-43 to 3-48, What Impacts Would Occur to Waters under the Jurisdiction of the US Army Corps of Engineers?
NCTA and FHWA should pursue an alternative that involves bridging rather than filling Maple Swamp (Option A). Also, alternatives that involve construction of a new bridge across Currituck Sound would have direct and indirect impacts to SAV. Selection of the exact alignment should be done in a manner that results in the least adverse impacts to SAV and wetlands.

Section 3.3.6.4, Pages 3-46 and 3-48, Wetland and Stream Mitigation, Avoidance and Minimization
If an alternative that involves bridging of Maple Swamp is selected, the DEIS indicates that only a right-of-way (263 acres) through the swamp will be purchased. However, if the selected alternative allows fill in this section of the highway alignment, NCTA and FWHA would purchase the entire 612 acres of Maple Swamp. In this case, all remaining un-impacted areas would be set aside and protected in perpetuity as a forested wetlands mitigative measure. The value of this large tract of forested wetlands is likely high. Option A (using a bridge to cross the swamp, rather than fill) should be required as an appropriate avoidance and minimization measure. Preserving the remaining portion of the swamp should be a component of offsetting the unavoidable impacts from using a bridge to cross the swamp.

This section also addresses provision of compensatory mitigation through the Ecosystem Enhancement Program (EEP) of the NC Department of Environment and Natural Resources. NMFS agrees that replacement of unavoidable losses of emergent and forested wetlands should be provided through EEP. However, all bridge alternatives would directly or indirectly impact SAV habitat by shading. At this time the EEP does not provide an SAV mitigation option; therefore, mitigation to offset unavoidable losses of SAV habitat must be addressed independently from other wetland losses. NMFS can work with the NCTA, FHWA, and EEP to address this issue.

Section 3.3.7, Page 3-48 to 3-52, Would Coastal Area Management Act Areas of Environmental Concern or Essential Fish Habitat be affected?
This section notes that the NC Division of Coastal Management has no permit jurisdiction over shading and therefore, no mitigation for shading of SAV is proposed by NCTA and FHWA. While this approach may be consistent with state rules; it is not consistent with federal guidance. The DEIS should be revised to reflect the need to mitigate for impacts to SAV habitat from shading.

NMFS does not agree with NCTA's and FHWA's determination that all options considered in the DEIS would not have a substantial, long-term adverse impact on EFH or managed species. This paragraph does not accurately reflect the high value accorded SAV as important habitat for managed species. Evaluation of the impact is not based on the amount of similar habitat within the Sound but on the severity and duration of the impacts within the project footprints.

Section 3.6, Table 3-17. Notable Ecosystem Features
NMFS recommends that unconsolidated estuarine bottom (a category of EFH) be added to this table.

Section 3.6.3, Pages 3-97 to 3-99, What are the substantial indirect and cumulative effects and could they be minimized?
NMFS is committed to development of a project that would address the transportation need of Currituck County while avoiding and minimizing short- and long-term impacts to waters and wetlands that support NOAA trust resources.

United States Department of the Interior
OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
Richard B. Russell Federal Building
75 Spring Street, S.W.
Atlanta, Georgia 30303

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N.C. TURNPIKE AUTHORITY

Ms. Jennifer H. Harris, P.E.
North Carolina Turnpike Authority
1578 Mail Service Center
Raleigh, North Carolina 27699-1578

Re: Comments for the Review of Draft Environmental Impact Statement (DEIS) for Mid-Currituck Bridge Study

Dear Ms. Harris:

The Department of the Interior (Department) has received the Draft Environmental Impact Statement (DEIS) for the Mid-Currituck Bridge Study. In addition to the No-Build Alternative, the DEIS identifies five build alternatives: ER2, MCB2/C1, MCB2/C2, MCB4/C1 and MCB4/C2. The North Carolina Turnpike Authority (NCTA) and Federal Highway Administration (FHWA) have identified MCB4 as the recommended alternative, with no stated preference for C1 or C2.

We have provided detailed comments during several Turnpike Environmental Agency Coordination (TEAC) meetings. Many of these comments have been addressed in the DEIS. In general, these comments pertained to the following issues: impacts to waterfowl and other migratory birds in and near Currituck Sound, coastal wetland impacts, impacts to an exceptional quality loblolly bay (*Gordonia lasianthus*) forest in Maple Swamp, habitat fragmentation and wildlife passage through Maple Swamp, indirect effects related to induced development, and potential impacts to Currituck National Wildlife Refuge if development pressures result in paved road access to Carova. We offer the following additional comments.

General Comments

Overall, this project will have substantial impacts to fish and wildlife resources. The project is located in an environmentally significant coastal area. Wetland impacts for the NCTA and FHWA recommended alternative range from 36.6 to 43.2 acres. All alternatives will affect essential fish habitat. MCB2 and MCB4 alternatives would bisect a state Significant Natural Heritage Area – Maple Swamp. Until recently, Maple Swamp provided one of the best and

likely the northernmost example of an old-growth, *Gordonia* ecosystem. Currituck Sound, an important waterfowl wintering habitat, would be permanently altered by a large bridge structure with the MCB2 and MCB4 alternatives. Several acres of difficult-to-replace, submerged aquatic vegetation (and areas of potential future establishment) in Currituck Sound would also be shaded by the massive structure.

Currituck Sound Crossing Options

MCB2 and MCB4 each offer two Currituck Sound bridge options, C1 and C2. C1 has a more northern terminus in the Outer Banks, while C2 has a more southern terminus. C2 would traverse over a wider band of coastal marsh and forested wetlands, impact more acres of wetlands, be in close proximity to other important coastal wetlands, shade shallower aquatic bottom, and shade more existing submerged aquatic vegetation (SAV). Therefore, the Department strongly prefers the C1 alternatives over C2 alternatives. C1 would land on the Outer Banks at a location with only a narrow band of coastal marsh fringe and which has already been disturbed for proposed development. C1 is located farther away from emergent wetlands within Currituck Sound which are important to many coastal birds and waterfowl. Overall, C1 would have the fewest impacts to wildlife.

Maple Swamp Crossing Options

Pages 2-10 to 2-15 discuss the two options for crossing Maple Swamp for MCB2 and MCB4. Option A would bridge over Maple Swamp and place a toll plaza on the west side of Maple Swamp within the US 158 interchange. Option A would also retain the existing Aydlett Road for use by local traffic. Option B would be a road on fill through Maple Swamp with the toll plaza placed on the east side of Maple Swamp at Aydlett. Option B would also remove the existing Aydlett Road. An option not considered in the DEIS would be to bridge Maple Swamp, remove the existing Aydlett Road, locate the toll plaza on the east side of Maple Swamp, and accommodate local traffic with ramps off and onto the main road at Aydlett. This would combine elements of Options A and B, but would have the least impact on Maple Swamp and its hydrology, allow for onsite wetland restoration in the roadbed of the removed Aydlett Road, and provide the highest level of permeability for wildlife movements through Maple Swamp.

The existing Aydlett Road currently impacts the hydrology of Maple Swamp and partially restricts wildlife movement, as well as serves as a source of wildlife road mortality. Removing Aydlett Road and completely bridging Maple Swamp would provide the best conditions for a wildlife travel corridor. The Department strongly opposes a road on fill through Maple Swamp. Even with provision for wildlife crossings, the fill will still have significant impacts on wildlife resources through fragmentation, interruption of wildlife movements, and significant alterations in wetland hydrology.

Wildlife Crossing Structures

Figure 2-7 on page 2-12 (DEIS), text on page 3-40 (DEIS), and text on page 4-33 of the *Natural Resources Technical Report* depict five wildlife crossing structures in the road fill for Option B. Would there be any additional structures for conveyance of hydrology? If not, the wildlife

crossing structures could be permanently flooded, thus rendering them nearly useless for terrestrial wildlife. Most terrestrial species of wildlife would require dry ground in order to utilize the crossings.

In Figure 2-7, Option B depicts two bridges as wildlife crossings on either end of the fill across Maple Swamp, with three smaller pipe and culvert crossings in the middle. What is the rationale for having the larger bridge structures along the outside edges? Was micro-topography considered in the placement of the structures? If not properly placed with consideration of topography and hydrology, it is very possible that the smallest structures would be completely inundated. Larger bridge structures would be far more effective wildlife passage structures.

Impacts to Maple Swamp and the *Gordonia* Forest

Page 3-31identifies the *Gordonia* forest within Maple Swamp as a state Significant Natural Heritage Area and as "an unusually extensive stand" of the species. This old-growth stand of *Gordonia* may have represented the largest stand in the state, and was likely the northernmost range of this community type. However, almost all the *Gordonia* has been clear cut. An interagency field meeting on July 10, 2007 verified the uniqueness and extraordinary value of the community type to the ecology of the area prior to the logging. Subsequent field inspections by USFWS and North Carolina Wildlife Resources Commission staff on August 4, 2009 and by project consultants on August 4-5, 2009 documented extensive clear cutting of the *Gordonia* forest, as well as most of the other forest lands within and adjacent to the project study area.

There is inconsistency within the DEIS and associated documents regarding how Maple Swamp is treated. Throughout the main document, reference is made to Maple Swamp forest as if it were still completely intact. However, the associated *Natural Resources Technical Report* (NRTR, dated November 2009) and the *Indirect and Cumulative Effects Technical Report* (ICETR, dated November 2009) both, at least in part, acknowledge some level of clear cutting within Maple Swamp. Since the DEIS was released in March 2010, this known information should have been included in the main document since it relates to much additional information, such as impact tables and mitigation options. Portions of the main document and some impact tables need to be revised to reflect current conditions.

Based on multiple field observations by USFWS staff, it appears that the hydrology of Maple Swamp has been significantly affected by the removal of the enormous amount of biomass during the logging operations. Reduced transpiration from the loss of so many trees may have led to a rise in the water table, as evidenced by deeper and more persistent standing water through the study area. Even after several days of no rain, culverts under Aydlett Road were observed to have high velocity discharge. A persistent higher water table would likely convert the former swamp forest into emergent or shrub-scrub wetlands. If Option B (road on fill material through Maple Swamp) is selected, it is unclear what ramifications occur with such altered hydrology.

Compensatory Mitigation

During the July 10, 2007 interagency field meeting and subsequent TEAC meetings, several state and federal natural resource agencies expressed their support to preserve the unique *Gordonia* forest within Maple Swamp as a form of compensatory wetland mitigation for unavoidable impacts. Recommendations were made for the NCTA to begin making efforts (possibly with the assistance of local land trusts or other environmental organizations) to preserve portions of Maple Swamp. To our knowledge, no such efforts were made. Now that the unique *Gordonia* ecosystem is largely gone, the value of preserving portions of Maple Swamp has somewhat diminished. However, given the fact that the community type has the ability, over great time, to regenerate through stump sprouting, we believe that preservation of portions of Maple Swamp is still worthwhile.

Page 3-47 and 3-48 of the DEIS generally discuss compensatory mitigation options. Page 4-9 of the NRTR addresses landlocked parcels within Maple Swamp that could be preserved as wetland mitigation credit. The NRTR acknowledges some clear cutting of Maple Swamp; however, the acreages listed in the NRTR are much understated based on current conditions. We still support the purchase of these landlocked parcels for wetland preservation credits. Since the logging operations have affected the landscape (e.g. rutting, log landings, compaction, and hydrology alteration), some wetland restoration or enhancement may be needed. Any such restoration or enhancement should be conducted so as to promote the growth or re-growth of the *Gordonia* community type.

Threatened and Endangered Species

There are several inconsistencies and/or errors in the DEIS and supporting documents in their treatment of threatened and endangered species. The paragraph in section 3.3.8 on page 3-52 is flawed and does not match with Table 3-13 on page 3-53 (and Table 17 on page 5-14 of NRTR). The table is flawed as well.

Table 3-13 (DEIS) and Table 17 (NRTR) states that habitat is present for the red-cockaded woodpecker (*Picoides borealis*). The DOI is not aware of any habitat for this species within the study area.

Page 5-18 of the NRTR states that green sea turtles (*Chelonia mydas*) "do not nest in North Carolina." In fact, green sea turtles do nest in North Carolina in small numbers, but not within the project study area. Though the probability is low, green sea turtles may be encountered within Currituck Sound.

Page 5-19 of the NRTR states "nesting is uncommon in North Carolina" for Kemp's ridley sea turtles (*Lepidochelys kempii*). In fact, the Kemp's ridley sea turtle does not nest in North Carolina. It appears that the document partially interchanged the descriptions for the green sea turtle and the Kemp's ridley sea turtle. Though unlikely, it is possible that a Kemp's ridley sea turtle could be encountered within Currituck Sound.

Table 3-13 (DEIS) and Table 17 (NRTR) states that there is no habitat present for the leatherback sea turtle (*Dermochelys coriacea*). The tables and the text on page 5-20 (NRTR) render a "No Effect" biological conclusion for this species. Although there is no nesting habitat present, using the same rationale as for the other sea turtle species, there is the possibility of encountering the leatherback sea turtle within Currituck Sound. Therefore, to be consistent, the biological conclusion should be "May Affect – Not Likely to Adversely Affect."

With regard to Section 7 consultation under the Endangered Species Act, sea turtles fall under the purview of the USFWS only during their beach nesting activity. While in the water, they fall under the purview of the National Marine Fisheries Service. Therefore, biological conclusions should be rendered separately for each scenario. With regard to beach nesting activities, we believe the project will have no effect on sea turtles.

Table 3-13 (DEIS) and Table 17 (NRTR) states that there is no habitat present for shortnose sturgeon (*Acipenser brevirostrum*), yet they render a biological conclusion of "May Affect – Not Likely to Adversely Affect." How could there be an effect if no habitat is present?

Table 3-13 (DEIS) and Table 17 (NRTR) states that there is habitat present for seabeach amaranth (*Amaranthus pumilus*), but the text on page 5-22 of the NRTR states that there is a "lack of suitable habitat". We believe that there is no habitat present for this species.

Waterfowl

The current and historical importance of Currituck Sound to wintering waterfowl is well-documented. Along the Atlantic coast, the marshes, other wetland habitats and shallow sound waters of North Carolina support 300,000-400,000 waterfowl annually during winter. Currituck Sound and Pamlico Sound provide the important habitat to support these large numbers of wintering waterfowl. Currituck National Wildlife Refuge (CNWR) is only a few miles away from the proposed Mid-Currituck Bridge and supports large numbers of wintering waterfowl. The proximity of the bridge to CNWR would have the potential to reduce or remove foraging areas used by wintering waterfowl to feed and rest. This would come from the direct loss of wetland habitats (e.g. marsh plants that provide seeds and plant material eaten by wintering waterfowl) and submerged aquatic plants (SAV) which are also fed upon by waterfowl.

Although section 3.3.3 of the DEIS and section 4.1.3.1 of the NRTR provide some information on the historical and current importance of Currituck Sound for waterfowl, there is essentially no evaluation of what the effects to waterfowl would be. Given the importance of Currituck Sound for wintering waterfowl, we find this to be a glaring omission. At a minimum, the following potential impacts should be addressed: direct habitat loss, temporary construction impacts to include short-term noise impacts to wintering waterfowl, long-term noise effects, and potential avoidance from visual disturbance. In addition, the statement on the top of page 3-39 "However, there have been substantial declines in waterfowl numbers since the 1980's" is mischaracterized. It should read "However, there have been substantial declines in waterfowl numbers since the 1980's because of loss of natural habitat and development in the Currituck Sound region".

Other Migratory Birds

The natural habitats of the Atlantic coast host countless numbers of migratory birds annually during migration periods. The arrangement of the system of barrier islands and natural marshes along the North Carolina coast make this region extremely attractive and conducive to migrating birds. The construction of a large and high bridge perpendicular to this Atlantic coast migration corridor will cause significant mortality from direct bird strikes on the bridge and collisions with vehicles on the bridge. Only alternative ER2 would avoid this hazard. Although section 4.1.2.1 of the NRTR provides minimal evaluation of the hazard of birds being killed by vehicles on the bridge, there is no analysis of mortality due to direct bird strikes on the bridge.

If an alternative is chosen to construct the Mid-Currituck Bridge, the bridge should be designed to discourage birds from perching on or underneath it. The William B. Umstead Bridge over Croatan Sound has proven to be an "attractive nuisance" situation for tens of thousands of purple martins (*Progne subis*) roosting on the cables, girders, and I-beams under the bridge. High levels of vehicle collision mortality have been documented from that bridge; therefore, a design which would similarly encourage such perching should be avoided.

Even at bridges which do not encourage similar perching, high levels of mortality from vehicles hitting flying birds have also been recorded for North Carolina's longest coastal area bridges (e.g. NC 12 Bonner Bridge over Oregon Inlet, new US 64 over Croatan Sound, US 64 over Alligator River). To discourage birds from flying low enough to be struck by a vehicle, visual obstructions along the sides of the bridge should be erected. This can take the form of fencing, higher bridge rails, poles, or decorative structures which encourage birds to fly higher. The Florida Department of Transportation erected poles along a bridge over Sebastian Inlet and documented an almost 64% decline in bird mortality. Similarly, a proposed coastal area bridge in California will be constructed with a high, decorative fence which has a high visual permeability for motorists but which will encourage birds to fly over the height of traffic (see attached Figures 1 and 2).

Floodplain Issues

Page 3-74 states "With respect to floodplain highway encroachment, it is the policy of the FHWA 'to avoid significant encroachments, where practicable.'". Page 3-75 states "MCB2/B and MCB4/B would involve a significant encroachment since they would be considered a significant alteration to a water course by Currituck County." Given the fact that other viable alternatives exist, and given the fact that the two Option B alternatives (road on fill through Maple Swamp) were developed well after the Option A alternatives (bridging Maple Swamp) were initially proposed at TEAC meetings, it appears that the FHWA would be obligated to select either an Option A alternative or to select a combination alternative previously described in this letter (both bridging Maple Swamp and removing existing Aydlett Road).

Page 3-72 states "Should MCB2/B or MCB4/B be selected for implementation, additional studies would be conducted during final design so adverse floodplain impacts…could be avoided or minimized, as well as affects on groundwater hydrology, hydrological characteristics of Maple Swamp, and supported ecological functions." Since according to Title 23 *Code of Federal*

Regulations Part 650, Subpart A, "Significant encroachment" includes "A significant adverse impact on natural and beneficial floodplain values", we believe that information derived from the aforementioned studies would be crucial prior to selecting an option for crossing Maple Swamp. Furthermore, since the existing Aydlett Road has already affected the non-tidal functions of the floodplain, it seems prudent to study the effects of an option which both removes Aydlett Road and bridges Maple Swamp, thus representing more natural conditions. This would likely support the combination option previously described (both bridging Maple Swamp and removing existing Aydlett Road).

Indirect and Cumulative Effects

The Department is concerned that the Mid-Currituck Bridge project will lead to increased development and infrastructure improvements in the currently roadless area of the Outer Banks north of the project area at Carova. Portions of the Currituck National Wildlife Refuge (CNWR) are immediately adjacent to Carova, and residents must currently drive on the beach through CNWR lands to access Carova. Currently, approximately 12% of the 3,200 platted lots at Carova have residential structures. If increased access to the northern Outer Banks increases the build out of Carova, our concern is that there will be public and political pressure to extend NC 12 northward from Corolla. Both the development and the road would hamper the management and the "wildlife first" mission of the CNWR.

Page xix and 4-23 of the ICETR states "For the non-road-accessible Outer Banks there would be no reasonably foreseeable change in the location, rate, or type of development with the implementation of the detailed study alternatives, in comparison to the No-Build Alternative." We are skeptical of this conclusion. Pages 4-24 through 4-27 lists some reasons for the conclusion reached in the ICETR. Section 4.2.4.1 indicates that the uniqueness of the Carova area provides people with a sense of remoteness and isolation. This section basically argues that since Carova serves a unique market of isolation seekers, making the community road accessible would be incompatible with the local mindset. At best, this is descriptive, not prescriptive of what new potential residents may want or may tolerate.

Section 4.2.4.2 lists several putative government restraints to extending NC 12 to Carova. This section argues that the Coastal Barrier Resources Act (CBRA) would act as a deterrent to extending NC 12. However, CBRA only makes properties ineligible for federal flood insurance and restricts the expenditure of federal money. CBRA does not prohibit development with private or local government or state government money.

The National Wildlife Refuge System Improvement Act of 1997 is also listed as a deterrent to extending NC 12. However, history has shown that this law has not deterred the North Carolina Department of Transportation (NCDOT) from attempting to improve or relocate roads through National Wildlife Refuges. Also, there is the potential that current CNWR lands which are traversed by beach drivers could be swapped for other parcels, thus removing the trigger for a compatibility determination.

An old resolution of the NCDOT Board of Transportation is argued as a deterrent to extending NC 12 to Carova. However, it is the prerogative of subsequent Boards of Transportation to change previous resolutions.

Section 4.2.4.3 lists substandard lot sizes as a deterrent to future development in Carova. However, current zoning laws could be amended in the future. Also, substandard lots could be combined to meet size requirements, thus still allowing for additional build out, albeit at a lesser rate.

Section 4.2.4.4 argues that increased development and road improvements in Carova are inconsistent with the Currituck County land use plan. However, county land use plans can and do change frequently and are influenced by public demand.

Therefore, the Department remains concerned that the Mid-Currituck Bridge may increase the residential build out of the roadless area at Carova, thereby stimulating public and political pressure for infrastructure improvements, including the extension of NC 12 northward. This would have adverse ramifications on the management of CNWR.

Miscellaneous Comments

Black bears (*Ursus americanus*) are a significant wildlife resource within the study area. The DEIS main document does not mention black bear, and the NRTR has only a cursory mention of the species. The DEIS should evaluate the effects to this keystone species, to include effects to home ranges, movements, and road aversion due to noise and disturbance. Both Option A and B for crossing Maple Swamp should be contrasted. Also, it should be noted that potential black bear/vehicle collisions are a significant human safety issue.

Section 3.3.7 on page 3-48 (DEIS) states "Impacts (fill, pilings, clearing) to CAMA wetlands (wetland freshwater marsh) would range from 0.1 acre to 3.9 acres." However, Table S-1 on page xviii (DEIS) and Table 3-11 on page 3-49 (DEIS) show a range of 0.0 to 2.2 acres for CAMA wetlands. Table 3-11 also lacks explanatory note number 3 to accompany the superscript number 3.

Page 4-9 of the NRTR states that 264 acres within nine landlocked parcels were clear cut. This number is greatly understated based on current conditions. Page 4-25 of the NRTR does acknowledge some logging south of Aydlett Road, but does not indicate the extent. Figures 5(b) and 5(c) indicate clear cutting north of Aydlett Road, but do not reflect several hundred acres cut south of Aydlett Road, including the *Gordonia* forest.

Table 3-3 on page 3-14 of the ICETR depicts 100+ acres, 850 acres and 81 acres of Maple Swamp being logged in the years 2009, 2008 and 2007, respectively. Again, the main document of the DEIS is not consistent with this acknowledgment. The stated source for these figures is Dan McCarthy, yet there is no explanation of who Dan McCarthy is. These numbers do not agree with Maple Swamp logging acreages given to the USFWS by Mr. Aaron Gay, Currituck County Ranger with the North Carolina Division of Forest Resources.

The first paragraph of section 4.2.4.1 on page 4-24 of the ICETR is confusing and inaccurate. The platted subdivisions of Carova are not "mixed with four nature preserves". They are adjacent to portions of the CNWR. There are six distinct units of the CNWR north of Corolla. The Back Bay National Refuge is located several miles north in Virginia. False Cape State Park lies immediately north of Carova in Virginia, but is not a national wildlife refuge as the text states. The Currituck Banks Estuarine Research Reserve lies several miles south of Carova, as does a parcel of land owned by The Nature Conservancy.

Summary

The Department appreciates the opportunity to review this project. Based on our review, we find that the DEIS has some errors and inadequacies in some areas. Of the five build alternatives, ER2 clearly has the least impacts to fish and wildlife resources and federal trust resources. However, it is understood that since ER2 would not generate tolls, it would be very unlikely that the NCTA would be able to construct ER2. Of the four remaining build alternatives, the Department prefers MCB4/C1. As to the Maple Swamp crossing option, we prefer both Maple Swamp be bridged and the existing Aydlett Road be removed.

If you have any questions regarding our response, please contact Pete Benjamin at (919) 856-4520, ext. 11. I can be reached at (404) 331-4524 or through email at gregory_hogue@ios.doi.gov.

Sincerely,

Gregory Hogue
Regional Environmental Officer

cc:
Jerry Ziewitz – FWS
Gary Jordan – FWS
OEPC - WASH

Attachment

Figure 1

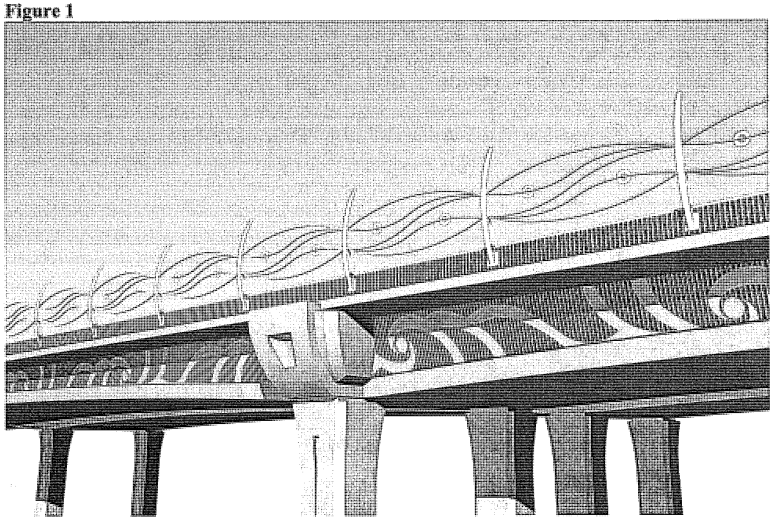
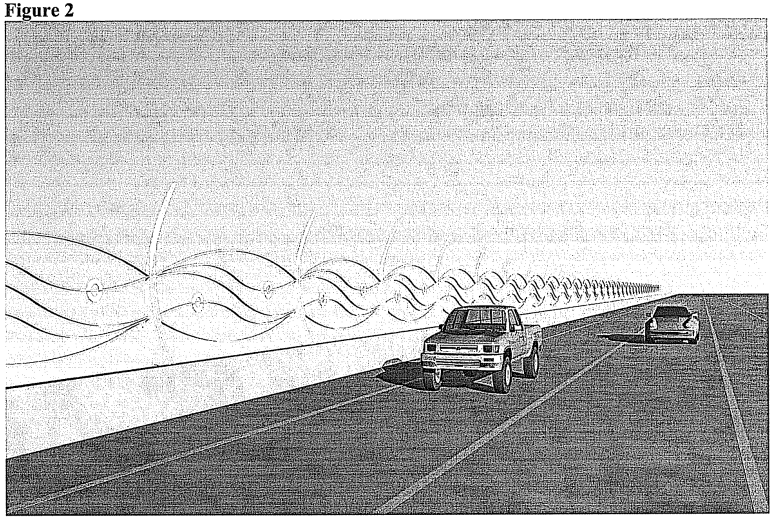


Figure 2



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
SAM NUNN
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ATLANTA GEORGIA 30303-8960

June 4, 2010

Ms. Jennifer Harris, P.E.
North Carolina Turnpike Authority
5400 Glenwood Avenue, Suite 400
Raleigh, North Carolina 27612

SUBJECT: Federal Draft Environmental Impact Statement for the Mid-Currituck Bridge Study, Currituck and Dare Counties, North Carolina; TIP Project No.: R-2576; FHW-E40830-NC; CEQ No.: 20100116

Dear Ms. Harris:

The U.S. Environmental Protection Agency Region 4 (EPA) has reviewed the subject document and is commenting in accordance with Section 309 of the Clean Air Act and Section 102(2)(C) of the National Environmental Policy Act (NEPA. The North Carolina Turnpike Authority (NCTA), a division of the North Carolina Department of Transportation (NCDOT), and the Federal Highway Administration (FHWA) are proposing to construct a new multi-lane, 7 to 7.5-mile bridge and access roads and interchanges across Currituck Sound between US 158 in Currituck County and NC 12 in Dare County. There are five alternatives being considered with two hurricane evacuation improvement options and two mainland bridge approach options. NCTA and FHWA also studied an 'improve existing' roadway alternative (i.e., ER2) at the request of numerous State and Federal agencies.

The NCTA and FHWA are utilizing the agency coordination process under SAFETEA-LU Section 6002. The new bridge alternatives are proposed as a toll facility. The existing roads alternative that was studied in the DEIS (i.e., ER2) is not currently funded. EPA provided detailed project scoping comments, conceptual alternatives refinement report comments, and statement of purpose and need and alternatives screening report comments to the NCTA in letters dated August 3, 2007, December 14, 2007, and May 5, 2008, respectively.

EPA's primary environmental concerns regarding the Clean Water Act remain unresolved. Detailed technical review comments are attached (See Attachment A).

EPA has rated the proposed bridge alternatives MCB2 and MCB4 as 'EO-2', Environmental Objections with additional information being requested for the final document (Attachment B includes EPA's Summary of Rating Definitions and Follow-up Action. EPA's review has identified: significant environmental impacts to jurisdictional waters of the U.S. that should be avoided in order to adequately protect the environment, potential degradation of water quality to Currituck Sound, severe impacts to fish and wildlife resources, and indirect and cumulative effects within the project study area. Further, we believe that the proposed action might cause significant environmental degradation under the Clean Water Act and Section 404(b)(1) Guidelines.

NCTA and FHWA need to further demonstrate that the environmental impacts to jurisdictional waters of the U.S. can be further avoided and minimized and potentially mitigated for and that water quality is not further degraded as a direct result of this project and its associated indirect and cumulative impacts. NCTA and FHWA should consider substantial changes to the recommended alternative or consideration of some other project alternative, including the improvement to existing roadway facilities. Alternative MCB2/C1/A might be environmentally acceptable provided that impacts from floodplain encroachment can be fully and appropriately addressed prior to the FEIS, all storm water from the new bridge can be collected and treated with minimal impacts to jurisdictional resources, construction does not involve any dredging, and all wetland impacts can be first avoided and minimized and that adequate compensatory mitigation is found. Compensatory mitigation should be 'in-kind' and within the same hydrologic cataloguing unit.

EPA also believes that Alternative ER2 is a reasonable and feasible alternative and its potential impacts can be addressed through additional avoidance and minimization measures. EPA believes that ER2 should be designated as the environmentally preferred alternative and meets the proposed project's purpose and need by providing the appropriate balance of impacts to the benefits and costs

Mr. Christopher Militscher of my staff will continue to work with you and FHWA and other agencies on the continued environmental coordination activities for this project. Please feel free to contact Mr. Militscher at (919) 856-4206 should you have specific questions concerning EPA's comments.

Sincerely,

Heinz J. Mueller, Chief
NEPA Program Office

cc: J. Sullivan, FHWA
K. Jolly, USACE
B. Wrenn, NCDENR
G. Thorpe, NCDOT

w/Attachments A and B

Attachment A
DEIS Detailed Review Comments
Mid-Currituck Bridge Study
Currituck and Dare Counties
R-2576

General Comments

The DEIS is presented in a revised format from the recommended format found at 40 CFR Section 1502.10. Page v of the DEIS Preface includes a statement concerning Chapter 3, the Affected Environment and Environmental Consequences and as well as the potential short- and long-term beneficial and adverse effects (if any) of the detailed study alternatives. EPA believes that this major Federal action that could involve the construction of a new bridge and other coastal infrastructure improvements in the cost range of $595.5 million $1,065.1 million will have potential short-term and long-term adverse effects on the natural and human environment. The average cost range of the new bridge alternatives and options appears to be approximately $750 to $800 million based upon the information on Page xxi of the DEIS.

EPA could not find a specific discussion in the DEIS concerning the long-term maintenance costs of a new 7 to 7.5-mile bridge facility over Currituck Sound. Major infrastructure along the Outer Banks and the coastal plain of North Carolina is periodically damaged by severe storms and hurricanes. Maintenance costs associated with the existing project study area roadways and bridges has been expressed by FHWA and NCDOT as a major concern for more than a decade. Shrinking transportation dollars and increased maintenance and repair costs for infrastructure in areas that are very vulnerable to severe weather conditions such as high winds and storm surges and salt air and water should be a very important consideration for decision-makers. NCDOT Division 1 officials have routinely expressed their concerns at other project meetings for maintaining existing roadways and bridges. .Adding more than 7 miles of new infrastructure in this area will further strain existing transportation resources.

Pages xii and xiii of the DEIS include other transportation projects proposed in the study area. EPA understood from the NCDOT project management that for R-2545 and R-2544, US 64 including the new bridge over the Alligator River, only the bridge is funded and the 20-miles of widening and new location sections between Columbia and Manteo are currently unfunded. Appendix A, Comments and Coordination does not include copies of specific agency letters following Turnpike Environmental Agency Coordination (TEAC) meetings.

Project Purpose and Need

The DEIS presents three primary project needs, including the need to improve traffic flow in the study area roadways such as US 158 and NC 12, the need to reduce travel time for persons traveling between the Outer Banks and Currituck County mainland, and the need to substantially reduce evacuation times from the Outer Banks. EPA has previously commented on some of the project purpose and need issues during scoping and the Turnpike Environmental Agency Coordination (TEAC) process. EPA continues to have substantial environmental concerns regarding the documented need for a new crossing of Currituck Sound and the detailed study alternatives (DSAs) presented in the DEIS that include a new bridge. The traffic flow and travel time benefits from a new bridge crossing do not in the long-term outweigh the direct adverse effects to the natural environment, including wildlife, coastal wetlands, and water quality. Table 2-3 of the DEIS attempts to capture some of the travel benefits of the detailed study alternatives of ER2, MCB2 and MCB4 compared to the No-build. In addition, this table also tries to capture the 2035 Hurricane Evacuation Benefit in clearance times between the alternatives.

EPA does not believe that there have been any documented hurricane evacuation problems in this area of the Outer Banks in modern times using the existing roadway system. EPA understands the State's desired goal of reducing hurricane evacuation clearance times to the 18-hour goal. Planning and designing a roadway system based upon this desired goal should be a consideration but not a finite decision point in the preferred alternative selection process. There are other areas of the Outer Banks that potentially cannot meet this 18-hour goal even if a new bridge is constructed over Currituck Sound. EPA in its review of the September 2005 North Carolina Department of Transportation State Hurricane Evacuation Study found only two Category 3 hurricanes in 'modern times' (post 1930) that directly hit the Outer Banks. On September 16, 1933, Hurricane #13 hit the Outer Banks and there were reportedly 21 died, many of whom died from inland flooding. On September 1, 1993, Hurricane Emily resulted in 160,000 persons being evacuated. Two surfers reportedly died from drowning after they apparently refused to evacuate the island.

Other reduced strength hurricanes have historically either brushed near the Outer Banks or made landfall further south in North Carolina and traveled north up the coastal plain towards Virginia. Some of these lesser strength hurricanes caused extensive flooding and storm surge damage along the Outer Banks and in inland areas (e.g. Category 2 Hurricane Isabel on September 18, 2003; only 45% reportedly evacuated from the Outer Banks). Considering that most documented fatalities during hurricanes involve drowning in flooded low-lying areas, transportation agencies should consider other planning initiatives as evacuated persons from the Outer Banks move inland. Many of the evacuation routes in the coastal plain traverse low-lying areas, rivers and streams. During one NCDOT presentation on hurricane evacuation in 2008, NCDOT used hurricane evacuation pictures from Texas (i.e., Hurricane Rita) as the documentation for traffic congestion problems. The September 2005 NCDOT State Hurricane Evacuation Study contains no photographs or other direct evidence of past evacuation problems in North Carolina. EPA does agree that reducing hurricane evacuation clearance times in general is a desirable goal and should be reasonably weighed against other costs, benefits and adverse environmental effects. Local planning and early warning appear to be important components to effective hurricane evacuation, including the consideration of minimizing new development along isolated and remote areas of barrier islands.

The DEIS includes information on the funding of the project and estimated costs on pages xxi and xxii. According to this section, only the toll, new bridge alternatives have a potential to be funded. DSA ER2 cannot be funded through toll revenues or the Public Private Partnership agreement. Furthermore, the $15 million per year provided by the N.C. General Assembly cannot be applied to DSA ER2 per the DEIS, only DSAs MCB2 and MCB4. The

DEIS does not indicate if the N.C. Board of Transportation considers R-2576, Mid-Currituck Bridge Study project to be a priority project under its current priority plans and what funding could be made available for DSA ER2 if it is selected as the preferred alternative. NCTA officials have stated during TEAC meetings that ER2 is not a 'feasible' alternative as it cannot be funded as a toll project.

Detailed Study Alternatives and Options

The DEIS includes DSAs ER2, MCB2 and MCB4 with the following options: MCB2/C1, MCB2/C2, MCB4/C1 and MCB4/C2. Option C1 includes a northern connection and interchange on the barrier island side of Currituck County and Option C2 includes a southern, longer connection and interchange near Albacore Street. Option C2 is actually a 7.5-mile bridge. The DEIS also states that the bridge over Currituck Sound for C1 Option is approximately 7.0 miles in length ((Page 2-10). From past TEAC meetings, there was reference to the new bridge being approximately 5 to 7 miles long. MCB2 provides greater improvements to local roadways and MCB4 provides more limited improvements. The specific improvements under each DSA are included in Section 2 of the DEIS. The A and B designation refers to the mainland approach road options of the new bridge.

EPA recognizes that MCB2 includes the existing road improvements similar to ER2, but the information contained on page xxi of the DEIS is confusing. For example, the range of cost difference between ER2 and MCB2/B/C1 is $416.1 to $523.4 million vs. $800.1 to $970.2 million, respectively. The DEIS does not specifically state the cost of a 7-mile or 7.5-mile bridge. The range of costs for a new bridge might be from $384.0 to $446.8 million. Similarly, the other MCB2 alternatives would indicate that a new 7-mile bridge over Currituck Sound would cost approximately $400 to $500 million dollars. These figures do not correlate well with the information contained in Table 2-4 where the costs are broken down for each DSA. Construction costs for the bridge alternatives under Option A range from $619.3 to $845.7 million, and construction costs for bridge alternatives under Option B range between $513.4 and $726.3 million. These figures exclude mitigation, right of way and utility costs. There is great variability in the actual bridge costs as presented in the DEIS and it is unclear as to the cost differences between Option C1 which is approximately 7.0 miles in length and Option C2 which is 7.5 miles in length. Therefore, EPA requests that the FEIS include clarification as to the actual costs of a new bridge.

Option B would not include a toll plaza at the US 158 interchange and the bridge approach would be placed on fill within Maple Swamp. Option A would place a toll plaza within the US 158 interchange. The mainland approach road would include a bridge over Maple Swamp. Similarly to Options C1 and C2, the costs between these two options are not clearly identified in the DEIS. It is also unclear if the costs for the longer bridge over Maple Swamp under Option A are added to the C1 and C2 lengths.

The DEIS indicates that the new Mid-Currituck Bridge would be a two-lane facility and discusses some of the travel and other considerations on Page 2-17. The difference between a two-lane facility and four-lane facility is estimated at approximately $120 million. The cost estimation details are not included in the DEIS. Superstructure supports, materials, and construction costs would be expected to be proportionally greater with a four-lane facility. Detailed cost assumptions and estimations should be included in the FEIS.

Human and Natural Environmental Impacts

The DEIS includes a comparison of key impacts in Table S-1 and in other sections of the document. Some of these impact assumptions and categories are not meaningful or have not been shown to be a relevant issue for the comparison of alternatives. For example, outdoor advertising signs are listed as a key impact with 29 signs for ER2 and 6 or 16 signs for the MCB2 or MCB4 alternatives and the respective options. FHWA and NCDOT routinely relocate outdoor advertizing signs for widening and new location projects. The relocation of gravesites is also highlighted as a major difference between the alternatives and a key impact. The relevance of this 'key impact' is not identified in the DEIS.

The residential relocations between the alternatives are generally similar and range between 5 and 8 with 10 vacation rental units. Business relocations are also generally in the same magnitude of impact with between 5 and 8. The summary table also includes impacts with no third outbound lane for hurricane evacuation. The impacts range from 2 to 6 by not including this third lane. The DEIS includes discussions with access changes to neighborhoods and businesses. The access changes appear to be a reasonable expectation considering the scope and magnitude of the proposed improvements.

Total wetland impacts are 7.2 acres, 40.3 acres, 44.9 acres, 42.4 acres, 47.0 acres, 36.6 acres, 41.1 acres, 38.7 acres, and 43.2 acres for Alternatives ER2, MCB2/C1/A, MCB2/C1/B, MCB2/C2/A, MCB2/C2/B, MCB4/C1/A, MCB4/C1/B, MCB4/C2/A and MCB4/C2/B, respectively. The bridge alternatives also have the highest impacts to SAVs with 18.8 acres for MCB2/C1, 23.3 acres for MCB2/C2, 18.8 acres for MCB4/C1 and 23.3 acres for MCB4/C2. Based on the magnitude difference in wetland and other water resource impacts, EPA believes that ER2 is the environmental preferred alternative and appears to be the Clean Water Act Section 404 Least Environmentally Damaging Practicable Alternative (LEDPA).

The impacts to water quality are expected to be very significant. The DEIS does not fully address the fact that water quality in Currituck Sound has declined substantially in the last several decades due to primarily an increase in turbidity and nutrient loading from non-point source runoff. Nursery areas for Blueback herring and Alewife have not been recognized since the 1980's. Coastal marshes around Currituck Sound waters have been lost to erosion or invaded with exotic plant and animal species. In addition to development, other human activities such as agricultural and silviculture have potentially impacted overall water quality in the sound and caused subsequent decline in ecosystem and habitat function. Section 3.3.4.1 addresses aquatic wildlife in Currituck Sound and Section 3.3.4.2 discusses Submerged Aquatic Vegetation (SAV). For purposes of differentiating the impacts between the alternatives, Section 3.3.4.3 is inadequate for fully addressing the magnitude of impacts to water habitat. In addition to the direct loss of SAVs and shading effects, the new bridge pilings would also potentially allow for the introduction of other organisms not typically found in a shallow water estuary. The DEIS states that: "On the other hand, organisms could be attracted to bridge pilings as a reef structure". In the appropriate ecosystem, reef structures can aid and provide potential habitat.

The DEIS does not reference appropriate studies or supporting documentation that bridge pilings would be beneficial to the Currituck Sound ecosystem. Considering the loss of essential fish habitat and other natural functions from past and current human activities, EPA considers additional losses to SAVs to be a critical issue. EPA does not consider runoff from construction, including increased turbidity, siltation and sedimentation in aquatic habitat areas to be a 'minimal' effect. The discussion concerning the impacts from the bridge construction alternatives versus the existing roadway improvements does not provide the public and resource and permitting agencies a reasonable comparison of impacts to aquatic habitat. Shading is expected to impact 14.5 to 17.8 acres of aquatic bottom. Bridge foundations are expected to directly impact 4.3 to 5.5 acres of SAVs. Contrary to the italicized comment at Section 3.3.4, construction impacts may not be temporary but could become permanent considering the existing water quality problems in Currituck Sound.

Section 3.3.4.4 of the DEIS provides more relevant information concerning the potential impacts from noise, turbidity and siltation. The DEIS acknowledges that non-mobile species such as clams could suffer long-term impacts from construction related siltation. However, the DEIS does not adequately assess the issue of recovering populations of benthic organisms after construction is completed or what practicable measures that NCTA would take to minimize turbidity generated during bridge construction. Potential construction techniques of the bridge are discussed in Section 2.4. EPA believes that only the 'top-down' method of construction would be acceptable. Dredging between 53,000 cubic yards and 61,000 cubic yards based upon other proposed methods described in Section 2.4 would not be environmentally-sound. Furthermore, the DEIS does not describe the proposed site suitability and location of dredged spoils. The DEIS does not specifically reference if the potential impacts of 25 or 17 acres to aquatic bottom are included in summary tables. Also, the discussion concerning the approximate 4 acres of impact from the dock construction is not explained fully in reference to the summary impact table.

NCTA and FHWA propose to build the bridge simultaneously from both sides using both US 158 and NC 12 with construction meeting in the middle. Moving large construction equipment and materials via NC 12 would potentially be very disruptive to local residents and have a substantial impact to local traffic. This issue is not discussed in the DEIS.

Alternatives MCB2 and MCB4 involve the construction of the new bridge across Currituck Sound and will traverse Maple Swamp on the mainland side. Maple Swamp is designated as a Significant Natural Heritage Area (SNHA). Option A would involve the bridging of Maple Swamp. Option B would involve filling the wetlands of Maple Swamp. EPA recommends bridging this entire high quality system.

The DEIS addresses different stormwater treatment options from the deck drains for the bridge alternatives. EPA believes that a full collection and treatment system is needed for any of the bridge alternatives. Untreated roadway runoff into Currituck Sound will further degrade this resource that is already stressed from human activities, including residential and commercial development. Bridge drainage options are specifically discussed on Pages 2-25 to 2-27 of the DEIS. EPA strongly recommends Option 1 of the three options identified for collecting and treating bridge drainage. A direct discharge of bridge stormwater through deck drains into Currituck Sound is not environmentally sound and will continue to accelerate water quality degradation problems.

The discussion concerning invasive species control at Section 3.3.5 is not adequate. The FEIS should cite examples of past successes using NCDOT's Best Management Practices (BMPs) for management of invasive plant species in coastal areas. To EPA's knowledge, there are few or no long-term and cost-effective successes to controlling invasive plants such as Phragmites once they become introduced or established through disruptive activities such as construction. NCDOT's BMPs on such coastal wetland mitigation sites such as Mashoes Road for controlling Phragmites have been very costly and in the long-term ineffective in eliminating this damaging species.

The DEIS very generally discusses borrow site material needed for fill. The DEIS does not address the specific locations of any proposed borrow sites or any impacts associated with these potential locations. For purposes of assessing the potential indirect impacts from borrow sites needed for the proposed project alternatives, the DEIS does not provide adequate details and defers to the final design stages; additional information should be provided in the FEIS.

The DEIS includes consideration for on-site wetlands mitigation by removal of Aydlett Road. However, this compensatory mitigation of potentially 9.1 acres is only being offered for the bridge alternatives that would fill existing Maple Swamp. From direct field observations, there are extensive invasive plant species immediately adjacent to Aydlett Road. The management and control of invasive plant species would need to be thoroughly addressed should this mitigation be pursued at a future date. Compensatory mitigation is also addressed on Pages 3-46 and 3-48 of the DEIS. A conceptual mitigation plan is not included in the DEIS, and should be included in the FEIS.

Floodplain Issues

The DEIS includes statements that the new highway will involve significant encroachment in floodplain areas but it also states that with respect to floodplain highway encroachment, it is the policy of the FHWA to avoid significant encroachment since they would be considered a significant alteration to a water course by Currituck County (Pages 3-74 and 3-75). Page 3-72 states that "should MCB2/B or MCB4B be selected for implementation, additional studies would be conducted during the final design so adverse floodplain impacts....could be avoided or minimized, as well as affects to groundwater hydrology, hydrological characteristics of Maple Swamp, and supported ecological functions". EPA believes that these studies should be completed prior to the issuance of a FEIS. Furthermore, Option A (i.e., Bridging Maple Swamp) should be considered in combination with the removal of Aydlett Road. The floodplain impact is estimated at 22.1 acres on the mainland (Page 3-72). For alternatives MCB2/A and MCB4/A, the impact to the 100-year floodplain would be a total of 10.4 acres. Reference to a project commitment is also made on Page 3-74 with the mitigation measures determination following final design. The DEIS does not provide any suggestion of how these significant floodplain encroachment impacts can be minimized. Considering severe storms and storm surge, the past history of flooding, the accelerated development in the project study area and increases in impervious surfaces, and the potential for sea level rise, any

floodplain encroachment will significantly increase flooding events. EPA does not concur with the statement concerning floodplain impacts for MCB2/A and MCB4/A on Page xxiii.

Sea Level Rise

The DEIS includes a discussion of sea level rise in Section 3.4.4 and defers decisions on road and bridge elevations needed to accommodate potential sea level rise to final design. Raising the grade of the roadways to accommodate sea level rise estimates will increase fill heights and create additional impacts to jurisdictional water resources. EPA does not agree that a Mid-Currituck Bridge would be a useful asset in reducing the impact of sea level rise on the project's area road system. Conversely, bridge alternatives are expected to increase floodplain encroachment with no minimization measures being proposed. Sea level rise will only exacerbate flooding and storm surge issues. The statement that a Mid-Currituck Bridge could 'stay in service up to 75 years', is not reasonable nor is there a reference to other similar bridge structures in the coastal plain that have lasted that period of time without significant repairs or replacement. EPA does not concur with the suggestion that a breach in the island at the Currituck/Dare County line could be addressed through a new bridge and the conclusions of this section of the DEIS do not appear to be adequately supported by the documentation.

Fish and Wildlife Impacts

EPA defers specifically to the U.S. Fish and Wildlife Service, N.C. Wildlife Resources Commission and other resource agencies concerning the potentially significant impacts to fish and wildlife. EPA concurs fully with the comments contained in the May 25, 2010, letter from the U.S. Department of Interior to NCTA and the May 21, 2010, memorandum from the N.C. Wildlife Resources Commission to Ms. Melba McGee, NCDENR. Only alternative ER2 does not represent a significant impact to fish and wildlife resources, including aquatic organisms and fish, migratory birds, and terrestrial species. The discussion contained in the summary impacts table is not a reasonable representation of the differences in the impacts between the alternatives. The bridge alternatives represent a major or severe impact to wildlife species, including direct impacts from habitat loss, habitat fragmentation and indirect and cumulative effects. Inaccuracies concerning endangered and threatened species should be addressed in the FEIS.

Farmland Impacts

The DEIS describes the potential impacts to farmlands in Section 3.1.12. The discussion is not based upon an actual full analysis and determination of prime, unique and State and locally important farmlands under Title 7 Code of Federal Regulations (CFR) Part 658 but on soil types. The assessment did not include completed Form AD-1006 or Form NRCS-CPA-106. MCB2/A and MCB4/A would affect approximately 37 acres of prime farmland soils and 72 acres of State and locally important farmland soils. MCB2/B and MCB4/B would impact approximately 76 acres of prime farmland soils and 41 acres of State and locally important farmland soils. The DEIS does not provide a relevant discussion of North Carolina's initiatives in protecting farmlands from continued losses to development. The DEIS does not address if Currituck County is participating in the Voluntary Agricultural District (VAD) program. The DEIS does not indicate if these potential farmland losses will impact the specific operations of current agriculture and what economic impact that may result. The DEIS on Page 3-19 does reference another 2009 report that includes a copy of the Farmland Conversion Impact Rating form CPA-106. Table S-1 Comparison of Key Impacts does not include any specific farmland impact category. Continued farmland losses in North Carolina is an important socio-economic issue and the DEIS attempts to categorize the potential loss from this proposed project as being inconsequential (e.g., "....this is less than 0.01 percent of all farmland soils in Currituck County".).

Indirect and Cumulative Impacts

EPA has previously expressed concerns for the indirect and cumulative impacts from the proposed bridge alternatives. The DEIS discusses indirect and cumulative effects in Section 3.6. EPA continues to have environmental concerns for the proposed project bridge alternatives. The statement contained in summary impact table on Page xx includes the desire by Currituck County that the bridge alternatives are desired because the potential development at the bridge's interchange and along US 158. There are significant wetland areas and other low-lying floodplain areas where this development is desired. Referencing Page 3-88 of the DEIS, EPA does not concur with the statement concerning the type and density of development compared to the 'No-build alternative' and the bridge alternatives. 'The lack of transportation improvements and its constraint on development' statement included on Page 3-89 is not accurate or supported by actual development facts. This area has been developing at an accelerated pace until the major economic down turn in 2009. This has been occurring for more than a decade and without any transportation improvements and with some seasonal congestion. EPA does not agree with the assessment of potential development in the Carova area. The FEIS should address these issues further.

SUMMARY OF RATING DEFINITIONS AND FOLLOW UP ACTION*

Environmental Impact of the Action

LO-Lack of Objections
The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC-Environmental Concerns
The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impacts. EPA would like to work with the lead agency to reduce these impacts.

EO-Environmental Objections
The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU-Environmentally Unsatisfactory
The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS sate, this proposal will be recommended for referral to the CEQ.

Adequacy of the Impact Statement

Category 1-Adequate
The EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alterative and those of the alternatives reasonably available to the project or action. No further analysis or data collecting is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2-Insufficient Information
The draft EIS does not contain sufficient information for the EPA to fully assess the environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3-Inadequate
EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640 Policy and Procedures for the Review of the Federal Actions Impacting the Environment

North Carolina
Department of Administration

Beverly Eaves Perdue, Governor — Moses Carey, Jr., Secretary

June 10, 2010

Ms. Jennifer Harris
N.C. Turnpike Authority
1578 Mail Service Center
Raleigh, NC 27611

Re: SCH File # 10-E-4220-0361; DEIS; Transportation improvements to the Currituck Sound area by building a bridge across Currituck Sound from the mainland to the Outer Banks and improvements to existing roads. View document at http://www.ncturnpike.org/projects/Mid_Currituck

Dear Ms. Harris:

The above referenced environmental impact information has been submitted to the State Clearinghouse under the provisions of the National Environmental Policy Act. According to G.S. 113A-10, when a state agency is required to prepare an environmental document under the provisions of federal law, the environmental document meets the provisions of the State Environmental Policy Act. Attached to this letter for your consideration are the comments made by agencies in the course of this review.

If any further environmental review documents are prepared for this project, they should be forwarded to this office for intergovernmental review.

Should you have any questions, please do not hesitate to call.

Sincerely,

Chrys Baggett (576)

Ms. Chrys Baggett
State Environmental Review Clearinghouse

Attachments

cc: Region R

Mailing Address:
1301 Mail Service Center
Raleigh, NC 27699-1301

Telephone: (919)807-2425
Fax (919)733-9571
State Courier #51-01-00
e-mail state.clearinghouse@doa.nc.gov

Location Address:
116 West Jones Street
Raleigh, North Carolina

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Steven W. Troxler
Commissioner

North Carolina Department of Agriculture
and Consumer Services
Agricultural Services

Vernon Cox
Environmental Programs
Specialist

Ms. Valerie McMillan
State Clearinghouse
N.C. Department of Administration
1301 Mail Service Center
Raleigh, North Carolina 27699-1301

MAY 2010
RECEIVED
DOA

April 27, 2010

State #: 10-E-4220-0361
RE: Mid-Currituck Bridge Study

Dear Ms McMillan:

Thank you for the opportunity to comment on the Mid-Currituck Bridge Study in Currituck and Dare Counties. The Environmental Assessment indicates that the proposed project will contribute to the ongoing loss of prime farm and forest land in our State. Farm and forest lands are important for both economic and environmental reasons. Appropriately managed agricultural lands can provide groundwater recharge, wastewater filtration, flood prevention, and wildlife habitat protection. Agricultural land enhances the quality of life for citizens within a community by offering scenic landscapes, open space, and a variety of outdoor recreational activities. In addition, loss of productive farmland has the potential for irreversible damage to the agricultural sector of our economy. Agricultural production incomes from locally grown products have a considerable multiplier effect. It is estimated that for every 40 acres converted from agricultural production, one agribusiness job and its associated economic activity is lost indefinitely.

In addition to direct impacts associated with this project, it is anticipated that additional acreage loss will occur due to development that would likely take place once the proposed modifications are installed. Overall, farmland consumes fewer services relative to the taxes generated, compared to other types of development. Careful review of activities that result in loss of farm and forest land is warranted when consideration is given for the loss of environmental amenities, the loss of local tax revenue, the value of agricultural products no longer produced, and the decrease of agribusiness jobs associated with the loss of the land.

Based on the secondary, cumulative, and direct impacts, this project will adversely impact the agricultural, environmental and economic resources in the proposed area. The total negative impact on the environment and agribusiness economy will be proportionately related to the total acres of farm and forest land taken out of production. Increased division of land units and its reduced accessibility for agricultural production will also increase the negative impact on agriculture. Due to these adverse impacts, additional consideration should be given to alternative routes and/or designs that would reduce the loss of farm and forest lands.

Respectfully,

Vernon Cox
Environmental Programs Specialist

E-mail: vernon.cox@ncagr.gov
1001 Mail Service Center, Raleigh, North Carolina, 27699-1001 (919) 733-7125 • Fax (919) 716-0105
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North Carolina Department of Cultural Resources

State Historic Preservation Office

Peter B. Sandbeck, Administrator

Beverly Eaves Perdue, Governor
Linda A. Carlisle, Secretary
Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

APR 2010 RECEIVED Secretary's Office DOA

April 16, 2010

Jennifer Harris
NC Turnpike Authority
1578 Mail Service Center
Raleigh, NC 27699-1418

RE: Draft EIS for Mid-Currituck Bridge Study, R-2576, Currituck and Dare Counties, CH94-0800

Dear Ms. Harris:

We have received the above referenced document from the State Clearinghouse and offer the following comments.

The Draft Environmental Impact Statement correctly identifies the historic properties within the undertaking's Area of Potential Effects as well as the effects the undertaking will have on them. It also commits to additional archaeological survey and testing once a preferred alternative has been selected.

We would like to note the potentially confusing use of the term "historic properties" on page 3-19 and on the following pages discussing cultural resources. The two architectural surveys identified 36 properties that are older than 50 years and may have some significance. However, only 14 of these properties were found to be listed in or eligible for listing in the National Register of Historic Places. Only these 14 properties should be termed "historic properties," subject to Section 106. Making the distinction between the two types of properties (simply old versus historic) will help to avoid any confusion on the part of the reader/public.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,

Renee Gledhill-Earley

for Peter Sandbeck

cc: Mary Pope Furr, NCDOT

Location: 109 East Jones Street, Raleigh NC 27601 **Mailing Address:** 4617 Mail Service Center, Raleigh NC 27699-4617 **Telephone/Fax:** (919) 807-6570/807-6599

B-23

NCDENR

North Carolina Department of Environment and Natural Resources

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

MEMEMORANDUM

JUN 2010 RECEIVED Secretary's Office DOA

TO: Valerie McMillan
State Clearinghouse

FROM: Melba McGee
Environmental Review

RE: 10-0361 Draft Environmental Impact Statement (DEIS) for the Proposed Mid-Currituck Bridge, Currituck County

DATE: June 9, 2010

The Department of Environment and Natural Resources has reviewed the Department of Transportation's proposal to build a bridge across Currituck Sound in Currituck County. The purpose of this proposal is to link the Currituck County Outer Banks with the mainland, reduce travel time from the mainland to the Outer Banks and reduce coastal evacuation times.

This project has a long history and is complex in nature. Based on the current data provided for review, there continues to be a number of weaknesses and information voids in the DEIS that will need to be addressed in order for our agencies to complete their review. Although the attached comments clearly reflect a number of deficiencies with the DEIS, our primary interest at this time is to continue to communicate and work closely with the Department of Transportation. The department feels additional efforts are needed in order to resolve the issues raised and encourages the Department of Transportation to continue to assemble the requested information and coordinate with our review agencies. Providing adequate information that addresses agency concerns during the NEPA Merger Process will help prevent delays during the department's review of the FEIS.

Thank you for the opportunity to respond.

Attachments

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NCDENR

North Carolina Department of Environment and Natural Resources
Division of Coastal Management

Beverly Eaves Perdue
Governor

James H. Gregson
Director

Dee Freeman
Secretary

June 4, 2010

JUN 2010 RECEIVED Secretary's Office DOA

Melba McGee
Environmental Coordinator
N.C. Department of Environment and Natural Resources
1601 Mail Service Center
Raleigh, NC 27699-1601

RE: SCH NO. 10-0361, Draft Environmental Impact Assessment, Mid-Currituck Bridge Study, STIP. No. R-2576, Currituck and Dare Counties.

Dear Ms. McGee:

The N.C. Division of Coastal Management (DCM) appreciates the opportunity to comment on the Draft Environmental Impact Assessment (DEIS) for the above referenced project.

A formal DCM review of the project to determine consistency with the state's Coastal Management Program will not occur until a Coastal Area Management Act (CAMA) major permit application is received. At that time, the CAMA major permit application will be circulated to the network of state agencies that comprise North Carolina's Coastal Management Program. The statutes, rules and policies of each of these agencies must be considered during the review of the CAMA major permit application. This process will also include a consistency review by the DCM District Planner of the CAMA land use plans in effect at the time of the permit application. Please see the attached memorandum written by the DCM District Planner Charlan Owens dated 6/4/10 for more information.

During the CAMA major permit application review process, DCM may have additional comments after examining the more detailed environmental information that will be provided with the permit application. DCM may also place conditions on any CAMA permit that is issued to avoid, minimize and/or mitigate environmental impacts. The comments provided in this letter shall not preclude DCM from requesting additional information throughout the CAMA major permit application review process, and following normal permitting procedures. Furthermore, nothing in this letter shall be interpreted as providing an opinion on the ultimate outcome of any CAMA permit decision.

General Project Issues

DCM has identified the following general project issues as defined by the Section 6002 Coordination Plan for the Mid-Currituck Bridge Project STIP Project R-2576. Please note that in the future DCM could identify these following issues as issues of concern as defined by the Section 6002 Coordination Plan for the Mid-Currituck Bridge Project STIP Project R-2576 if they are not satisfactorily addressed during the environmental review process.

- Stormwater Management
- Permanent and temporary impacts to sub-aquatic vegetation and habitat and associated compensatory mitigation
- Permanent and temporary impacts to CAMA Coastal Wetlands and associated compensatory mitigation
- Construction methodologies and associated permanent and temporary impacts to CAMA Areas of Environmental Concern (AEC's)
- CAMA Land Use Plan conformity
- Impacts of sea level rise

Specific Comments on the DEIS

1. Page xii, What other transportation projects are proposed in the project area. Please note that the NCDOT five-year plan does include funding for the replacement bridge over the Alligator River, which is part of TIP No. R-2544 and TIP No. R-2545.
2. Pages xxii, What state and federal regulatory requirements must be considered when comparing the alternatives. This section does not appear to include requirements of the N.C. Coastal Area Management Act, State Dredge and Fill Law, federal Coastal Zone Management Act, N.C. Sedimentation Pollution Control Act and stormwater management rules of the Environmental Management Commission.
3. Page xxvii, project commitment #5; page 2-38, Explain how each alternative will be built; page 3-42, Impacts from Noise, Turbidity, and Siltation; and page 3-76, Construction Impacts. It is important to provide information about construction methods that may have substantial impacts to the natural environment prior to the selection of a preferred alternative. Waiting until the permitting process to select final construction methods could result in denial of a permit or a substantial delay in issuing a permit. In particular, DCM has serious concerns about dredging in Currituck Sound.
4. Page xxvii, project commitment #6; and page 3-65, How would potential accelerated sea level rise resulting from climate change affect long-term use of the detailed study alternatives? The design of road and bridge elevations to accommodate potential sea level rise, in addition to current storm surge and flooding elevations, may have substantial impacts to the natural environment, and it is therefore important to provide this information prior to the selection of the preferred alternative.
5. Page 1-4, What needs is the project trying to meet. Due to the large size of the study area, multiple origins and destinations along the full travel corridor should be assessed and averaged for a more representative average estimate of travel time savings.

6. Page 2-10, MCB2 and MCB4 Corridor Alternatives and Design Options; and page 3-47, Avoidance and Minimization. Please specify how the restoration would be conducted with Option B whereby Aydlett Road would be removed and its right-of-way restored as a wetland. Please include any problems that may be encountered with wetland restoration due to the floodplain impacts that are anticipated with Option B.
7. Page 2-13, Figure 2-8. Ten-foot paved shoulders are depicted on both sides of the bridge. Please consider reducing impervious surface by constructing a ten-foot paved shoulder on one side of the bridge only.
8. Page 2-17, How many lanes would a Mid-Currituck Bridge include, and how tall would the bridge be. The NCTA will also need to demonstrate compliance with 15A NCAC 07H .0208(a)(2)(H): "Development shall not impede navigation or create undue interference with access to, or use of, public trust areas or estuarine waters."
9. Page 2-24, NC 12 Drainage; and page 3-29, Impacts to Water Quality. Please provide more information about the outfalls to Currituck Sound that would be associated with the infiltration strategies for NC 12, including size, number and location.
10. Page 2-25, Bridge Drainage; and page 3-50, Essential Fish Habitat. Please provide a discussion of the NCDOT report prepared in accordance with Session Law 2008-107, Section 25.18, Stormwater Runoff from Bridges. Please coordinate with the N.C. Division of Water Quality (DWQ) and the N.C. Department of Transportation (NCDOT) Hydraulics Unit to incorporate results of that report into the stormwater design for the bridges on this project.
11. Page 3-28, Classifications of Water Resources. The waters of Currituck Sound and the Atlantic Intracoastal Waterway are classified as Joint Waters and the waters of Jean Guite Creek are classified as an Inland Waters Primary Nursery Area. Therefore, please coordinate with both the N.C. Division of Marine Fisheries and the N.C. Wildlife Resources Commission to determine dates for any fisheries moratoriums.
12. Page 3-31, Natural Heritage Areas. The statement that the bridge corridor was placed so that there would be no permanent loss or alteration of the unique loblolly bay forest found within the swamp may not be accurate for all of the detailed study alternatives. For example, the hydrologic impacts anticipated with Option B could cause the loss or alteration of portions of the unique loblolly bay forest.
13. Page 3-32, Impacts to Biotic Communities. Please note that if temporary impacts do not recover pre-project conditions then they may need to be reclassified as permanent impacts with accompanying compensatory mitigation to be provided.
14. Page 3-33, Table 3-5. Please ensure that the estimates for impacts due to piling and shading are correct in both the text and the table. For example, according to the text on page 3-41, bridge foundations would affect 4.3 to 5.5 acres of SAV. However, according to Table 3-5 the pilings would affect 0.0 acres of SAV. Table 3-5 also states that there will be no piling impacts to CAMA Wetlands for any of the alternatives.
15. Pages 3-33 to 3-37, Tables 3-5, 3-6, 3-7 and 3-8 with accompanying text. The wetland impacts should be identified according to wetland type and quality. It is particularly important to DCM that the potential CAMA Coastal Wetland impacts be specified. The DCM GIS wetland data would be an appropriate tool to classify impacts according to wetland type and quality.

16. Pages 3-33 to 3-37, Tables 3-5, 3-6, 3-7 and 3-8. Please include permanent and temporary impacts due to the potential dredging of Currituck Sound.
17. Page 3-38, Impacts to Biotic Communities. The DEIS states that if used, dredging would occur in areas of shallow water less than 6 feet deep where there is no SAV. Please describe how SAV locations would be located and protected at the time of construction. It is recommended that the determination of SAV locations and protection methods be closely coordinated with the N.C. Division of Marine Fisheries.
18. Page 3-42, Impacts from Noise, Turbidity and Siltation. Please specify what practicable measures are being considered to minimize turbidity generated during bridge construction, including benefits and disadvantages of each.
19. Page 3-46, Clean Water Act and Coastal Area Management Act Permits. Please note that impacts to CAMA AEC's will trigger the need for a CAMA major permit, however the CAMA major permit will be required for the entire project in accordance with the total development concept.
20. Page 3-47, Avoidance and Minimization. Is the information about preservation of Maple Swamp still accurate considering the logging that has recently occurred?
21. Page 3-47, Compensatory Mitigation of Impacts. According to the Section 6002 Coordination Plan for Mid-Currituck Bridge Project STIP Project R-2576, the DEIS will include a conceptual mitigation proposal. The discussion of compensatory mitigation in the DEIS presents a summary of typical mitigation strategies, but does not appear to present a conceptual mitigation proposal.
22. Page 3-49, Table 3-11. Please contact DCM Transportation Projects Field Representative for NCDOT Division One, Jim Hoadley, at (252) 264-3901 to ensure that the correct impacts to all CAMA Areas of Environmental Concern are provided, including Estuarine Waters, Public Trust Area, Coastal Shoreline and CAMA Wetland.
23. Page 3-64, How would potential accelerated sea level rise resulting from climate change affect long-term use of the detailed study alternatives? It is recommended that NCTA also incorporate results from the following four more recent sources of information about sea level rise: (1) Results of the N.C. Sea Level Rise Forum that was hosted by the N.C. Department of Environment and Natural Resources (NCDENR) in January 2010: http://www.nccoastalmanagement.net/slr.html; (2) The N.C. Sea-Level Rise Assessment Report prepared by the N.C. Coastal Resources Commission's Science Panel on Coastal Hazards, March 2010: http://www.nccoastalmanagement.net/slr/NC%20Sea-Level%20Rise%20Assessment%20Report%202010%20-%20CRC%20Science%20Panel.pdf; (3) The U.S. Climate Change Science Program Synthesis and Assessment Product 4.1, Coastal Sensitivity to Sea Level Rise: A Focus on the Mid-Atlantic Region, January 2009: http://downloads.climatescience.gov/sap/sap4-1/sap4-1-final-report-all.pdf; and (4) Results of the Climate Change Adaptation Workshop titled "Planning for North Carolina's Future: Ask the Climate Question", held on March 2-3, 2010 in Raleigh and hosted by the N.C. Interagency Leadership Team: http://www.climatechange.nc.gov/pages/ClimateChange/CC_Workshop_Archive.html.
24. Page 3-65, How would potential accelerated sea level rise resulting from climate change affect long-term use of the detailed study alternatives? Please provide more information about the expectation that under all sea level rise scenarios considered, NC 12 would eventually be broken by inundation near the Currituck/Dare County line. Please provide specific anticipated dimensions for the predicted breach in the island at the Currituck/Dare County line.

25. Page 3-65, How would potential accelerated sea level rise resulting from climate change affect long-term use of the detailed study alternatives? Please provide figures for the entire study area that depict the potential impacts of sea level rise within specified timeframes. Please include the impact that sea level rise would have on the long-term maintenance, lifespan and cost of each detailed study alternative. This should include the procedure for removal of any obsolete structures within public trust areas.
26. Page 3-74, Hydraulic Impacts to Floodplain. NCTA should coordinate with the U.S. Army Corps of Engineers (USACE) and DWQ to determine if the anticipated hydraulic impacts associated with Option B could be considered a direct or indirect impact to wetlands, and if so, if compensatory mitigation would be required. Anticipated hydraulic impacts described in the DEIS include changes to the existing maximum water surface elevation for the 100-year storm up to 4,000 feet north of the proposed fill and up to 5,500 feet south of the proposed fill, and groundwater and drainage patterns in Maple Swamp for non-tidal storm surge situations.

Thank you for your consideration of the North Carolina Coastal Management Program. DCM looks forward to our continued involvement as a Participating Agency with this project. Please contact me at (919) 733-2293 x238 or via e-mail at cathy.brittingham@ncdenr.gov if you have any questions or concerns, or require additional information.

Sincerely,

Cathy Brittingham

CC: Doug Huggett, DCM
Jim Hoadley, DCM
Charlan Owens, DCM

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Coastal Management
Beverly Eaves Perdue, Governor **James H. Gregson, Director** Dee Freeman, Secretary

JUN 2010 RECEIVED Secretary's Office DOA

MEMORANDUM

TO: Cathy Brittingham, DCM Transportation Project Coordinator

FROM: Charlan Owens, AICP, NE DCM District Planner

SUBJECT: Review of the Administrative Action Draft Environmental Impact Statement (DEIS) Mid-Currituck Bridge Study for transportation improvements to the Currituck Sound area that include a no bridge scenario with transportation improvements to US 158 and NC 12 (ER2); two (2) bridge scenarios with different improvements to NC 12 and US 158 (MCB2 and MCB4); two (2) bridge corridor options for its ending at the Currituck Outer Banks (C1 and C2); two (2) options for the bridge approach on mainland Currituck (Option A and Option B), and; two (2) hurricane evacuation options (a third outbound lane or a reverse center lane); within Currituck County, and the incorporated towns of Kitty Hawk, Southern Shores, and Duck, in Dare County.

Reference: State No. 10-E-4220-0361; STIP Project No. R-2576

Date: June 4, 2010

Provisional Consistency Determination:

Note that this is not the formal consistency determination given the stage of the project description and the need for additional information.

Option B is not consistent with the Currituck County 2006 LUP certified by the Coastal Resources Commission (CRC) on May 18, 2007 and amended on September 25, 2008 and June 24, 2009. (See "Basis for Determination", Attachment A)

ER2 and MCB2 are not consistent with the Town of Duck 2004 LUP certified by the CRC on April 8, 2005. (See "Basis for Determination", Attachment D)

Additional information is needed concerning protection of Natural Heritage Areas in Currituck County, anticipated shoreline stabilization, use of vegetated buffers along shorelines, anticipated wetland mitigation within the Town of Kitty Hawk, handicapped accessibility of proposed public access facilities, use of vegetated roadside swales and handling of stormwater drainage; proposed highway corridor and multi-path/trail enhancements; relocation of utilities

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underground; inclusion of traffic signals in Lower Currituck, and; anticipated infrastructure and service needs for Currituck County. (See "Basis for Determination" in Attachments A, B, and D)

Additional information is needed to make a consistency determination for the Town of Kitty Hawk 2004 LUP, certified by the CRC on June 2005. (See "Basis for Determination" Attachment B)

The alternatives are consistent with the Town of Southern Shores 1997 LUP certified by the CRC on September 25, 1998. (See Attachment C)

Overview: The proposed project calls for transportation improvements in the Currituck Sound area, with focus on the consideration of a Mid-Currituck Bridge over the Currituck Sound. The project area encompasses US 158 between its intersection with NC 168 in Currituck County and its intersection with NC 12 between the Town of Southern Shores and the Town of Kitty Hawk in Dare County, and NC 12 from its intersection with US 158 in the Town of Southern Shores and through the Town of Duck in Dare County, and into unincorporated Corolla within Currituck County.

Four (4) types of Areas of Environmental Concern (AECs) occur within the project area: Coastal Wetlands, Estuarine Waters, Coastal Shorelines, and Public Trust Areas. Surface waters within the project area include the Currituck Sound, the Atlantic Intercoastal Waterway, Jean Guite Creek; two (2) canals that connect to Maple Swamp and drain into Great Swamp and Deep Creek and two (2) modified natural streams that drain into the Currituck Sound, along US 158 on the mainland; and one (1) small stream within the maritime swamp on the Outer Banks in Corolla. Section 404 wetlands are also located within the project area.

The purpose of the project is to 1) substantially improve traffic flow on NC 12 and US 158; 2) substantially reduce travel time between the Currituck County mainland and the Currituck County Outer Banks; and 3) substantially reduce hurricane clearance times during a coastal evacuation. The project is needed to address increasing congestion on NC 12 and US 158. The increased congestion is causing travel time between the Currituck County mainland and Currituck County Outer Banks to increase, especially during the summer. As a result of increasing congestion and development, hurricane evacuation clearance times far exceed the state-designated standard of 18 hours.

There are two (2) bridge scenarios that include different amounts of improvements to NC 12 and US 158, MCB2 and MCB4. There are also two (2) variations of the bridge corridor for its ending on the Outer Banks in Currituck County, C1 and C2. A no-bridge alternative, ER2, and combinations of the two (2) bridge scenarios and two (2) bridge corridors make up the five (5) alternatives under consideration:

1. ER2 – No bridge; Third outbound lane (or contraflow of an existing lane) from US 158/168 intersection to mainland side of Wright Memorial Bridge in Currituck; US 158

widened to a six- or eight-lane super-street between the Wright Memorial Bridge and the US 158/NC 12 intersection; Interchange at US 158/NC 12 intersection; NC 12 widening with three-lane from Southern Shores to the Duck village, no change to the village area segment in Duck, widening to three-lane north of the Duck village area to just north of Hunt Club Drive in Currituck, and widening to four-lanes with a median from just north of Hunt Club Drive to Albacore Street in Corolla. Estimated Cost - $416.1 to $523.4 million.

2. MCB2/C1 – Bridge from mainland at Aydlett to NC 12 at an intersection approximately 2 miles north of the Albacore Street retail area in Corolla; Third outbound lane (or contraflow of an existing lane) from US 158/168 intersection to Mid Currituck Bridge/US 158 intersection; Interchange at the mainland side of the Mid Currituck Bridge/US 158 intersection; US 158 widened to a six- or eight-lane super-street between the Wright Memorial Bridge and the US 158/NC 12 intersection; Interchange at US 158/NC 12 intersection; NC 12 widening with three-lane from Southern Shores to the Duck village, no change to the village area three-lane segment in Duck, widening to three-lane north of the Duck village area to just north of Hunt Club Drive in Currituck, widening to four-lanes with a median from just north of Hunt Club Drive to Outer Banks side of Mid Currituck Bridge. Estimated Cost - $800.1 to $1,062.4 million.

3. MCB2/C2 – Bridge from mainland Aydlett to NC 12 approximately .5 mile south of the Albacore Street retail area in Corolla; Third outbound lane (or contraflow of an existing lane) from US 158/168 intersection to mainland side of Mid Currituck Bridge; Interchange at the mainland side of the Mid Currituck Bridge/US 158 intersection; Third outbound lane (or contraflow of an existing lane) from US 158/168 intersection to Mid Currituck Bridge/US 158 intersection; US 158 widened to a six- or eight-lane super-street between the Wright Memorial Bridge and the US 158/NC 12 intersection; Interchange at US 158/NC 12 intersection; NC 12 widening with three-lane from Southern Shores to the Duck village, no change to the village area three-lane segment in Duck, widening to three-lane north of the Duck village area to just north of Hunt Club Drive in Currituck, widening to four-lanes with a median from just north of Hunt Club Drive to Outer Banks side of Mid Currituck Bridge. Estimated Cost - $802.4 to $1,065.1 million.

4. MCB4/C1 – Bridge from mainland Aydlett to NC 12 at an intersection approximately 2 miles north of the Albacore Street retail area in Corolla; Third outbound lane (or contraflow of an existing lane) from US 158/168 intersection to mainland side of Mid Currituck Bridge; Interchange at the mainland side of the Mid Currituck Bridge/US 158 intersection; Third outbound lane (or contraflow of an existing lane) from west side of the Wright Memorial Bridge to the US158/NC12 intersection; NC 12 widening with four-lanes and median from Sea Shell Lane in Currituck to Outer Banks side of Mid Currituck Bridge. Estimated Cost - $600.7 to $816.2 million.

5. MCB4/C2 – Bridge from mainland Aydlett to NC 12 approximately .5 mile south of the Albacore Street retail area in Corolla; Third outbound lane (or contraflow of an existing lane) from US 158/168 intersection to mainland side of Mid Currituck Bridge; Interchange at the mainland side of the Mid Currituck Bridge/US 158 intersection; Third outbound lane (or contraflow of an existing lane) from west side of the Wright Memorial Bridge to the US158/NC12 intersection; NC 12 widening with four-lanes and a median

from Sea Shell Lane in Currituck to Outer Banks side of Mid Currituck Bridge. Estimated Cost - $595.5 to $808.6 million.

Other alternatives evaluated and eliminated from consideration included three (3) additional road and/or bridge alternatives, lower cost alternatives that attempted to make more efficient use of the available road capacity on US 158 and NC 12 (shifting vacation housing rental times, minor improvements to the road system, and bus transit), ferry alternatives and multiple Mid-Currituck Bridge corridor alternatives.

For the four (4) bridge alternatives, two (2) options are being considered for the mainland approach to the Currituck Sound, Option A and Option B. Option A would place a toll plaza within the US 158 interchange. The mainland approach road to the bridge over Currituck Sound would include a bridge over Maple Swamp. Drivers traveling between US 158 and Aydlett would continue to use Aydlett Road. Under Option B, the US 158 interchange would not include the toll plaza. The approach to the bridge over Currituck Sound would be a road placed on fill within Maple Swamp. Wildlife passages would be incorporated into the fill within Maple Swamp. Aydlett Road would be removed and its right-of-way restored as a wetland. Traffic traveling between US 158 and Aydlett would use the bridge approach. Within Aydlett, a local connection would be provided between the bridge approach road and the local Aydlett street system. The toll plaza would be placed in Aydlett east of the local road connection. No access to and from the Mid-Currituck Bridge would be provided in Aydlett.

For all five (5) alternatives, there are also two (2) hurricane evacuation options being considered. The first is to add a third outbound lane to US 158 for evacuation use only. The second option is to reverse the existing center turn lane on US 158 to create a third outbound lane during an evacuation. When a third outbound lane is needed on the existing Wright Memorial Bridge and Knapp Bridge, one existing inbound land would be reversed.

To accommodate pedestrians and bicyclists, the Mid-Currituck bridge would include a 10 foot wide shoulder and a bicycle safe rail. Potential additional provisions for bicyclists and pedestrians could include an exclusive lane for pedestrians and bicyclists, bridge and bridge approach lighting, and a parking area on the Outer Banks side of the bridge. Pedestrian and bicyclist features will be considered further during project design if adequate funds are available. Existing pedestrian and bicyclist improvements along US 158 and NC 12 removed through lane widening would be replaced. In Currituck, between Caldwell Road and the end of the project, there is currently no multi-use path. Space for a multi-use path is provided in association with the NC 12 widening being considered. The County could provide funds or share in the cost per NCDOT pedestrian policy guidelines to build the path in the context of the NC 12 widening or choose to build it at a later date.

Travel demand and benefits of the proposed improvements have been projected out to the year 2035. Under the no-build scenario, approximately 22.9 miles of roadway within the project area would be operating with traffic demand at or above road capacity (summer average) and hurricane evacuation clearance time would be 36 hours. Road improvements under ER2 would reduce the roadway miles operating at or above road capacity in the summer to 15.4 miles and reduce the hurricane evacuation clearance time to between 22 and 27 hours. The MCB2 proposal would reduce the roadway miles operating at or above road capacity in the summer to

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1.4 miles and the MCB4 proposal would reduce this figure to 7.4 miles. The bridge alternatives would also provide a hurricane evacuation clearance time between 22 and 27 hours.

Based on information available to date, the NC Turnpike Authority, and the Federal Highway Administration have identified MCB4 as the Recommended Alternative. At this time, the Turnpike Authority has no recommendation related to the two (2) bridge corridor alternatives (C1 or C2) the mainland bridge approaches (Option A or B), or a hurricane evacuation option. The Recommended Alternative is not the Preferred Alternative and is not a final decision. The Preferred Alternative may be further developed in the Final EIS.

All waters in the project area are classified as SC waters. Suitable activities for this saltwater classification include "aquatic life propagation and survival, fishing, wildlife, and secondary recreation". Jean Guite Creek is a designated Primary Nursery Area (PNA).

Maple Swamp Gordonia Forest and Great Swamp on the Currituck mainland and the Pine Island/Currituck Club Natural Area within the Currituck Sound are identified as Significant Natural Heritage Area. The Maple Swamp Gordonia Forest is assigned a "B" status, which indicates that it is a statewide significant site that is among the highest quality occurrences in North Carolina. The significant features associated with this site include an unusually extensive stand of loblolly bay forest, which may represent the largest stand in the state, and the most northern range of this community. The Great Swamp is also assigned a "B" status because of the extensive tidal freshwater marsh areas and what are thought to be natural and/or virgin stands of tidal cypress/gum swamp. All of the alternatives would affect the eastern fringe of Great Swamp. The bridge alternatives would pass through Maple Swamp. The bridge corridor was placed so that there would be no permanent loss or alteration of the unique loblolly bay forest found within the swamp. The bridge crossing is located north of the bay forest area near a cleared and actively maintained utility corridor. The Pine Island/Currituck Club Natural Area is given a "C" status, which indicates it is an outstanding example of the marsh community, though the community may be represented by better examples in the state. Drainage improvements along NC12 with ER2 and MCB2 would affect the fringe of the Pine Island/Currituck Club Natural Area where it borders NC 12.

Land area within the proposed bridge corridors is located within Floodzone AE. US 158 from the intersection with US 168 to just south of Maple Swamp is located within the AE Floodzone. South of Maple Swamp, along the remainder of the Currituck mainland, US 158 is located primarily outside of the Floodzone. On the Outer Banks, US 158 is located primarily in Zone AE, with some areas outside of the Floodzone. NC 12 on the Outer Banks from the US 158 intersection north to the proposed bridge corridors is located both outside the Floodzone and within Zone AE.

Anticipated impacts: Impacts identified in the DEIS include, but are not limited to, those identified below:

Fill, pile placement, shading, and clearing associated with bridge construction would result directly in the permanent loss or alteration of aquatic habitat within the project area. Impacts would result primarily from shading. Shading of aquatic bottom that is less than 6 feet deep is

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anticipated at .1 acre of for the ER2 alternative and between 14.5 acres to 17.8 acres with the bridge alternatives. With the bridge alternatives, 4.3 acres to 5.5 acres of existing Submerged Aquatic Vegetation (SAV) will be shaded.

Temporary wetland impacts of 2.1 acres for the ER2 alternative, and between 1.7 acres and 2.1 acres for the bridge alternatives are anticipated. Permanent wetland impacts up to 5.1 acres are anticipated for the ER2 alternative, and between 34.4 acres and 45.3 acres for the bridge alternatives. Coastal Wetland impacts are anticipated to be .7 acre for the ER2 alternative and between .7 acre and 2.2 acres for the MCB2 bridge alternative. Mitigation opportunities are available. The Option A mainland bridge approach assumes that wetlands associated with Maple Swamp would be bridged. With Option B, fill would be placed in Maple Swamp and Aydlett Road would be removed and its right-of-way restored to a wetland to mitigate for the fill used to cross Maple Swamp. Wetlands along the sound side of the Outer Banks at the C1 and C2 bridge termini would be bridged.

Removal and alteration of wildlife habitat (both by habitat use and bridging) and habitat edge effects are anticipated. There is habitat present for nine (9) federally protected species in the project area. The Biological Conclusion for the ER2 is "May Affect-Not Likely to Adversely Affect" for two (2) of the species and "No Effect" for the remaining seven (7) species. For all nine (9), the Biological Conclusion for the MCB2 and MCB4 alternatives is "May Affect – Not Likely to Adversely Affect".

Upland fill is anticipated to be approximately 85.3 acres for the ER2 alternative, between 110 acres and 118.4 acres for the MCB2 alternative, and between 40.8 acres and 52.4 acres for the MCB4 alternative. No impact to floodplains is anticipated with the ER2 alternative or the bridge alternatives, however the Option B mainland road approach would result in significant encroachment on the floodplain (as a significant alteration to a water course) by the fill placed in the Maple Swamp. If selected, additional studies would be needed to determine how to avoid or minimize the associated maximum .2 foot increase in the 100-year storm's water surface elevation just north of the fill.

Temporary water quality impacts would result from increased turbidity levels during construction of a bridge. Permanent impacts to water quality are primarily associated with increased bridge and highway runoff. Between 53.4 acres and 89 acres of increased impervious surface is anticipated for the ER2 alternative. The bridge options will result in a 114.8 acre to a 126.8 acre increase in impervious surface for MCB2 and a 74 acre to 86.6 acre increase in impervious for MCB4. Preliminary designs for NC 12 indicate generally the use of infiltration strategies for the majority of the project, along with a limited number of outfalls to the Currituck Sound. Preliminary designs assume that the bridges over Currituck Sound and Maple Swamp would drain directly into Currituck Sound and Maple Swamp. Drainage would not be captured and treated to remove motor vehicle pollutants. Three (3) options for treating runoff from the bridge are outlined in the DEIS. Further consideration of capturing and treating the first inch of runoff would be accomplished when finalizing mitigation measures should MCB2 or MCB4 be selected for implementation. Appropriate Best Management Practices (BMPs) would be used during construction and maintenance for protection of surface waters, wetlands, and upland habitat and would also be used to control erosion, sedimentation, and stormwater runoff.

An analysis of boating activity in the Currituck Sound to determine bridge span height is yet to be conducted. The NC Turnpike Authority and US Coast Guard are requesting information from boaters to complete this analysis.

The State Historic Preservation Officer has concluded that the detailed study alternatives would have no adverse effect on historic properties in the project area. The hurricane evacuation option to construct a third outbound lane on US 158 would use land from one(1) or two (2) historic Section 4(f) properties that are eligible for inclusion in the National Register of Historic Places. With the ER2 alternative, a temporary easement would be needed on three (3) additional historic Section 4(f) properties. The final determination for these properties will be included in the Final EIS. Concerning archaeological resources, numerous archaeological surveys have been conducted in or adjacent to the project area. Eight (8) recorded archaeological sites have been identified. Only a few submerged cultural resources surveys have been conducted and no underwater sites are listed within the project area. There is a potential for additional, as yet unidentified, cultural resource sites in the project area to be discovered. Additional archaeological surveys may be conducted on both land and water to identity the absence or presence of resources once a Preferred Alternative has been finalized.

Relocations of ten (10) to eighteen (18) houses, two (2) to eight (8) businesses, three (3) to twenty-nine (29) outdoor advertising signs, and nineteen (19) to sixty-six (66) gravesites are anticipated, depending on the alternative chosen.

Relocation of utilities would be included in final design plans. The relocation would be coordinated with the appropriate officials to minimize damage or disruption of existing service. The relocation of utilities underground has not been addressed.

For US 158 and NC 12, existing multi-use paths for bicyclists and pedestrians affected by any of the alternatives would be replaced. The planned multi-use path on the south side of US 158 in Kitty Hawk would also be replaced with the ER2 and MCB2 alternatives. Existing marked pedestrian crossings of NC 12 in Southern Shores would be restored if NC 12 is widened in Southern Shores.

Specific to highway corridor appearance, a landscaping plan would be developed for the interchange of the Mid-Currituck Bridge. The use of vegetative buffers has not been addressed.

Concerning the use of additional traffic signals, installation of additional signals, particularly in Lower Currituck, has not been addressed.

Proposed bridging would split panoramic views of the Currituck Sound. On the mainland, the bridge would result in a visual barrier to cohesion within the Aydlett community. Lighting would be used at the toll plaza, which would impact homes to the south in Aydlett, under Option B. The ER2 and MCB2 alternative would introduce an interchange into views at the NC 12/US 158 intersection adjacent to Kitty Hawk and Southern Shores. The C1 bridge location option would physically divide the Corolla Bay subdivision, and to a lesser extent, would adversely affect views in the northern part of Monteray Shores. A C2 bridge terminus would adversely affect views from the outdoor recreation area at TimBuck II. All widening improvements would result in view changes along the respective corridors.

Indirect impacts and cumulative impacts through the year 2035 are also addressed within the DEIS. The analysis provides conclusions, including, but not limited to, the following. There would be a negligible or slight increase in permanent residents on the Outer Banks for the bridge alternatives and no increase under the ER2 alternative. For the non-road accessible Outer Banks (the County zoned RO2 and COBRA Floodzone areas) there would be no reasonably foreseeable change in the location, rate or type of development with the implementation of the study alternatives. This conclusion is based on barriers that include a lack of accessibility, and the numerous government policy constraints related to development and the extension of NC 12 into Carova. Specific to beach access and other infrastructure needs of day visitors, there is some potential for an increase in day visitors, with a higher potential for day visitors in the non-road accessible area, however a notable increase in the number of day trips is not anticipated. One of the reasons given for this is that beach access, parking, public facilities, and services in Currituck and Dare County are limited to modest. An assessment of infrastructure needs to accommodate increased day visitors was not provided. Concerning the economic impacts, except for new Outer Banks businesses locating at the end of the bridge on the mainland, the location of employment centers would not be expected to change. A specific review of increased county services needs was not provided. An economic study prepared by UNC indicated the potential for approximately thirty-four (34) businesses to shift to the Mid-Currituck bridge area, within an approximate radius of 1.5 miles around the end of the mainland terminus of the bridge. Approximately 68 acres of business development would likely occur near the US 158/Mid-Currituck Bridge interchange on what is currently agricultural land. The introduction of the bridge could result in people choosing difference places to live than if the bridge were not built. Additional demand for homes and businesses on the mainland for Outer Banks workers and customers is not anticipated to occur. As a summary, The DEIS indicates on Page xx, Table S-1 that "...improved accessibility to Currituck Outer Banks with the bridge would cause the order of future development to change such that the development occurs first in Currituck County and later in Dare County. However, the extent of development on the Outer Banks by 2035 would be the same with or without the bridge. In addition, in terms of indirect impacts, the presence of the bridge could result in business development in proximity to the bridge's interchange with US 158 and associated use of farmland and visual change."

See ATTACHMENTS A, B, C, and D for policies currently relevant to this request.

Attachment A – Currituck County 2006 LUP
Attachment B – Town of Kitty Hawk 2004 LUP
Attachment C – Town of Southern Shores 1997 LUP
Attachment D – Town of Duck 2004 LUP

cc: John Thayer, AICP, Manager, Planning and Access Programs
Jim Gregson, Director, DCM
M. Ted Tyndall, Assistant Director, Permits & Enforcement, DCM
Doug Huggett, Manager, Major Permits, DCM

ATTACHMENT A

Note that this is not the formal consistency determination given the stage of the project description and the need for additional information.

Policy Review:

The **Currituck County 2006 Land Use Plan** Land Classification Map designates the project area as "Full Service Areas", "Limited Service Areas", and "Conservation Areas".

"Full Service Areas" are located along US 158 from the US 158/US 168 intersection to the Atlantic Intercoastal Waterway (AIW), within the Grandy community, within the Powells Point community, and within the Point Harbor Community. The Corolla community and areas along NC 12 are also located within "Full Service Areas". As indicated on Page 11-3, these areas of the county are preferred for community centers.

"Limited Service Areas" are located along US 158 from the AIW to just north of Grandy, south of Grandy to just north of Powells Point, south of Powells Point to just north of Point Harbor, and the southern portion of Point Harbor to the Wright Memorial Bridge. The community of Aydlett is also located within "Limited Service Areas". As indicated on Page 11-2, the purpose this designation is to provide for primarily residential development at low densities.

"Conservation Areas" are located along the west side of US 158 within southern Coinjock and extending south to an area between Coinjock and Grandy. The area between US 158 and the Aydlett community is also designated "Conservation Areas". Additionally, island areas and marsh shorelines within the Currituck Sound west of Corolla are designated "Conservation Areas". Areas of Environmental Concern (AECs) are also designated as "Conservation Areas" as indicated on Page 11-1. As indicated on Page 11-1, "(t)he purpose of the Conservation class is to provide for the long-term management and protection of significant, limited, or irreplaceable areas. Proper management is needed to conserve the natural, cultural, recreational, scenic, or biologically productive values of these areas. The Conservation class should be applied to areas that should not be developed at all (preserved) or if developed, done so in a very limited manner characterized by careful planning and cautious attention to the conservation of environmental features. Infrastructure and services, public or private, should not be included in these areas as a catalyst that could stimulate development."

The Future Land Use Map illustrates a "Proposed Mid-County Bridge" from US 158, across the Maple Swamp, Aydlett, and the Currituck Sound, to NC 12 on the Currituck Outer Banks.

The project area is also located within the "Intersection of Proposed Mid-County Bridge and US Highway 158", "Barco/Coinjock/Airport Area", "Aydlett and Waterlilly/Churches Island", "Grandy", "Jarvisburg", "Point Harbor", and "Corolla" subareas. At the proposed US 158/Mid-County Bridge intersection, US 158 runs along a relatively narrow, north-south ridge of higher ground and areas to the east and west consist of low-lying areas generally characterized as wetlands. Beyond the wetlands to the east is the community of Aydlett.

The policy emphasis for the "Intersection of Proposed Mid-County Bridge and US Highway 158" subarea is indicated on Page 11-7:

> "The policy emphasis of this plan is for there to be no access from the bridge road into the Aydlett community, thereby protecting the community from unwanted commercial development. Rather, commercial development spawned by the bridge should be clustered just off US 158 north and south of the new intersection with the bridge road. Further, it is expected that wetlands will block commercial development from occurring at locations removed from the US 158 corridor. For these reasons the area is identified on the Future Land Use Map as Limited Service.
>
> At the same time, care should be taken to adequately control the location and design of commercial development so as not to compromise the traffic moving function of the new bridge and roads leading to it. Community aesthetics and image associated with new development along this major travel corridor should also receive strong consideration is setting standards for development approval here. While currently limited to 1 housing unit per acre, residential development densities in this area could be increased to 1.5 units per acre upon completion of the proposed Mid-County Bridge and availability of services."

The Aydlett community is the proposed mainland location of the bridge. "Aydlett and Waterlilly/Churches Island offer some of the most attractive areas for development on the mainland of Currituck County. Situated atop an ancient, north-south running ridge of relatively high and dry ground, these areas directly abut the western shoreline of Currituck Sound, with very little intervening marsh. Home sites have panoramic views across the sound to the Outer Banks. As indicated Page 11-8, policy emphasis, "...there is to be no access from the bridge road into communities near the landfall for the bridge." The "Grandy", "Jarvisburg", "Point Harbor" subareas are located along areas of US 158 proposed for an additional outbound lane. Transportation improvements are addressed within the "Grandy" and "Point Harbor" descriptions. Specific to the proposed Mid-Currituck Bridge (Mid-County Bridge), it is anticipated that the bridge will strengthen Grandy's position as a service area for the Outer Banks of Currituck County. On Page 11-1, in "Point Harbor" the need to coordinate with NCDOT for the placement of traffic signals along US 158 in the southern portion of mainland Currituck is identified. The "Corolla" community is the proposed Outer Banks location for the bridge. The Corolla area is 85 to 90 percent developed. As the value of barrier island property has continued to escalate, the economic incentive for redevelopment of existing properties has increased. Due to redevelopment pressures, increases in service demand, impervious surface areas and greater traffic generation are anticipated.

Definitions of key words are provided on Page 9-2. The following definitions are intended to convey the meaning of these key words as used in the Land Use Plan Policy Statements:

adequate: sufficient to achieve the intended purpose or prevent harm allow/permit: authorize; official action to let something happen

control: to regulate or direct

discourage: to not favor; to dissuade

encourage: to favor or foster (also see support)

endorse: to approve of an action, often by another party

may: provides the option, but not required

preferred: among alternatives, the favored course

prohibit: not allowed, period

promote: to proactively encourage, to take positive steps

reasonable practical, even-handed, sensible, not extreme

require: to mandate something

shall: mandatory, not optional

should: ought to, if no valid reason not to

significant: important, as determined by quantity or relative impact

support: to shore up; may imply financial support

As of **June 4, 2010**, the following policies from the Currituck County 2006 LUP, certified by the Coastal Resources Commission (CRC) on May 18, 2007, and amended on September 25, 2008 and June 24, 2009, may be applicable to this request:

Public Access:

Policy PA1, Page 9-3.

> "Public access to the sound and ocean waters of Currituck County is essential to the quality of life of residents and visitors, as well as the economy of the area. The County supports the establishment of ADDITIONAL PUBLIC AND PRIVATE ACCESS opportunities to the waters of Currituck County. (Also see Outer Banks Policy Section.)."

Policy PA2, Pages 9-3 and 9-4.

> "The County supports MANY FORMS OF "ACCESS" to the water, including scenic outlooks and boardwalks, boat ramps, marinas and docks, fishing piers, canoe and kayak launches, and other means of access. Whenever possible,

such facilities shall be designed to accommodate the needs of handicapped individuals."

Policy PA3, Page 9-4.

"Properties owned by the County, State or other cooperating public agencies shall be considered as special opportunities for public access sites. MULTIPLE USE OF APPROPRIATE SITES (e.g. utility station and public boat ramp site) shall be encouraged."

Policy PA4, Page 9-4.

"The LOCATION OF PUBLIC ACCESS SITES shall generally be determined by a rational examination of the sound and ocean resource, the distribution of existing access sites, and the availability of appropriate new sites. In addition to advanced planning, however, the County will remain open to any site that offers good shoreline access for the public, as unforeseen opportunities may arise."

Policy PA9, Page 9-4.

"Currituck County shall discourage developments which would have the effect of "WALLING OFF THE WATER", thereby eliminating views to the water from adjoining streets, roads, walkways and other public spaces."

Policy PA10, Page 9-4.

"Opportunities for protecting or creating public access shall be pursued when drafting and administering development standards for ocean front and sound front projects in the County."

Land Use Compatibility:

Policy ES1, Page 9-5.

"New development shall be permitted to locate only in areas with SUITABLE SOILS and where ADEQUATE INFRASTRUCTURE is available. For existing development located on poor soils, and where sewage treatment upgrades are necessary, engineering solutions may be supported, provided that environmental concerns are fully addressed."

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Policy ES2, Page 9-5.

"NON-COASTAL WETLANDS, including FRESHWATER SWAMPS, AND INLAND, NON-TIDAL WETLANDS, shall be conserved for the important role they play in absorbing floodwaters, filtering pollutants from stormwater runoff, recharging the ground water table, and providing critical habitat for many plant and animals species. Currituck County supports the efforts of the U. S. Army Corps of Engineers in protecting such wetlands through the Section 404 permit program of the Clean Water Act, as well as Section 401 water quality certifications by the State of North Carolina."

Policy ES3, Page 9-5.

"COASTAL WETLANDS shall be conserved for the valuable functions they perform in protecting water quality and in providing critical habitat for the propagation and survival of important plant and animal species. CAMA use standards and policies for coastal wetlands shall be supported. Uses approved for location in a coastal wetland must be water dependent (i.e. utility easements, bridges, docks and piers) and be developed so as to minimize adverse impacts."

Policy ES4, Pages 9-5 and 9-6.

"In approving new developments, Currituck County shall support the retention or creation of vegetated buffer area along ESTUARINE SHORELINES as a simple, effective and low-cost means of preventing pollutants from entering estuarine waters. Exceptions to this requirement may include developments involving pre-existing man-made features such as hardened shorelines, drainage ditches, and canals...The County also supports CAMA use standards for all COASTAL SHORELINES, whether estuarine or otherwise."

Policy ES5, Page 9-6.

"Uses allowed in ESTUARINE WATERS must be water dependent (public access, docks, piers, erosion control, and other CAMA-approved uses) and must not interfere with the proper function, cleanliness, salinity, and circulation of the resource..."

Policy ES8, Page 9-6.

"Areas of the County identified for significant future growth shall avoid NATURAL HERITAGE AREAS (e.g. Great Marsh on Knotts Island, Currituck Banks/Swan Island Natural Area, Currituck Banks Corolla Natural Area, Pine Island/Currituck Club Natural Area, Northwest River Marsh Game Land, and many other marsh areas on the mainland.)."

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Policy AG2, Page 9-6.

"Farms and woodlands shall be recognized as an integral part of the county's OPEN SPACE SYSTEM. Efforts to keep these areas viable as part of the area's resource-based economic sector, shall be encouraged."

Infrastructure Carrying Capacity:

Policy TR1, Page 9-10.

"Opportunities to enhance REGIONAL TRANSPORTATION CONNECTIONS between Currituck County and other parts of the state and region shall be supported. The County shall actively participate in regional transportation planning efforts."

Policy TR3, Page 9-10.

"A program of improvements and maintenance to maximize the FUNCTIONAL LIFE OF EXISTING ROADWAYS shall be endorsed as a cost effective and environmentally sound means of meeting area transportation needs."

Policy TR9, Page 9-11.

"BIKEWAY FACILITIES shall be encouraged as energy-efficient, healthful, and environmentally sound alternatives to the automobile. The inclusion of bikeways, sidewalks, trails, and other alternatives to the automobile shall be encouraged in both public and private developments."

Policy TR10, Page 9-11.

"Designs for all future road construction and improvements shall consider opportunities for the inclusion of BIKE LANES within the project. Particular attention should be given to priority bikeway facility needs as submitted for inclusion in the State Transportation Improvement Program."

Policy TR13, Page 9-12.

"A new MID-COUNTY BRIDGE between the mainland and Corolla shall be supported to provide critical traffic relief to US 158, to improve emergency access to and evacuation from the Currituck Outer Banks, to promote economic development, and to provide better access to public and private services not readily available on the Outer Banks. To protect the character of communities

near the bridge (e.g. Aydlett, Churches Island, Poplar Branch), the road leading to the bridge shall have no access points before its intersection with US 158."

Policy TR14, Page 9-12.

"Plans for IMPROVEMENTS TO NC 12 shall be an integral part of the planning for the management of traffic to and from the Currituck Outer Banks."

Action TR-1, Page 13-5.

"The County shall continue to be an active participant in lobbying efforts for planned roadway improvements to US 158, NC 168, NC 334, and NC 12."

Action TR-2, Page 13-5.

"...Identify the pros and cons of the proposed mid-county bridge, improvements to NC 12, enhanced ferry service, or a combination of all three."

Action TR-3, Page 13-5.

"Establish a task force to look at the broad implications of a mid county bridge and its potential impacts, such as growth in the RO2 COBRA zone, beach access and other infrastructure needs of increased number of day visitors, changes in county services such as law enforcement, economic impacts on the Mainland and Outer Banks, etc. The findings of such a task force should be made available well in advance of the construction of the bridge."

Policy TR18, Page 9-12.

"The operational success of existing and future TRANSIT SERVICES shall be supported through the encouragement of some compact, transit-sensitive developments. Recommendations for area transportation improvements shall recognize public and private transit as an integral part of the transportation system."

Policy PR4, Page 9-14.

"The County shall seek to identify, plan for and develop a system of OPEN SPACE GREENWAYS, HIKING and BIKING TRAILS as opportunities may allow. The use of (1) natural corridors such as streams and floodplains, and (2) man-made corridors such as utility and transportation rights-of-way and easements, shall be emphasized."

Natural Hazard Areas:

Policy NH3, Page 9-16.

"New PUBLIC FACILITIES AND STRUCTURES, as well as improvements to existing public facilities and structures, shall be located and designed to mitigate natural hazards. When placement in a natural hazard area is unavoidable, compliance with the National Flood Insurance Program and County Flood Damage Prevention Ordinance shall be required."

Action NH1, Page 13-9.

"Form an interagency task force whose purpose is to develop a plan for the RO-2 COBRA zone to address growth issues likely to come about as a result of the proposed mid-county bridge. Bring together personnel from the US Fish and Wildlife Service, the US Army Corps of Engineers, the State Division of Coastal Management, the Nature Conservancy, Currituck County, as well as area property owners, to prepare the plan."

Policy NH6, Page 9-16.

"The County shall make EMERGENCY EVACUATION a priority in the development and approval of transportation plans and improvements included in the NC DOT Transportation Improvement Program."

Policy NH8, Page 9-16.

"Currituck County encourages owners of PROPERTIES ALONG ESTUARINE SHORELINES to employ the least hardened approach to shoreline stabilization (i.e. marsh grass favored over riprap favored over bulkheading, etc.), provided that reasonable access is available to install the technology available."

Water Quality:

Policy WQ3, Page 9-17.

"Currituck County supports policies, plans and actions that help protect the water quality of the county's estuarine system by preventing SOIL EROSION AND SEDIMENTATION, and by controlling the quantity and quality of STORMWATER RUNOFF entering the estuary."

Policy WQ4, Page 9-17.

"RUNOFF AND DRAINAGE from development, forestry and agricultural activities shall be of a quality and quantity as near to natural conditions as possible. Post-development runoff shall not exceed pre-development volumes."

Policy WQ6, Page 9-17.

"Currituck County supports the retention or preservation of VEGETATED BUFFERS along the edge of drainage ways, streams and other components of the estuarine system as an effective, low cost means of protecting water quality."

Policy WQ7, Page 9-18.

"The environmental benefits of properly designed, VEGETATED ROADSIDE DRAINAGE SWALES shall be recognized. Curb and gutter shall be reserved to developments that are urban in character (i.e. less than 10,000 square foot lot sizes) and that are served by adequate stormwater collection, retention and slow release facilities."

Policy WQ8, Page 9-18.

"Currituck County shall support the development and maintenance of a countywide COMPREHENSIVE DRAINAGE AND FLOOD MANAGEMENT PLAN, including public and private actions in support of plan implementation. Currituck County shall support County, NCDOT and property owner cooperation in preventing and resolving stormwater problems."

Policy WQ10, Page 9-18.

"SEWAGE TREATMENT DISCHARGES shall not be permitted into the waters of Currituck County. WATER TREATMENT DISCHARGES may be allowed if such discharge would not cause significant degradation of water quality (e.g. negatively affecting the fisheries resource)."

Local Countywide Concerns:

Policy CA1, Page 9-19.

"The important economic, tourism, and community image benefits of attractive, functional MAJOR HIGHWAY CORRIDORS through Currituck County shall be recognized. Such highway corridors, beginning with US 158 and NC 168, shall

receive priority attention for improved appearance and development standards, including driveway access, landscaping, buffering, signage, lighting, and tree preservation."

Policy CA2, Page 9-19.

"A CANOPY OF STREET TREES shall be encouraged along all major highways in the County. This canopy may be implemented through preservation of existing trees or the planting of trees that will reach substantial size and maturity. The preservation or planting of such trees shall be encouraged in the area immediately adjoining the right of way."

Policy CA6, Page 9-19.

"To foster an improved community appearance, promote public safety, and help prevent service outages, the placement of UTILITY WIRES UNDERGROUND shall be encouraged in all public and private developments."

Policy HP1 Page 9-20.

"Local efforts to identify, designate and preserve SITES, BUILDINGS AND DISTRICTS OF PARTICULAR HISTORIC SIGNIFICANCE shall be supported."

Policy HP4 Page 9-20.

"The DESTRUCTION OF SIGNIFICANT ARCHITECTURAL, HISTORIC, AND ARCHAEOLOGICAL RESOURCES in the planning area shall be discouraged."

Subarea Concerns:

Policy ML3, Page 9-21.

"The interests of Mainland Area residents in having ACCESS TO THE AREA'S OCEAN AND ESTUARINE WATERS shall be fostered through County actions to increase the number of additional public access sites at a rate commensurate with the population growth of the Currituck County. Included in the actions taken to increase public access shall be a consideration given to transportation needs, including boat docks and ferry services."

Policy ML4, Page 9-21.

"Currituck County recognizes that the appearance and traffic moving functions of the NC 168/US 158 CORRIDOR is of exceptional importance to both the near term quality of life and long-term economic prospects for residents and property owners in the Mainland Area. The Transportation and Community Appearance policy sections of this plan shall be implemented to give priority to this issue."

Basis for Determination: Under Option B, traffic traveling between US 158 and Aydlett would use the bridge approach, with a local connection provided between the bridge approach road and the local Aydlett street system. The existing road connecting Aydlett to US 158 would be removed. Additionally, a lighted toll plaza would be placed in Aydlett. This proposal is in direct conflict with the Policy Emphasis for the "Intersection of Proposed Mid-County Bridge and US Highway 158" subarea designation on Page 11-7, the Policy Emphasis for "Aydlett and Waterlilly/Churches Island" sub area designation on Page 11-8, and Policy TR 13 on Page 9-12. These policies address protection of the Aydlett community character with no access to be provided from the bridge road.

Additional information is needed concerning the protection of Natural Heritage Areas in Currituck County, specifically Maple Swamp. The bridge corridor passes through Maple Swamp. Under Option B, fill would be placed within the swamp, resulting in a significant encroachment into the floodplain and altering the watercourse. The bridge over Maple Swamp in Option A would drain directly into Maple Swamp. Clarify how the improvements are consistent with the "Conservation" designation description, Policy ES 2 concerning swampland, Policy ES8 concerning Natural Heritage Areas, and Policy NH 3 concerning the mitigation of natural hazards, and Policy WQ 10 concerning water treatment discharges.

Additional information is also needed to concerning anticipated shoreline stabilization to address Policy NH8, the use of vegetated buffers along shorelines to address Policy ES4 and Policy WQ6, handicapped accessibility of proposed public access facilities to address Policy PA2, use of vegetated roadside swales in handing of stormwater drainage to address Policy WQ7, proposed highway corridor improvements to address Policy CA1 and Policy CA2, relocation of utilities underground to address Policy CA6, including of traffic signals in Lower Currituck to address the "Point Harbor" subarea description on Page 11-10, and the anticipated infrastructure for day visitors and service needs for Currituck County to address Action TR3.

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ATTACHMENT B

Note that this is not the formal consistency determination given the stage of the project description and the need for additional information.

Policy Review:

The **Town of Kitty Hawk 2004 Land Use Plan** Land Classification Map designates the project area along the south side of US 158 and its intersection with NC 12 as primarily "Commercial, Shopping, and Working Areas", with some "Lower Density Residential Areas". Improvements to US 158 are proposed from the Wright Memorial Bridge to the intersection of US 158 and NC 12.

Action oriented terms are defined on Pages IX-4 to IX-6:

Should – An officially adopted course or method of action intended to be followed to implement goals. Though not as mandatory as "shall", it is still an obligatory course of action unless clear reasons can be identified that an exception is warranted. Elected, appointed, and administrative officials may be involved at all levels from planning to implementation.

Create – Bring about the desired goal, usually with elected and appointed officials and staff involved and actions, which may involve financial support, as appropriate at all levels from planning to implementation.

Continue – Follow past and present procedures and funding, if appropriate, to maintain desired goal, usually with elected and appointed officials and staff involvement and actions at all levels from planning to implementation.

Density – Quantity per unit area.

Encourage – Foster the desired goal through Town policies and actions, including financial support, if appropriate.

Enhance – Improve current goal to a desired state through the use of policies and actions at all levels of planning using external resources and Town financial support as appropriate.

Identify – Catalog and confirm issues, resource(s), and potential or desired actions.

Implement – Act to accomplish land use plan objectives.

Intensity – Magnitude of development per unit area.

Maintain – Keep in good condition the desired state of affairs through the use of Town policies and with elected and appointed officials and staff involvement, funding, and actions as appropriate.

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Prevent – Stop described event through the use of appropriate Town policies and regulations, as well as coordination with other local, State, and Federal planning and regulatory agencies and programs. Actions may involve Town financial support, if appropriate.

Promote – Advance the desired state through the use of Town policies and elected and appointed officials and staff involvement, and take action as appropriate.

Protect – Guard against a deterioration of the desired state through the use of Town policies, regulations, and funding, as appropriate, in concert with other local, State, and Federal programs and regulations. Enlist the cooperative efforts of elected and appointed officials, staff, and external resources including other local, State and Federal agency personnel.

Provide – Take the lead role in supplying the appropriate support to achieve the desired goal. The Town is typically involved in all aspects from planning to implementation to maintenance. Actions may involve Town financial support, if appropriate.

Strengthen – Improve and reinforce the desired goal through the use of Town policies and regulations in concert with other local, regional, statewide, or Federal programs and regulations. Elected and appointed officials and staff, as well as external resources may be involved and take action, including financial support, if appropriate.

Support – Adopt and pursue policies and take action to coordinate activities and supply necessary resources, as appropriate, to achieve desired goal.

Sustain – Uphold the desired state through Town policies and regulations, appropriate financial assistance, and elected and appointed official and staff involvement and actions to achieve the desired goal.

Work – Cooperate and act through the use of staff, Town officials, outside resources and volunteers to create the desired goal.

As of **June 4, 2010**, the following policies from the Town of Kitty Hawk 2004 LUP, certified by the Coastal Resources Commission (CRC) on June 17, 2005, may be applicable to this request:

Issue Area #6 Currituck Sound Shoreline, Kitty Hawk Bay, and Albemarle Sound:

Policy #6a, Page IX-10.

"...The Town supports applicable State and Federal laws and regulations regarding building, land uses, and development in areas of environmental concern."

Policy #6b, Page IX-10.

"Kitty Hawk supports continued management of the Currituck Sound, Kitty Hawk Bay, and Albemarle Sound shorelines to protect and preserve the natural resources of the water and shoreline, relying primarily on the CAMA permit program and the Areas of Environmental Concern (AEC) designated under the CAMA program."

Policy #6d, Page IX-10.

"Kitty Hawk supports the construction of properly permitted estuarine bulkheads. It is the policy of Kitty Hawk to support State rules regarding bulkheading. Alternative uses such as sills and marsh plantings and other more environmentally friendly erosion control measures will be welcomed and preferred to bulkheading when conditions are favorable to such use."

Issue Area #12 Natural Hazard Areas:

Policy #12b, Page IX-15.

"Kitty Hawk supports CAMA regulations as applicable and also the U. S. Army Corps of Engineers in its enforcement of regulations pertaining to '404 Wetlands' with the exception of Corps' allowance of mitigation measures to be undertaken on sites outside of Town when filling is allowed within the Town."

Policy #12e, Page IX-15.

"Kitty Hawk supports State and Federal policies that regulate the location and intensity of development in State designated areas of environmental concern."

Policy #12g, Page IX-15.

"Kitty Hawk will allow development and redevelopment within special flood hazard areas subject to the provisions and requirements of the National Flood Insurance Program, CAMA regulations, and the Town's zoning ordinance."

Policy #12j, Page IX-16.

"Kitty Hawk will take actions locally and in conjunction with NCDOT and adjacent jurisdictions to improve traffic safety and drainage to mitigate the impact of localized flooding and seek alternative methods of hazard avoidance."

Issue Area #15 Public Safety:

Policy #15a, Page IX-18.

"Kitty Hawk will continue to adopt, enforce, and amend as necessary ordinances and procedures to ensure public safety. The Town supports State and Federal laws and regulations and the enforcement of criminal statutes."

Objective #15i, Page IX-18.

"Seek ways to minimize conflicts between pedestrians and vehicles and improve safety along NC 12 and US 158, particularly at cross streets and parking area entrances and exits."

Issue Area #21 Stormwater Management:

Policy #21a, Page IX-22.

"Kitty Hawk is commited to minimizing and mitigating the effects of storm water drainage and to implementing a comprehensive approach to storm water management. The Town supports the concept of ocean outfalls as a means to remove stormwater from low lying areas during emergency situations. Kitty Hawk supports the concept that all stormwater should be contained on the property where it was generated, except in circumstances where rainfall exceeds that of a five-year storm."

Objective #21b, Page IX-22.

"Ensure that North Carolina Department of Transportation provides appropriate and timely levels of service with respect to storm water drainage issues within Kitty Hawk."

Issue Area #22 Tourism:

Policy #22a, Page IX-23.

"Kitty Hawk recognizes the vital importance of tourism to the local economy and supports efforts to maintain its status as a desirable place to visit and vacation. The Town also recognizes the need to address the infrastructure and service demands of the seasonal populations that may occur."

Policy #22b, Page IX-23.

"Kitty Hawk supports the concept of combining natural resources and tourism to promote the area's ecological values, known as 'eco-tourism' and supports passive recreation activities such as biking and walking/jogging."

Issue Area #23 Transportation:

Policy #23a, Page IX-23.

"Kitty Hawk supports the construction of a mid-Currituck County bridge and the continued maintenance and protection of NC 12 through Kitty Hawk."

Objective #23b, Page IX-23.

"Support efforts to improve the intersection of US 158 and NC 12 (Duck Road) at the Kitty Hawk and Southern Shores."

Objective #23c, Page IX-24.

"Lobby for maintaining and protection NC 12 in its present configuration through Kitty Hawk."

Objective #23d, Page IX-24.

"Ensure that the North Carolina Department of Transportation provides appropriate and timely levels of service with respect to storm water drainage issues within Kitty Hawk."

Objective #23i, Page IX-24.

"Maintain and enhance the multi-use trail system."

Basis for Determination:
Additional information is needed concerning anticipated shoreline stabilization to address Policy #6d, anticipated wetland mitigation to address Policy #12b, handling of stormwater drainage to address Policy #21a, Objective #21b,and Objective #23d, and proposed multi-use trail enhancements to address Objective #23i.

ATTACHMENT C

Note that this is not the formal consistency determination given the stage of the project description and the need for additional information.

Policy Review:

The **Town of Southern Shores 1997 Land Use Plan** Land Classification Map designates the project area along the north side of US 158 and its intersection with NC 12 as primarily "Developed", with some "Conservation II" and "Conservation III" areas. Areas along NC 12 from its intersection within US 158 north to the town limits are primarily designated as "Developed" with some "Conservation II" areas. As indicated on Page 21, all AECs and other similar lands, including public trust areas, coastal wetlands, and areas regulated by the US Army Corps of Engineers as "404" wetlands are designated as "Conservation I". "Conservation II" includes all community open space owned by the Civic Association or the Chicahawk property association and "Conservation III" applies to the Duck Woods Country Club. Improvements to US 158 are proposed from the Wright Memorial Bridge to the intersection of US 158 and NC 12, and along NC 12 north to the Town of Duck.

The Town of Southern Shores is currently working on a Land Use Plan (LUP) update. Note that the updated LUP may be in effect at the time the Final EIS is submitted.

As of **June 4, 2010**, the following policies from the Town of Southern Shores 1997 LUP, certified by the Coastal Resources Commission (CRC) on September 25, 1998, may be applicable to this request:

Resource Protection Pages 16 and 17.

1. statement on community attitude toward resource protection – "The Town will rely on ....state regulations to deal with development within AECs (unless local regulations are more stringent) and Corps of Engineers regulations dealing with 404 Wetlands."

2. discussion on AECs – "Please note in constraints to development section earlier in the Plan – not duplicated here. The Town relies on CAMA regulations for AECs."

4. protection of wetlands – The Town relies on CAMA regulations to protect coastal wetland AECs to include primary nursery areas; The Town relies on the U. S. Army Corps of Engineers to regulate 404 Wetlands."

Economic and Community Development

Pages 18 and 19.

5. commitment/state/federal programs (highways, bridges, CDBG, rural water systems, etc. – "The Town is opposed to the five laning of Hwy 12. The Town will continue to coordinate/cooperate with state, federal, county and other local governments on common issues, problems."

ATTACHMENT D

Note that this is not the formal consistency determination given the stage of the project description and the need for additional information.

Policy Review:

The **Town of Duck 2004 Land Use Plan** Land Classification Map designates the project area along NC 12 as primarily "Residential Areas", with "In-fill and Growth Areas", "Conservation, Open Space, and Community Facilities Areas", "Village Commercial Area", "Transitional Area", and "General Commercial Area" also along NC 12. Improvements to NC 12 are proposed north and south of the village area.

Action oriented terms are defined on Pages IX-4 to IX-6:

Should – An officially adopted course or method of action intended to be followed to implement goals. Though not as mandatory as "shall", it is still an obligatory course of action unless clear reasons can be identified that an exception is warranted. Elected, appointed, and administrative officials may be involved at all levels from planning to implementation.

Create – Bring about the desired goal, usually with elected and appointed officials and staff involved and actions, which may involve financial support, as appropriate at all levels from planning to implementation.

Continue – Follow past and present procedures and funding, if appropriate, to maintain desired goal, usually with elected and appointed officials and staff involvement and actions at all levels from planning to implementation.

Encourage – Foster the desired goal through Town policies and actions, including financial support, if appropriate.

Enhance – Improve current goal to a desired state through the use of policies and actions at all levels of planning using external resources and Town financial support as appropriate.

Identify – Catalog and confirm issues, resource(s), and potential or desired actions.
Implement – Act to accomplish land use plan objectives.

Maintain – Keep in good condition the desired state of affairs through the use of Town policies and with elected and appointed officials and staff involvement, funding, and actions as appropriate.

Prevent – Stop described event through the use of appropriate Town policies and regulations, as well as coordination with other local, State, and Federal planning and regulatory agencies and programs. Actions may involve Town financial support, if appropriate.

Promote – Advance the desired state through the use of Town policies and elected and appointed officials and staff involvement, and take action as appropriate.
Protect – Guard against a deterioration of the desired state through the use of Town policies, regulations, and funding, as appropriate, in concert with other local, State, and Federal programs and regulations. Enlist the cooperative efforts of elected and appointed officials, staff, and external resources including other local, State and Federal agency personnel.

Provide – Take the lead role in supplying the appropriate support to achieve the desired goal. The Town is typically involved in all aspects from planning to implementation to maintenance. Actions may involve Town financial support, if appropriate.

Strengthen – Improve and reinforce the desired goal through the use of Town policies and regulations in concert with other local, regional, statewide, or Federal programs and regulations. Elected and appointed officials and staff, as well as external resources may be involved and take action, including financial support, if appropriate.

Support – Adopt and pursue policies and take action to coordinate activities and supply necessary resources, as appropriate, to achieve desired goal.

Sustain – Uphold the desired state through Town policies and regulations, appropriate financial assistance, and elected and appointed official and staff involvement and actions to achieve the desired goal.

Work – Cooperate and act through the use of staff, Town officials, outside resources and volunteers to create the desired goal.

As of **June 4, 2010**, the following policies from the Town of Duck 2004 LUP, certified by the Coastal Resources Commission (CRC) on April 8, 2005, may be applicable to this request:

<u>Issue Area #6 Currituck Sound Shoreline</u>:

Policy #6a, Page IX-10.

"Duck supports continued management of the Currituck Sound shoreline to protect and preserve the natural resources of the water and the shoreline relying primarily on the CAMA permit program and the Areas of Environmental Concern (AEC) designated under the CAMA program..."

Policy #6b, Page IX-10.

"Duck will: provide clear direction to assist decision making and consistency findings for zoning, divisions of land, and public and private projects;..."

Issue Area #8 Duck Trail:

Policy #8a, Page IX-11.

"Duck supports the continued maintenance of the Duck Trail and efforts to enhance, improve, and expand the facility to provide a safe setting for recreation and as an alternative transportation route."

Objective #8b, Pages IX-11 and IX-12.

"Investigate additions and/or extensions to Duck Trail including alternative routes. An important aspect of Duck Trail additions and/or extensions would be locations along the west side of NC 12 and along the Currituck Sound shore line and shore front."

Objective #8e, Page IX-12.

"Seek ways to improve safety along Duck Trail, particularly at cross streets, cross walks, and parking area entrances and exits."

Objective #8f, Page IX-12.

"Support the addition or incorporation of appropriate landscaping to better define Duck Trail and improve user safety."

Objective #8g, Page IX-12.

"Support the placement of appropriate signage and marking(s) along Duck Trail and the installation of information kiosks to provide maps, safety and contact information, local events calendar(s), and information on the positive health and recreation benefits of biking and walking/jogging."

Objective #8h, Page IX-12.

"Support the creation of way stations/rest areas, the installation of bicycle racks, and incorporate fitness stations as appropriate at various points along Duck Trail."

Objective #8j, Page IX-12.

"Support efforts to enhance and improve the connectivity of Duck Trail facilities."

Issue Area #12 Land Use Compatibility:

Policy #12a, Page IX-15.

"Duck ...supports applicable State and Federal laws and regulations regarding land uses and development in areas of environmental concern."

Issue Area #13 Natural Hazard Areas:

Policy #13d, Page IX-16.

"Support State and Federal policies that regulate the location and intensity of development in State designated areas of environmental concern."

Policy #13i, Page IX-16.

"Take steps locally and in conjunction with NCDOT and adjacent jurisdictions to improve traffic safety and drainage to mitigate the impact of localized flooding and seek alternative methods of hazard avoidance such as construction of the mid-Currituck (County) Bridge."

Issue Area #14 Overhead Utility Lines:

Policy #14a, Page IX-17.

"Duck supports the placement or replacement of utility lines underground."

Issue Area #17 Public Safety:

Policy #17a, Page IX-19.

"Duck will ... support State and Federal laws and regulations to ensure public safety."

Objective #17g, Page IX-20.

"Seek ways to minimize conflicts between pedestrians and vehicles and improve safety along Duck Trail, particularly at cross streets and parking area entrances and exits."

Objective #17h, Page IX-20.

"Encourage the placement of appropriate signage and marking(s) along Duck Trail to improve safety."

Issue Area #23 Stormwater Management:

Policy #23a, Page IX-24.

"Duck supports the creation of plans and programs to minimize and mitigate the effects of storm water drainage and a comprehensive approach to storm water management."

Objective #23b, Page IX-25.

"Encourage the North Carolina Department of Transportation to provide appropriate and timely response to storm water drainage issues with Duck."

Issue Area #24 Tourism:

Policy #24a, Page IX-25.

"Duck supports and recognizes the vital importance of tourism to the local economy and supports efforts to maintain its status as a desirable place to visit and vacation. The Town also recognizes the need to address the infrastructure and service demands of the seasonal populations."

Policy #24b, Page IX-25.

"Duck supports the concept of combining natural resources and tourism to promote the area's ecological values, known as 'eco-tourism' and supports passive recreation activities such as biking and walking/jogging."

Issue Area #26 Transportation:

Policy #26a, Page IX-26.

"Duck supports the construction of a mid-Currituck County bridge and maintenance of the existing two-lane configuration of NC 12 with the Duck Trail along NC 12 through Duck."

Objective #26a, Page IX-26.

"Lobby for construction of a mid-Currituck County bridge."

Objective #26b, Page IX-26.

"Lobby for maintaining NC 12 as a two-lane facility in its present configuration through Duck."

Objective #26c, Page IX-26.

"Encourage the North Carolina Department of Transportation to provide appropriate and timely levels of service within Duck."

Objective #26d, Page IX-26.

"Encourage the provision of save, efficient transportation system given State and local finances, topography, geography, and natural systems and surrounding land uses and development."

Objective #26f, Page IX-26.

"Encourage high levels of maintenance of private and State roads."

Objective #26j, Page IX-27.

"Recognize the importance and significance of Duck Trail as a key transportation facility in and through Duck."

Basis for Determination: Under no bridge alternative E2 and bridge alternative MCB2, the entire NC 12 roadway through the Town of Duck would be widened to a three-lane roadway. Currently, only the Duck village area is a three-lane roadway. This is in direct conflict with

Policy #26a, Page IX-26 and implementing Objective #26b, Page IX-26 to maintain the existing two-lane configuration of NC 12.

Additional information is needed concerning handling of stormwater drainage to address Policy #13i and Objective #23b, proposed multi-use trail enhancements to address Policy #8a, Objectives #8b, #8e, #8f, #8g, #8h, #8j, and Objectives #17g and #17h, and relocation of utilities underground to address Policy #14a.

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DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH

Inter-Agency Project Review Response

Project Number
10-0361
County
Currituck, Dare

Project Name **US-DOT/Federal Hwy Admin/NC-DOT**

Type of Project **Draft Environmental Impact Statement - Transportation improvements to Currituck Sound area by building bridge across Currituck Sound from mainland to Outer Banks.**

☐ The applicant should be advised that plans and specifications for all water system improvements must be approved by the Division of Environmental Health prior to the award of a contract or the initiation of construction (as required by 15A NCAC 18C .0300et. seq.). For information, contact the Public Water Supply Section, (919) 733-2321.

☐ This project will be classified as a non-community public water supply and must comply with state and federal drinking water monitoring requirements. For more information the applicant should contact the Public Water Supply Section, (919) 733-2321.

☐ If this project is constructed as proposed, we will recommend closure of _____ feet of adjacent waters to the harvest of shellfish. For information regarding the shellfish sanitation program, the applicant should contact the Shellfish Sanitation Section at (252) 726-6827.

☐ The soil disposal area(s) proposed for this project may produce a mosquito breeding problem. For information concerning appropriate mosquito control measures, the applicant should contact the Public Health Pest Management Section at (919) 733-6407.

☐ The applicant should be advised that prior to the removal or demolition of dilapidated structures, an extensive rodent control program may be necessary in order to prevent the migration of the rodents to adjacent areas. For information concerning rodent control, contact the local health department or the Public Health Pest Management Section at (919) 733-6407.

☐ The applicant should be advised to contact the local health department regarding their requirements for septic tank installations (as required under 15A NCAC 18A .1900 et. sep.). For information concerning septic tank and other on-site waste disposal methods, contact the On-Site Wastewater Section at (919) 733-2895.

☐ The applicant should be advised to contact the local health department regarding the sanitary facilities required for this project.

☐ If existing water lines will be relocated during the construction, plans for the water line relocation must be submitted to the Division of Environmental Health, Public Water Supply Section, Technical Services Branch, 1634 Mail Service Center, Raleigh, North Carolina 27699-1634, (919) 733-2321.

☒ For Regional and Central Office comments, see the reverse side of this form.

Jim McRight	PWSS	04/08/2010
Reviewer	Section/Branch	Date

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH

Inter-Agency Project Review Response

Project #
10-0361
County
Currituck, Dare

Project Name: US-DOT/Federal Hwy Admin/NC-DOT

Type of Project: Draft Environmental Impact Statement – Transportation improvements to Currituck Sound area by building bridge across Currituck Sound from mainland to Outer Banks.

Comments provided by:

- [X] Regional Program Person
- [ ] Regional Supervisor for Public Water Supply Section
- [ ] Central Office program person

Name: Joey White Telephone #: (252) 948-3894 Date Rec'd: 04/08/2010 Date Rev'd: 04/23/2010

Joey C White

Program within Division of Environmental Health:

- [X] Public Water Supply
- [ ] Other. Name of Program_____

Response (check all applicable):

- [X] No objection to project as proposed
- [ ] No comment
- [ ] Insufficient information to complete review
- [ ] Comments attached
- [X] See comments below

JUN 2010 RECEIVED Secretary's Office DCM

- Relocation and/or replacement of potable water supply lines will require engineered plans and specifications to be submitted to the Public Water Supply Section for review and approval before construction. Final approval must be issued before placing the water mains into service.
- The Currituck County Water System and the Southern Outer Banks Water Systems have water service in the proposed project area, and should be contacted to determine precise locations of water mains such that construction does not affect utility piping or services to customers.

Return to:
Public Water Supply Section
Environmental Review Coordinator
for the
Division of Environmental Health

NCDENR

North Carolina Department of Environment and Natural Resources
Division of Marine Fisheries

Beverly Eaves Perdue, Governor | Dr. Louis B. Daniel III, Director | Dee Freeman, Secretary

TO: Melba McGee
THROUGH: Anne Deaton
FROM: Kevin Hart
DATE: May 14, 2010
SUBJECT: DEIS- Mid-Currituck Bridge (Project Number 10-0361)

The following comments by the North Carolina Division of Marine Fisheries (NCDMF) on the subject project are offered pursuant to G.S. 113-131. The applicant is proposing to construct a 7 to 7.5 mile toll bridge to connect mainland Currituck County (Maple Swamp) with Currituck County Outer Banks. There are 5 alternatives designed for the subject project including a no-build alternative and alternatives that vary the number of lanes approaching the bridge. The sound side of the Outer Banks are heavily covered with submerged aquatic vegetation (SAV). Depending on the alternative chosen the bridge will shade between 0.1 acres (no bridge alternative) to 17.2 acres (MCB4/C2) of SAV habitat.

The subject project has 2 proposed design alternatives that include construction of the Mid-Currituck Bridge (MCB2 and MCB4) and a third alternative that does not include the bridge (ER2). MCB2 will add a third evacuation only lane on US 158 between NC 168 and the Mid-Currituck Bridge or use an existing center turn lane as a third outbound evacuation lane. US 158 would be widened to a 6-lane road between the Wright Memorial Bridge and Cypress Knee Trail and between Cypress Knee Trail and the Home Depot driveway would be expanded to 8-lanes and NC 12 would be widened to 3-lanes between US 158 and a point just north of Hunt Club Drive. MCB4 would add an evacuation only third outbound lane between NC 168 and the bridge, a third outbound evacuation only lane would be added between the Wright Memorial Bridge and NC12, and NC 12 would be widened to 4-lanes from Seashell Lane to NC 12. ER2 would add a third evacuation only lane on US 158 between NC 168 and the Wright Memorial Bridge, US 158 would be widened to a 6-lane road between the Wright Memorial Bridge and Cypress Knee Trail, and US 158 would be widened to 8 lanes between Cypress Knee Trail and the Home Depot driveway. NC 12 would be widened to 3-lanes between US 158 and a point just north of Hunt Club Drive and to 4 lanes from just north of Hunt Club Drive to Albacore Street. All alternative designs have an interchange designed at the current intersection of US 158, NC 12, and the Aycock Brown Welcome Center entrance. The NCTA's recommended alternative is MCB4. Of the alternatives listed the least environmentally damaging alternative is ER2 and is the NCDMF recommended alternative. ER2 will not shade important essential fish habitat.

With all of the proposed Mid-Currituck Bridge construction designs there are 2 alternatives for the approach to the Mid-Currituck Bridge. The first alternative (A) would be to construct a bridge to connect Hwy 158 and the Mid-Currituck Bridge while leaving Aydlett Road. The second alternative would be to remove the existing Aydlett Road and fill and construct a new road with crossings and culverts. Although this alternative would keep the fill status quo, the fill essentially creates a dam and impairs water movement in Maple Swamp dividing the swamp in half. When constructing roads in wetlands, bridge construction is the NCDMF's preferred alternative, as culverts will minimally allow hydrologic flow. The NCTA does not specify the approach or the corridor (Outer Banks landfall) that they prefer at this time. Option B will permanently affect 4.6 more acres of wetlands than A, but in either case there will be approximately 40 acres of permanent wetland fill and clearing (DEIS Table S-1). It is important to note that coastal and non-coastal wetlands are important sources of detritus, the basis of the aquatic food chain and approximately 40 acres of this habitat will be negatively affected. The NCDMF preferred alternative, that is not addressed in the DEIS, is to remove the existing Aydlett Road and construct a new bridge over Maple Swamp to allow water to flow unimpaired. This option would reduce the amount of fill and shading throughout the entire swamp.

There are 2 alternatives (C1 and C2) proposed for where the Mid -Currituck Bridge would make landfall on the Outer Banks. C1 will make landfall south of Corolla and C2 will make landfall further south at Albacore Street. The C1 alternative presents less shading of SAV compared to the C2 alternative by avoidance and minimization of important SAV habitat. The C1 alternative will shade approximately 14.5 acres of existing and potential SAV habitat, while C2 will shade 17.8 acres (DEIS Table S-1). The shading of SAV will cause significant adverse impacts in the subject project area. It is well documented that SAV is important habitat that is utilized by fishes and invertebrates for nursery areas, foraging and protection from predators (Street et al. 2005). Although the subject project's Essential Fish Habitat Technical Report (pg 34) states that the pilings will create a habitat shift from SAV to hard bottom "reef" habitat, the current benthic and fish community are those that are suited for SAV. The NCDMF recommends C1 to minimize SAV and marsh impacts. If the subject project is permitted, would SAV mitigation be a part of the project?

Although the construction methods for the Mid Currituck Bridge have not been selected and will be discussed once the alternative has been selected, several construction methods are possible. These include a temporary construction trestle (bridge), overhead gantry crane, a launching truss, and low draft barges that would require dredging. The Division would have numerous issues and concerns with dredging associated with the bridge construction. Currituck Sound is a very important anadromous, estuarine and resident species nursery area. After the bridge alternative is chosen the NCDMF requests that the applicant minimizes and avoids impacts to SAV and soft bottom habitat. If dredging is chosen as the construction method, impacts to the nursery area will occur and elevated turbidity levels may adversely affect SAV. Additional damage to SAV could also occur from bottom disturbance associated with the bridge construction (prop dredging etc). The Division would request a dredging moratorium from February 15 – September 30, to ensure the environmental integrity of the area is protected during critical times of usage by finfish and invertebrates.

In summary the ER2 design is the least environmentally damaging alternative, and is the NCDMF preferred alternative. If the bridge is to be constructed, the NCDMF recommends that the C1 option is selected as the Outer Banks approach design, as this design minimizes wetland and SAV impacts. Will mitigation for SAV and wetlands be included in the proposed design? Although not discussed in the DEIS, the NCDMF's preferred Mid-Currituck Bridge approach alternative is the removal of the existing Aydlett Road and construction of a bridge to cross Maple Swamp to allow water movement through the wetland and accommodate for future sea level rise. The NCDMF also requests that when the Turnpike Authority chooses a construction method, they minimize and avoid impacts to SAV and wetlands and abide by a dredging moratorium (February 15-September 30) if dredging is included as a construction technique.

The NCDMF appreciates the opportunity to provide input on this project. If you have any comments or questions, please call me at (252) 948-3878 or email me at Kevin.Hart@ncdenr.gov .

Street, M.W., A.S. Deaton, W.S. Chappell, and P.D. Mooreside. 2005. North Carolina Coastal Habitat Protection Plan. North Carolina Department of Environment and Natural Resources, Division of Marine Fisheries, Morehead City, NC. 656 pp.

Table S-1 (continued). Comparison of Key Impacts

	ER2	MCB2/C1		MCB2/C2		MCB4/C1		MCB4/C2	
Submerged Aquatic Vegetation (SAV) Impact									
• Existing SAV Shaded	0.0 acre	4.3 acres		5.5 acres		4.3 acres		5.5 acres	
• Existing and Potential (water depths < 6 feet) SAV Shaded	0.1 acre	14.5 acres		17.8 acres		14.5 acres		17.8 acres	
Permanent Wetland Impacts for Option A and Option B with and (without) a third outbound lane for hurricane evacuation[3]									
		Option A	Option B	Option A	Option B	Option A	Option B	Option A	Option B
• Fill	5.1 (4.6) acres	12.8 (12.4) acres	42.9 (42.4) acres	10.2 (9.8) acres	40.3 (39.9) acres	8.5 (8.1) acres	38.6 (38.2) acres	5.9 (5.5) acres	36.0 (35.6) acres
• Pilings	0.0 acre	0.0 acre	0.0 acre	0.0 acre	0.0 acre	0.0 acre	0.0 acre	0.0 acre	0.0 acre
• Clearing	0.0 acre	25.7 acres	0.3 acres	30.6 acres	5.1 acres	25.8 acres	0.3 acres	30.6 acres	5.1 acres
Total Permanent Impacts	5.1 (4.6) acres	38.6 (38.2) acres	43.2 (42.8) acres	40.7 (40.3) acres	45.3 (44.9) acres	34.4 (34.0) acres	38.9 (38.5) acres	36.5 (36.1) acres	41.0 (40.6) acres
Temporary Wetland Impacts	2.1 acres	1.7 (0.0) acres	1.7 (0.0) acres	1.7 (0.0) acres	1.7 (0.0) acres	2.1 (0.0) acres	2.1 (0.0) acres	2.1 (0.0) acres	2.1 (0.0) acres
Total Wetland Impacts	7.2 (4.6) acres	40.3 (38.2) acres	44.9 (42.8) acres	42.4 (40.3) acres	47.0 (44.9) acres	36.6 (34.0) acres	41.1 (38.5) acres	38.7 (36.1) acres	43.2 (40.6) acres
Total Coastal Area Management Act (CAMA) Wetland Impacts	0.7 acre	0.7 acre		2.2 acres		0.0 acre		0.0 acres	
CAMA Areas of Environmental Concern Affected—with construction of a third outbound lane for hurricane evacuation (without third outbound lane, if different)									
• Fill	0.9 (0.8) acre	0.9acre		0.9 acre		0.0 acre		0.0 acre	
• Pilings	0.0 acre	0.1 acre		0.2 acre		0.1 acre		0.2 acre	
• Clearing	0.0 acre	0.0 acre		1.5 acres		0.0 acre		1.5 acres	
Essential Fish Habitat Affected									
• Fill	1.8 acres	1.8 acres		1.8 acres		0.0 acre		0.0 acre	
• Pilings	0.0 acre	0.1 acre		0.2 acre		0.1acre		0.2 acre	
• Shading (water depths < 6 feet)	0.1 acre	14.5 acres		17.8 acres		14.5 acres		17.8 acres	
• Clearing	0.0 acre	0.0 acre		3.2 acres		0.0 acre		3.2 acres	

[3] The first number or numbers indicate the impact assuming the construction of a third outbound lane for hurricane evacuation. The number or numbers in parentheses is the impact if improving hurricane clearance times is accomplished by reversing the existing center turn lane.

NCDENR

North Carolina Department of Environment and Natural Resources

Division of Water Quality
Coleen H. Sullins
Director

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

June 1, 2010

JUN 2010 RECEIVED Secretary's Office DOA

MEMORANDUM

To: Melba McGee, Environmental Coordinator, Office of Legislative and Intergovernmental Affairs

From: David Wainwright, Division of Water Quality, Central Office

Subject: Comments on the Draft Environmental Impact Statement related to the proposed Mid-Currituck Bridge, Currituck County, Federal Aid Project No. BRSTP-000S(494),TIP R-2576.

State Clearinghouse Project No. 10-0361.

This office has reviewed the referenced document dated March 2010. The NC Division of Water Quality (NCDWQ) is responsible for the issuance of the Section 401 Water Quality Certification for activities that impact Waters of the U.S., including wetlands. It is our understanding that the project as presented will result in impacts to jurisdictional wetlands, streams, and other surface waters. NCDWQ offers the following comments based on review of the aforementioned document:

Project Specific Comments:

1. This project is being planned as part of the Section 6002 Process. As a participating team member, NCDWQ will continue to work with the team.

2. A map showing delineated streams, wetlands, and other jurisdictional features should be included. Impacts to these jurisdictional features should be shown on the map as well. This should be included in all future environmental documentation.

3. The discussion of other proposed project in the area lists several planned projects in and around the study area. The text includes a discussion of R-4457, which includes an interchange conversion at the US 158/NC 12 intersection in Dare County. It is stated that this project was not included in the "No-Build" alternative because "the interchange is included as a component of detailed study alternatives ER2 and MCB2 because the interchange is needed to reach a desirable level of service (LOS) on the summer weekday in 2035." The DWQ does not agree with this concept. It is believed that the interchange should be included in the "No-Build" alternative because the project is planned independent of the Mid-Currituck Bridge project. If the "No-Build" alternative is selected then the intersection would be built. To not include it in the "No-Build" alternative is to deny the true no-build scenario, and skews the no-build analysis. In all fairness, both MCB2 alternatives and the no-built alternative need to appropriately consider an interchange at the US 158/NC 12 intersection.

Transportation Permitting Unit
1650 Mail Service Center, Raleigh, North Carolina 27699-1650
Location: 2321 Crabtree Blvd., Raleigh, North Carolina 27604
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4. It is stated in several places in the document that if MCB4 were to be selected as the preferred alternative, the components that could not be funded through tolling would have to be funded or financed through the NCDOT. However, it is not discussed which components this may include. Please provide further details on those components which would be DOT funded.

5. It is stated on Page 1-3 that congestion occurs on almost all of NC 12 in the project area, mentioning that just south of Southern Shores and Duck as well as east of the Wright Memorial Bridge on US 158 tend to be the most congested. The statements should be clarified. As written, one would assume that congestion is a constant problem in these areas. However, this is most likely during summer peak hours as well as other high demand times, and most likely not during off-peak times. Other bulleted statements associated with the discussion are clarified and presented in more detail than this particular bullet.

6. Please explain the black rectangles in Figure 2-11(STIP Projects in the No-Build Alternative) that appear to be associated with R-4429. Also, as previously mentioned, the DWQ feels that R-4457 should be represented on this map.

7. The first part of Section 2.1.7.2 appears to be in conflict, is unclear, and needs to be clarified. The first sentence states that preliminary designs assume drainage over Currituck Sound and Maple Swamp would not be captured. The third sentence states that if this is done (referring to the first sentence about not capturing drainage) then the first inch of runoff from the bridge could be captured and treated.

8. The DWQ is very concerned about stormwater run-off from this project. It is stated in section 3.3.1.4 (Impacts to Water Quality), with respect to permanent impacts from stormwater runoff, that "the primary pollutants associated with bridge and highway runoff include particulates, organic compounds, nutrients, and heavy metals. These pollutants accumulate on impervious surfaces and are derived from automobiles, and materials used in construction and maintenance of roadways. These substances have the potential to affect negatively aquatic life by directly or indirectly interfering with various biological processes and cycles." The text further states "Pollutants discharged into Currituck Sound from a bridge could dissipate slowly because of poor water circulation, and could result in bioaccumulation and higher sediment pollutant levels than in areas with higher flow and better water circulation. Thermal and turbidity differences in runoff also could affect water quality by depressing oxygen levels and light penetration." The DWQ is concerned with the effects on the macro benthos, SAV, fish and wildlife, and overall water quality.

   In issuing a 401 Water Quality Certification, 15 NCAC 2H .0506(b) states (in part) that certification may be issued if the project does not result in the degradation of surface waters; provides for protection of downstream water quality standards through the use of on-site stormwater control measures; and will minimize adverse impacts to the surface waters based on vegetation, fish and wildlife resources, and hydrological conditions. In order to obtain a 401 Water Quality Certification, the NCTA will have to provide reasonable assurance to the DWQ that these criteria are being met.

9. Section 2.1.7.2 (Bridge Drainage) states "the preliminary designs assume that bridges over Currituck Sound and Maple Swamp would drain directly into Currituck Sound and Maple Swamp. Drainage would not be captured and treated to remove motor vehicle pollutants." The DWQ has concerns with allowing untreated water to be discharged directly into Currituck Sound.

10. Additional details need be included regarding stormwater treatment Option 3. It is not discussed where off-site treatment components (i.e. detention ponds, treatment wetlands, swales, etc.) would be located. It is also not mentioned if additional impacts to resources such as CAMA

wetlands or AEC's will occur. The possibility of off-site stormwater treatment mitigation is not discussed either. These issues need to be addressed in the document.

11. If a stormwater treatment option is used that involves bridge deck filter devices, and perhaps some options involving detention basins, the DWQ will require a satisfactory operating and maintenance (O & M) agreement.

12. Section 2.1.7.2 states that stormwater treatment Option 3 is assumed in preliminary designs and assessed in the DEIS. However, the footnote for Table 2-4 (Cost of Detailed Study Alternatives) indicates that the costs in the table assume treatment Option 2.

13. The NCTA is strongly encouraged to contact the DWQ's Stormwater Permitting Unit to further discuss what the appropriate treatment level and options would be required to obtain necessary treatment levels. The NCTA is further encouraged to do so before preliminary designs are begun so any necessary design features can be taken into account before design begins.

14. While submerged aquatic vegetation (SAV) is briefly discussed, there is no corresponding map showing the location of known SAV areas. Please include a map showing the bridge alternatives overlain with the most recently mapped SAV locations.

15. The documents states that EEP will be utilized for wetland and stream impacts associated with the project. The DWQ prefers on-site mitigation when feasible and practicable, and understands that potential on-site mitigation will be investigated at a later time. The document, however, does not discuss how impacts to SAV will be mitigated for should a bridge alternative be selected. It is preferred that the NCTA begin considering mitigation options as soon as possible, as mitigation for SAV is not as straight-forward as those for streams and wetlands. Final details, including any amount required, can be detailed later after a preferred alternative is selected. It is strongly suggested that the NCTA begin discussions with the DWQ and the DCM regarding this matter.

16. The NCTA should verify that most of Maple Swamp has been logged and consider this impact and update the document as necessary. For example, the effects of the swamp being clear-cut, to the extent that DWQ understands, will most likely effect the drainage and hydrology in the area. Appropriate calculations should be recalculated and considered accordingly. For example, it could increase potential flooding in the event of a major storm because the water storage capacity of the area has been decreased. Therefore, it may be prudent to consider this when discussing potential flooding. This increase in water may also affect what size culvert(s) would be needed to appropriately convey water should Option B (road on fill through Maple Swamp) be selected.

    It is also stated in Section 3.3.6.4 that land-locked parcels should be purchased and protected from future logging and this land would be set aside as a conservation area and allowed to retain its natural state. If these potential land-locked parcels planning to be preserved have been logged, then the resource desiring protection no longer exists.

17. Section 3.1.4.3 discusses outdoor advertising sign (billboard) relocations. It is stated that such structures are classified as personal property. Generally, compensation is not paid for personal property; such items are moveable, unlike real property and structures. In fact, most contracts require billboards to be removed from the property at such time the contract expires and is not renewed. Additionally, billboards can be moved and relocated, perhaps to the same general area. The DWQ does not view billboard relocations as a compensable impact and will not be considering them as such in determining the preferred alternative.

18. Regarding sea level rise, a map showing which areas will be regularly inundated or at-risk based on the modeling results should be presented. Also, the modeling results presented are based on the scenario on the year 2100. The point is made that, based on the modeling results, the Outer Banks will be permanently breached near the Dare/Currituck County line and the bridge will be the only route off the island. The bridge will be well beyond its useful life in 2100, even if the bridge does last the potential 75 years indicated in the document. The document also assumes that no other improvements to alleviate this breach (or any other issues associated with sea level rise) are constructed or addressed. Most likely, these issues will be addressed by NCDOT as they arise. Additionally, the document seems to assume that the bridge will be replaced at the end of its useful life, as once again the document seems to indicate that the bridge will be the only way off a breached Outer Banks based on modeling results for the year 2100. If the bridge is not replaced, and there is no guarantee that it will be, then this link to the mainland will not exist. Since the design year for the bridge and associated components is 2035, it would seem more appropriate that the sea level modeling results would be better served to address a time frame closer to 2035 rather than 2100. While the creation of the breach may be gradual (if not assisted by strong storm activity or hurricanes), it is not discussed when the breach is anticipated to become significant. As such, it is unclear if the bridge will still be in service at this time. The document assumes that this is the case, but no information is provided in support of this.

19. Section 3.5.7 asks if lighting would be used to allow construction at night. However, the discussion does not answer the question, rather just states that it is "not uncommon to restrict construction to daytime hours." While Aydlett and the Outer Banks may be the most critical areas, it is stated that people in Aydlett enjoy stargazing because the relative darkness of the area. So, to use nighttime lighting outside of these areas could further diminish this activity. Also, because of the openness of the sound, and nighttime lighting used for construction, even temporarily, could be detrimental and distracting as it could be seen for some distance from the work site.

20. Section 3.5.9, which discusses utility relocations, should be expanded. While it may be premature to discuss specific details as an alternative has not been selected yet, it should be discussed what types of utilities are within the project area, primary service provider company names, and if any major utility crossings will be affected by construction, and whether any impacts to jurisdictional resources will be anticipated. Also, the table of impacts does not indicate if an alternative involves a major utility crossing or not. For example, the current corridor location being considered on the mainland is parallel to electric utility lines, and is in close proximity to the utility corridor. Also, is a power substation located in Aydlett. The MCB2 and MCB4 alternatives have to be routed around this station. Such items should be discussed in the document as there may be conflicts with these structures.

21. The DEIS does not go into much detail regarding indirect and cumulative effects on overall water quality. Such an analysis will be required for this project per DWQ's *Cumulative Impacts and the 401 Water Quality Certification and Isolated Wetland Permit Programs* (available online at http://portal.ncdenr.org/web/wq/swp/ws/401/policies). Typically this analysis is performed after a preferred alternative is selected to allow for appropriately focused results. The DWQ has not received a copy of the *Indirect and Cumulative Effects Technical Report* and as such has not properly reviewed the report. The DWQ will review the document included in the CD and decide if it sufficient enough to meet the DWQ's requirements and provide comments in a separate letter.

22. The impact tables refer to "ponds." No further details or further discussions are given regarding these ponds and whether or not they are jurisdictional or stormwater ponds. If they are stormwater ponds associated with a DWQ issued stormwater permit, then they will need to

be reconfigured to assure that no net loss of treatment is occurring. If necessary, please contact the DWQ to discuss further details.

23. It should be stated in the document that there are no DWQ riparian buffer areas currently located within the Pasquotank River Basin. Therefore, no riparian buffer impacts will be incurred.

24. The DWQ understands that the 1995 DEIS was rescinded by the NCTA. However, the DEIS, as well as the 1995 Alternatives Study Report, discuss in detail bridge corridors that were significantly north and south of the currently proposed corridor. It may be worthwhile to include a brief discussion of these early corridors and why they were eliminated. This would help the NCTA in supporting the current corridors and show that other areas where considered for the crossing but where not shown to be viable.

25. A land suitability map is includes as Figure 3-11. However, the map covers all of Currituck County and is too small to see much detail. The DWQ is most interested in the area around the potential bridge corridors. A land suitability map zoomed to the corridor area that has the corridors overlain would provide useful information and should be included.

General Comments:

26. The environmental document, as well as the 401 Water Quality Certification Application, should provide a detailed and itemized presentation of the proposed impacts to wetlands and streams with corresponding mapping. If mitigation is necessary as required by 15A NCAC 2H.0506(h), it is preferable to present a conceptual (if not finalized) mitigation plan with the environmental documentation. Appropriate mitigation plans will be required prior to issuance of a 401 Water Quality Certification.

27. After the selection of the preferred alternative and prior to an issuance of the 401 Water Quality Certification, the NCDOT is respectfully reminded that they will need to demonstrate the avoidance and minimization of impacts to wetlands (and streams) to the maximum extent practical. In accordance with the Environmental Management Commission's Rules (15A NCAC 2H.0506[h]), mitigation will be required for impacts of greater than 1 acre to wetlands. In the event that mitigation is required, the mitigation plan shall be designed to replace appropriate lost functions and values. The NC Ecosystem Enhancement Program may be available for use as wetland mitigation.

28. In accordance with the Environmental Management Commission's Rules (15A NCAC 2H.0506[h]), mitigation will be required for impacts of greater than 150 linear feet to any single perennial or intermittent stream. In the event that mitigation is required, the mitigation plan shall be designed to replace appropriate lost functions and values. The NC Ecosystem Enhancement Program may be available for use as stream mitigation.

29. The NCTA is respectfully reminded that all impacts, including but not limited to, bridging, fill, excavation and clearing, and rip rap to jurisdictional wetlands, streams, and riparian buffers need to be included in the final impact calculations. These impacts, in addition to any construction impacts, temporary or otherwise, also need to be included as part of the 401 Water Quality Certification Application.

30. Bridge deck drains shall not discharge directly into the stream. Stormwater shall be directed across the bridge and pre-treated through site-appropriate means (grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. Please refer to the most current version of NCDWQ's *Stormwater Best Management Practices.*

31. The 401 Water Quality Certification application will need to specifically address the proposed methods for stormwater management. More specifically, stormwater shall not be permitted to discharge directly into streams or surface waters.

32. Borrow/waste areas should avoid wetlands to the maximum extent practical. Impacts to wetlands in borrow/waste areas will need to be presented in the 401 Water Quality Certification and could precipitate compensatory mitigation.

33. Based on the information presented in the document, the magnitude of impacts to wetlands and streams may require an Individual Permit (IP) application to the Corps of Engineers and corresponding 401 Water Quality Certification. Please be advised that a 401 Water Quality Certification requires satisfactory protection of water quality to ensure that water quality standards are met and no wetland or stream uses are lost. Final permit authorization will require the submittal of a formal application by the NCTA and written concurrence from NCDWQ. Please be aware that any approval will be contingent on appropriate avoidance and minimization of wetland and stream impacts to the maximum extent practical, the development of an acceptable stormwater management plan, and the inclusion of appropriate mitigation plans where appropriate.

34. If foundation test borings are necessary; it shall be noted in the document. Geotechnical work is approved under General 401 Certification Number 3687/Nationwide Permit No. 6 for Survey Activities.

35. Sediment and erosion control measures sufficient to protect water resources must be implemented and maintained in accordance with the most recent version of North Carolina Sediment and Erosion Control Planning and Design Manual and the most recent version of NCS000250.

NCDWQ appreciates the opportunity to provide comments on your project. Should you have any questions or require any additional information, please contact David Wainwright at (919) 715-3415.

cc: Bill Biddlecome, US Army Corps of Engineers, Washington Field Office
George Hoops, Federal Highway Administration
Chris Militscher, Environmental Protection Agency (electronic copy only)
Travis Wilson, NC Wildlife Resources Commission (electronic copy only)
Cathy Brittingham, Division of Coastal Management
Garey Ward, NCDWQ Washington Regional Office
File Copy

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Water Quality
Coleen H. Sullins
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Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

October 5, 2010

MEMORANDUM

To: Jennifer Harris, P.E., NCTA

From: David Wainwright, Division of Water Quality DHW

Subject: Response to the Mid-Currituck Bridge Study – Indirect and Cumulative Effects Technical Report, Currituck County, TIP R-2576.

This office has reviewed the referenced document dated November 2009. The NC Division of Water Quality (NCDWQ) is responsible for the issuance of the Section 401 Water Quality Certification for activities that impact Waters of the U.S., including wetlands. Under 15A NAC 2H .0500 (.0506[4]), it is the NCDWQ's responsibility to ensure that projects do not result in cumulative effects or cause a violation of downstream water quality based on reasonably anticipated future impacts.

Upon reviewing the information provided in the referenced document, the NCDWQ has concluded that the information provided does not fully address the NCDWQ's concerns regarding potential cumulative impacts and preservation of downstream water quality. The NCDWQ believes the document is deficient for the following reasons:

- A LEDPA has not been chosen for this project. Currently, there are two alternatives still being considered; the bridge and upgrade existing alternatives. Generally, a LEPDA is chosen before an ICE analysis is performed. This allows the applicant to better focus on a single alternative and, in turn, require fewer resources.
- Bridge stormwater is not addressed sufficiently. The general conclusion in the document is that stormwater effects from the bridge to Currituck Sound and wetlands will be negligible. This conclusion appears to be made based on the amount of stormwater anticipated to discharge from the bridge compared to the size of Currituck Sound, and does not seem to recognize that pollutants are concentrated in stormwater runoff. Furthermore, a stormwater management plan for the bridge has not been presented in the document, although more recent discussion between the NCTA and the NCDWQ have begun to shape a potential plan. However, a plan comprehensive enough to satisfy the NCDWQ has not been presented and therefore the NCDWQ cannot fully analyze the information provided and determine if cumulative impacts would likely occur with the construction of the project.
- It is concluded that 34 businesses would most likely relocate from the Outer Banks to the mainland of Currituck County. However, there is no mention of new businesses that may choose to locate along the US 158 corridor or other areas near the bridge. It is not discussed what types of businesses, either new or relocated, these could potentially be or if housing will be required or desired for employees of these businesses. Certain businesses are prone to effect water quality more than others.

Furthermore, it is unclear to the NCDWQ why future development associated with the bridge will be restricted to a 1.5 mile radius from the bridge intersection with US 158 as stated in the document. The *Economic Development Strategy "Vision Plan" for Currituck County, North Carolina* study concluded that construction would occur within a 7.5 square-mile area, not a 1.5 mile radius. The NCDWQ suggests that the analysis and references of a 1.5 mile circle (and all other circles) be removed from the document and development focus be moved to the entire study area.

- The NCDWQ is concerned with future development on the mainland around the bridge in part because the "vision study" referred to in the ICE states that than an increase in new retail, entertainment, and hospitality services is anticipated by Currituck County. The County would like to boost a lagging economic and employment sector. On the Outer Banks, it is stated that Currituck County would like to capture some of the retail sales and tax revenue it feels is being lost to Dare County. These ideas indicate that Currituck County has plans to allow more commercial and housing on the mainland and the Outer Banks to the extent possible. Any plans they have regarding economic development as a result of the bridge should be discussed and considered for indirect and cumulative effects to the extent that they are known or anticipated.
- Current land use maps are included for Kitty Hawk and Duck; a future land use map is included for Kitty Hawk. Land suitability maps are included for Duck, Kitty Hawk, and Currituck County. The NCDWQ has several issues concerning this information:
    - There is no indication on the maps to as to what year the data represent. The "current year" is 2006 according to the text. It is unclear what year represents the "future." Ideally this should be 2035as this is the project's horizon year.
    - For proper ICE analysis, the NCDWQ requires maps depicting actual zoned or planned zoning for the current year as well as anticipated future land use, as was included for Kitty Hawk. Land suitability, while useful, is not a substitute as it does not indicate with enough certainty where towns will allow certain types of development to occur, rather only if the land is suitable for development. This is important as the type and density of development allowed in an area affects water quality differently. Also, the NCDWQ considers any planned shifts in zoning, especially those that may be in conjunction with a given project, as a predictor of potential development, which may in turn affect water quality. This is perhaps most critical for the Currituck mainland as it has a large amount of undeveloped land and therefore has the most potential for development and growth. However, it is important for the outer banks as well since it is indicated that Currituck County wants more businesses in the area.
    - The map for Currituck County is at such a large scale that the areas that may be affected by future development cannot be effectively seen. Maps should be included at a scale that information being depicted can easily be analyzed.
    - The maps should have road corridors overlain such that they can be seen in relationship to zoning and land suitability, most notably the bridge corridor.
- It is unclear if new development in the area will have water and sewer available or if well and septic tanks will be utilized. If sewer will be provided, a brief discussion about which facility will service the area, whether the facility is compliance, and if the facility has enough capacity to handle expected growth or if upgrades would be necessary should be included. If the facility is not in compliance with permits, then additional impacts to surface waters may occur. In contrast, if septic tanks are to be used then a discussion of this should be included, and potential septic tank failures should be addressed as well, since this will have an effect on water quality.
- The document, with respect to water quality, is focused on impacts to Currituck Sound. The NCTA is respectfully reminded that, although Currituck Sound is the most dominant waterbody in the project area, the NCDWQ is concerned about effect to all jurisdictional waters within the project area.

Transportation Permitting Unit
1650 Mail Service Center, Raleigh, North Carolina 27699-1650
Location: 2321 Crabtree Blvd., Raleigh, North Carolina 27604
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Internet: http://h2o.enr.state.nc.us/ncwetlands/

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- The NCDWQ is concerned about impacts to submerged aquatic vegetation (SAVs). The document discusses shading from the bridge. However, potential impacts from turbidity and other potential pollutants should be addressed, including measures which will be taken to reduce the impacts.

In conclusion, it is suggested that once a preferred corridor is selected that the above issues be addressed by the NCTA. Once a preferred alternative is selected the response to the above issues can be focused to a given area and alternative.

The NCTA is reminded that issuance of a 401 Water Quality Certification requires that appropriate measures be instituted to ensure that water quality standards are met and designated uses are not degraded or lost. If you have any questions or require additional information, please contact David Wainwright at (919) 715-3415.

cc: Chris Militscher, Environmental Protection Agency (electronic copy only)
Garcy Ward, NCDWQ Fayetteville Regional Office
File Copy

NCDENR

North Carolina Department of Environment and Natural Resources

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

May 26, 2010

JUN 2010
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Secretary's Office
DOT

MEMORANDUM

TO: Melba McGee, DENR Environmental Coordinator

FROM: Harry LeGrand, Natural Heritage Program

SUBJECT: DEIS – Mid-Currituck Bridge Study; Aydlett to Corolla, Currituck and Dare counties

REFERENCE: Project No. 10-0361

The Natural Heritage Program has reviewed the DEIS, in particular the Natural Resources Technical Report in the Appendix. The DEIS correctly indicates the locations of the Significant Natural Heritage Areas in the project area, on Figure 3-5. The primary site that will be impacted by a new bridge is the Maple Swamp Gordonia Forest, which currently is bisected by Aydlett Road. As the Technical Report indicates, there is an existing east-west powerline corridor to the north of Aydlett Road, and it also states that there have been a number of recent clearcuts in this area. The 2008 aerial photos show that about 1-1.25-miles of the swamp on the north side of Aydlett Road (including on both sides of the powerline clearing) have recently been cleared. Fortunately, the swamp from Aydlett Road to the south, a distance of over 3.5 miles, and from the clearcut area north to Waterlily Road, a distance of about 1.7 miles, still appear to be in natural condition.

There are two options for getting traffic from US 158 to Aydlett, as shown in Figure 2.7. Our Program preference is Option B, which involves a new road at ground level, but with several wildlife underpasses and culverts. This option would be constructed mostly within the already cleared forested area north of Aydlett Road, and it would also include the removal of the existing Aydlett Road; this road site would be allowed to return to a wetland forested condition, over time. Option A involves a bridge over the swamp, but leaves Aydlett Road in place. However, because the area to be bridged has mostly been clearcut recently, and because Aydlett Road currently is at ground level with no animal movement passages, it appears that this option is not as favorable to our Program.

On the Currituck Banks side of the project area, our Program has little or no preference between Options C1 and C2, as neither impacts known rare species or Significant Natural Heritage Areas. This portion of the project area is mostly heavily developed, except for a very narrow strip of wetland along the Currituck Sound shoreline.

The project may slightly impact several additional natural areas elsewhere, in terms of widening of existing roads such as US 158. Our Program hopes that widening can be done on the sides of the existing roads opposite the natural areas, if feasible.

Please do not hesitate to contact me at 919-715-8697 if you have questions or need further information.

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State of North Carolina
Department of Environment and Natural Resources

Reviewing Office: Washington

INTERGOVERNMENTAL REVIEW - PROJECT COMMENTS

Project Number: 10-0361 Due Date: 5-27-10

After review of this project it has been determined that the ENR permit(s) and/or approvals indicated may need to be obtained in order for this project to comply with North Carolina Law. Questions regarding these permits should be addressed to the Regional Office indicated on the reverse of the form. All applications, information and guidelines relative to these plans and permits are available from the same Regional Office.

	PERMITS	SPECIAL APPLICATION PROCEDURES or REQUIREMENTS	Normal Process Time (statutory time limit)
[ ]	Permit to construct & operate wastewater treatment facilities, sewer system extensions & sewer systems not discharging into state surface waters	Application 90 days before begin construction or award of construction contracts. On-site inspection. Post-application technical conference usual.	30 days (90 days)
[ ]	NPDES - permit to discharge into surface water and/or permit to operate and construct wastewater facilities discharging into state surface waters.	Application 180 days before begin activity. On-site inspection. Pre-application conference usual. Additionally, obtain permit to construct wastewater treatment facility-granted after NPDES. Reply time, 30 days after receipt of plans or issue of NPDES permit-whichever is later.	90-120 days (N/A)
[ ]	Water Use Permit	Pre-application technical conference usually necessary	30 days (N/A)
[ ]	Well Construction Permit	Complete application must be received and permit issued prior to the installation of a well	7 days (15 days)
[ ]	Dredge and Fill Permit	Application copy must be served on each adjacent riparian property owner On-site inspection. Pre-application conference usual. Filling may require Easement to Fill from N.C. Department of Administration and Federal Dredge and Fill Permit.	55 days (90 days)
[ ]	Permit to construct & operate Air Pollution Abatement facilities and/or Emission Sources as per 15 A NCAC (2Q 0100 thru 2Q 0300)	Application must be submitted and permit received prior to construction and operation of the source. If a permit is required in an area without local zoning, then there are additional requirements and timelines (2Q 0113).	90 days
[ ]	Permit to construct & operate Transportation Facility as per 15 A NCAC (2D 0800, 2Q 0601)	Application must be submitted at least 90 days prior to construction or modification of the source	90 days
✓	Any open burning associated with subject proposal must be in compliance with 15 A NCAC 2D 1900	N/A	60 days (90 days)
✓	Demolition or renovations of structures containing asbestos material must be in compliance with 15 A NCAC 2D 1110 (a) (1) which requires notification and removal prior to demolition. Contact Asbestos Control Group 919-707-5950		
[ ]	Complex Source Permit required under 15 A NCAC 2D 0800		
[ ]	The Sedimentation Pollution Control Act of 1973 must be properly addressed for any land disturbing activity. An erosion & sedimentation control plan will be required if one or more acres to be disturbed. Plan filed with proper Regional Office (Land Quality Section) At least 30 days before beginning activity. A fee of **$65** for the first acre or any part of an acre. An express review option is available with additional fees		20 days (30 days)
X	Sedimentation and erosion control must be addressed in accordance with NCDOT's approved program. Particular attention should be given to design and installation of appropriate perimeter sediment trapping devices as well as stable stormwater conveyances and outlets		(30 days)
[ ]	Mining Permit	On-site inspection usual. Surety bond filed with ENR Bond amount varies with type mine and number of acres of affected land. Any arc mined greater than one acre must be permitted. The appropriate bond must be received before the permit can be issued.	30 days (60 days)
[ ]	North Carolina Burning permit	On-site inspection by N.C. Division Forest Resources if permit exceeds 4 days	1 day (N/A)
[ ]	Special Ground Clearance Burning Permit - 22 counties in coastal N.C. with organic soils	On-site inspection by N.C. Division Forest Resources required "if more than five acres of ground clearing activities are involved. Inspections should be requested at least ten days before actual burn is planned."	1 day (N/A)
[ ]	Oil Refining Facilities	N/A	90-120 days (N/A)
[ ]	Dam Safety Permit	If permit required, application 60 days before begin construction. Applicant must hire N.C. qualified engineer to: prepare plans, inspect construction certify construction is according to ENR approved plans. May also require permit under mosquito control program. And a 404 permit from Corps of Engineers. An inspection of site is necessary to verify Hazard Classification. A minimum fee of $200.00 must accompany the application. An additional processing fee based on a percentage or the total project cost will be required upon completion.	30 days (60 days)

	PERMITS	SPECIAL APPLICATION PROCEDURES or REQUIREMENTS	Normal Process Time (statutory time limit)
[ ]	Permit to drill exploratory oil or gas well	File surety bond of $5,000 with ENR running to State of NC conditional that any well opened by drill operator shall, upon abandonment, be plugged according to ENR rules and regulations.	10 days N/A
[ ]	Geophysical Exploration Permit	Application filed with ENR at least 10 days prior to issue of permit. Application by letter. No standard application form.	10 days N/A
[ ]	State Lakes Construction Permit	Application fees based on structure size is charged. Must include descriptions & drawings of structure & proof of ownership of riparian property.	15-20 days N/A
✓	401 Water Quality Certification	N/A	60 days (130 days)
[ ]	CAMA Permit for MAJOR development	$250.00 fee must accompany application	55 days (150 days)
[ ]	CAMA Permit for MINOR development	$50.00 fee must accompany application	22 days (25 days)
[ ]	Several geodetic monuments are located in or near the project area. If any monument needs to be moved or destroyed, please notify N.C. Geodetic Survey, Box 27687 Raleigh, NC 27611		
[ ]	Abandonment of any wells, if required must be in accordance with Title 15A. Subchapter 2C.0100.		
[ ]	Notification of the proper regional office is requested if "orphan" underground storage tanks (USTS) are discovered during any excavation operation.		
✓	Compliance with 15A NCAC 2H.1000 (Coastal Stormwater Rules) is required.		45 days (N/A)
[ ]	Tar Pamlico or Neuse Riparian Buffer Rules required.		

* Other comments (attach additional pages as necessary, being certain to cite comment authority)

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REGIONAL OFFICES

Questions regarding these permits should be addressed to the Regional Office marked below.

[ ] **Asheville Regional Office**
2090 US Highway 70
Swannanoa, NC 28778
(828) 296-4500

[ ] **Mooresville Regional Office**
610 East Center Avenue, Suite 301
Mooresville, NC 28115
(704) 663-1699

[ ] **Wilmington Regional Office**
127 Cardinal Drive Extension
Wilmington, NC 28405
(910) 796-7215

[ ] **Fayetteville Regional Office**
225 North Green Street, Suite 714
Fayetteville, NC 28301-5043
(910) 433-3300

[ ] **Raleigh Regional Office**
3800 Barrett Drive, Suite 101
Raleigh, NC 27609
(919) 791-4200

[ ] **Winston-Salem Regional Office**
585 Waughtown Street
Winston-Salem, NC 27107
(336) 771-5000

[✓] **Washington Regional Office**
943 Washington Square Mall
Washington, NC 27889
(252) 946-6481

MEMORANDUM

TO: Melba McGee – Environmental Coordinator – Office of Legislative & Intergovernmental Affairs

THROUGH: David May – Regional Supervisor – Aquifer Protection – Washington

FROM: Randy Sipe – Aquifer Protection Section – Washington Regional Office

SUBJECT: Comments
Draft Environmental Impact Statement
Mid-Currituck Bridge
Currituck County
Project No. 10-0361

DATE: April 19, 2010

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The Draft Environmental Impact Statement (EIS) for above referenced project was reviewed and the following comment is offered:

1. It is this office's opinion that during the selection of a final preferred alternative for this project any potential impacts to any of the several permitted non-discharge wastewater treatment and disposal facilities present on the Outer Banks of Currituck County should be considered. For instance, under the recommended alternative MCB4 in the draft EIS it appears that if the southernmost bridge corridor (C2) is used the eastern terminus of the bridge will be very near both the Ocean Sands (WQ0000185) and Monteray Shores (WQ0009772) wastewater treatment and disposal systems. Also, under this alternative Highway 12 would be widened to 4 lanes by the Pine Island-Currituck Club (WQ0004823) wastewater treatment and disposal system, which irrigates treated effluent onto the Currituck Club golf course directly west of the highway. These facilities have a combined treatment and disposal capacity of over 1.6 million gallons per day and serve a substantial portion of the Outer Banks of Currituck County. Under 15A NCAC 02T, they must maintain specified setback distances to numerous features such as property lines, public right-of-ways, and drainage ditches, which all could be affected by the construction of the proposed project. Additionally, due to the proximity of the eastern bridge terminus to the wastewater facilities, site improvements related to the proposed project may affect localized surface water and groundwater drainage characteristics. Please be aware that any changes in drainage patterns may also affect operational performance of the wastewater facilities and should be taken into consideration. If the operation of these facilities is impacted by the proposed project there could also be significant impacts to the residents, landowners, and business owners served by these facilities.

Please contact me at 252-948-3849 should you have any questions regarding this matter.

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North Carolina Wildlife Resources Commission

Gordon Myers, Executive Director

MEMORANDUM

TO: Melba McGee
Office of Legislative and Intergovernmental Affairs, DENR

FROM: Travis Wilson, Highway Project Coordinator
Habitat Conservation Program

DATE: May 21, 2010

SUBJECT: North Carolina Turnpike Authority (NCTA) Draft Environmental Impact Statement (DEIS) for the proposed transportation improvements to the Currituck Sound area, Currituck and Dare counties North Carolina. SCH Project No. 10-0361.

Staff biologists with the N. C. Wildlife Resources Commission have reviewed the subject DEIS and are familiar with habitat values in the project area. The purpose of this review was to assess project impacts to fish and wildlife resources. Our comments are provided in accordance with certain provisions of the National Environmental Policy Act (42 U.S.C. 4332(2)(c)) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667d).

The NCTA is proposing transportation improvements between the mainland and Outer Banks region of Currituck Sound. The alternatives presented in the DEIS represent a final subset of alternatives that were developed to meet the purpose and need of the project. These alternatives include improvements to existing highway facilities, the construction of a new location bridge across Currituck Sound, as well as a combination of improving existing facilities with a new bridge. Additional options relating to the location and construction of the new location bridge were also evaluated.

Currituck Sound is a unique and important ecosystem in North Carolina and is currently experiencing stress from a variety of sources including development and stormwater runoff. Existing problems for the Currituck Sound Ecosystem were identified in the *Currituck Sound, North Carolina Ecosystem Restoration Feasibility Study, Feasibility Scoping Meeting Report, February 2010.* The following stressors were discussed:

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Telephone: (919) 707-0220 • **Fax:** (919) 707-0028

- *Currituck Sound has experienced a significant change and subsequent decline in ecosystem/habitat function with wide fluctuations in the type and quantity of SAV, changes in fish population, and changes in resident and winter waterfowl habitat.*
- *Water quality has declined over the past 50 years primarily due to an increase in turbidity and possible nutrient loading from non-point source runoff.*
- *SAV have significantly declined since the 1980's thereby reducing spawning habitat and or nursery habitat for a variety of freshwater, anadromous, shellfish, and estuarine fish species as well as primary food source for wintering waterfowl.*
- *Fish (largemouth bass) and wintering waterfowl populations have declined drastically due to the loss of SAV and increased salinity (proving toxic to young bass)*
- *Loss of waterbird nesting habitat*
- *Coastal marshes and Currituck Sound waters have been lost to erosion or invaded by exotic plant and animal species.*

This project has the potential to exacerbate or directly contribute to these problems.

Alternative ER2 is the only alternative evaluated in detail that does not include the construction of a new bridge across Currituck Sound, therefore relying on improvements made to the existing roads to meet the project purpose and need. By not constructing a new bridge impacts to sensitive habitats such as Currituck Sound and Maple Swamp would be avoided. Therefore, ER2 is the least damaging alternative to fish and wildlife resources in the project study area. However, this alternative would not be constructible as a toll facility and without funding, unlikely to be selected. The following comments are regarding the construction of a new location facility.

Alternatives MCB4 and MCB2 involve construction of a new bridge across the Currituck Sound originating at US 158 west of Aydlett and ending on the Outer Banks south of Corolla. The Mid-Currituck Bridge (MCB) alternatives will traverse the mainland portion of Currituck County through Maple Swamp on an alignment parallel and north of existing Aydlett Road. Maple Swamp is designated a Significant Natural Heritage Area (SNHA) of state significance. Consisting of non-riverine swamp forest, non-riverine wet hardwood forest, and one of the largest loblolly bay forests in the state, this area provides exemplary habitat for a multitude of species including great blue heron and great egret colonies as well as a bald eagle nest, numerous amphibian and reptile species, and large mammals such as black bear. Fragmentation of this area would have significant adverse impacts on the quality of this habitat and its use by wildlife. Two options have been presented for the Maple Swamp crossing in the MCB alternatives. Option A would bridge Maple Swamp and Option B would utilize a fill causeway for the crossing.

MCB Option A is the least environmentally damaging of the two options. Bridging the entire crossing of Maple Swamp would improve wildlife passage significantly over the use of a fill causeway. Both surface and subsurface hydrology through this area would also be largely undisturbed with Option A.

MCB Option B is more complex and would utilize a fill causeway with wildlife crossings, while placing the tolling station in the community of Aydlett and consequently allowing the removal of the existing Aydlett Road. Wildlife crossings have been shown to be effective for improving

highway permeability for wildlife. However, constructing this facility on fill material will likely necessitate the removal of several feet of muck and replacement with a compactable soil which will affect the subsurface hydrology of the area. Hydrologic alteration in these non-riverine wetland systems can result in permanent changes in the vegetative community. Furthermore, the limited openings provided by the wildlife crossing structures will be prone to seasonal inundation from surface flow which may be exacerbated by hydrology alterations. Surface water inundation of the wildlife crossing structures will reduce their effectiveness and may discourage use by certain species of wildlife. Although this option does offer the potential for removing existing Aydlett Rd which may somewhat restore the natural hydrology, it would not avoid and minimize impacts to the extent of Option A.

Noting the benefits of the Aydlett Road removal and the potential restoration of the hydrologic and vegetative conditions of this area, the NCTA should consider a third option. Bridging Maple Swamp and "landing" the bridge west of Aydlett prior to the location of the planned toll facility in Option B would still provide access for the community and would allow the removal of Aydlett Road. This option would provide the greatest avoidance, minimization, and potential mitigation of impacts to fish and wildlife resources in Maple Swamp. All MCB alternatives should bridge Maple Swamp.

Two MCB alignment options are also under consideration for the section over Currituck Sound. Denoted as C1 and C2 both would originate in the same location on the west side of the sound however; bridge corridor C1 would terminate at NC 12 approximately two miles north of Albacore Street and C2 would terminate approximately 0.5 miles south of C1.

Impacts presented in the document state that corridor C1 would fill approximately 2.6 acres more wetlands as alternative C2. Although not an insignificant difference in direct impacts, corridor C2 would affect more high quality habitat. The proximity of C2 to the extensive Pine Island/Currituck Natural Area marsh complex would adversely affect the use of the area by fish and wildlife. Additionally, this area has a greater coverage of submerged aquatic vegetation (SAV). Both of these habitats are important habitats for migratory waterfowl and a multitude of fish species in Currituck Sound. We feel C1 would minimize impacts to the highest quality habitat.

Two MCB alternatives address different levels of existing road improvements, MCB2 and MCB4. MCB4 only proposes minimal existing road improvements were MCB2 would improve substantial amounts of NC 12 and US 158. The increased amount of existing road improvements in MCB2 would have greater environmental impacts while providing minimal benefit over MCB4. We feel MCB4 would minimize impacts to fish and wildlife resources.

Potential impacts resulting from various alternative construction methodologies was mentioned but not discussed in detail in the document. We recognize it may be premature to have detailed information on constructability issues, however the potential exist for those techniques to have significant effects on the aquatic resources in Currituck Sound, and recommend that NCTA coordinate with resource agencies to address potential impacts as soon as sufficient information becomes available.

MAY 28 2010

TOWN OF DUCK, NORTH CAROLINA

May 21, 2010

Ms. Jennifer Harris, PE
Environmental Engineer
North Carolina Turnpike Authority
1578 Mail Service Center
Raleigh, NC 27699-1578

Re: Town of Duck Comments on the Mid-Currituck Bridge Draft Environmental Impact Statement

Dear Ms. Harris:

The purpose of this letter is to provide further comments to the North Carolina Turnpike Authority (NCTA) on behalf of the Town of Duck Town Council regarding the proposed Mid-Currituck Bridge subsequent to the recent publication of the Draft Environmental Impact Statement (DEIS). The Town Council met on May 5, 2010 to consider a resolution which supports the NCTA's recommended alternative as published in the Draft Environmental Impact Statement. The Town of Duck Town Council adopted this resolution which is attached for your reference.

The Town appreciates the efforts of the NCTA and all project team members in developing this much needed public infrastructure project. We are hopeful that the design and construction of the recommended alternative can be achieved as outlined in the current project schedule.

The Town agrees with NCTA's recommendation of MCB4 which involves construction of a two-lane bridge facility with associated widening of US 158 and NC 12 in the vicinity of the bridge approaches as described in the DEIS. As stated previously, the Town believes a widening only alternative would fail to accomplish all of the objectives listed in the project purpose and need and a three-lane widening of NC 12 within the Town would have a negative impact on the Duck community. The Town believes strongly that the alternative recommended by NCTA most cost-effectively achieves the project purpose and need and would have the most favorable impact on the Town of Duck with regards to traffic diversion and community disruption.

To reiterate comments provided to you after the May 2008 public hearings, the Town believes a bridge alternative is necessary not only to meet the legislative standard evacuation time of 18 hours, but also to provide an alternative evacuation route in the event NC 12 is blocked during a severe storm event. It is not unusual for portions of NC 12 within the Town or throughout the northern Outer Banks to become virtually impassable due to flooding caused by overwash or heavy rainfall. There is also the potential for inlet formation within the Town in areas with low elevation and narrow width from ocean to sound. The DEIS has indicated this potential in the

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vicinity of the Dare/Currituck County line. There has been a history of inlets in the northern Outer Banks including the Caffey's Inlet, which was known to be located approximately where the Palmer's Island subdivision currently exists at the northern end of the Town of Duck. In response to impacts from sea level rise, it is important to recognize that an additional bridge is necessary to maintain access as an alternative evacuation route.

In addition to hurricane evacuation, the Town strongly favors the bridge alternative since it would divert a significant amount of traffic that would otherwise be required to travel through the Town to reach the Currituck portion of the Outer Banks. The Mid-Currituck Preliminary Traffic and Revenue Study indicated that in 2006 28,800 vehicles traveled through the Duck commercial area during the summer weekend peak. The Average Annual Daily Traffic (AADT) at this time was noted at 19,500. This same report projected future traffic in the design year (2035) during the summer peak at 44,100 vehicles per day with future AADT at 29,000. These projections indicate that the design year AADT is expected to increase above the current summer peak traffic levels. It is anticipated that the bridge alternative would divert greater than 40 percent of the vehicles that would otherwise be required to travel through the Town, both when the bridge is immediately opened and in the design year. Without this traffic diversion, congestion in our community would reach intolerable levels and severely increase hazards for the significant number of bicyclists and pedestrians that use the shoulder and/or cross NC 12 within the Duck community. For these reasons, we believe a bridge alternative is essential to maintaining the quality of life in the Duck community.

The Town also believes the following impacts associated with the widening of NC 12 through the Duck community as identified in the DEIS are a significant concern that would change the character of the Town and are not consistent with the Town's goals and objectives:

- The need for home relocations and property/easement acquisitions to support road improvements and drainage infiltration areas for a third travel lane.
- The closing of local streets along NC 12 to facilitate NC 12 traffic flow. Within the Town of Duck, the following streets were identified; Widgeon Drive (SR 1479), Wood Duck Drive (SR 1477), Canvas Back Drive (SR 1476), and Old Squaw Drive (SR 1474).
- Widening NC 12 to a three-lane section would aggravate hazards for bicyclists and pedestrians, particularly when crossing NC 12. There are many areas of Town where the posted speed limit of 35 or 45 mph combined with limited sight distance makes crossing NC 12 challenging and unsafe. These areas would become increasingly difficult to cross with the addition of a third travel lane. A third travel lane would also limit the Town's ability to provide future pedestrian safety enhancements such as refuge areas in the median since the center lane would need to be completely unobstructed to be used as an additional travel lane.
- The widening of NC 12 would generally serve to increase the instances of speeding and the likelihood of vehicle related crashes within the Town. Anecdotal information provided during the Town's recent bicycle and pedestrian safety audit indicates that drivers tend to adjust speed depending on their comfort level with the roadway. As the width of the roadway increases, the driver's comfort level improves and the tendency to speed increases. Several recommendations provided to the Town during the pedestrian safety audit call for reducing travel lane widths or providing traffic calming measures to reduce vehicle speeds. The widening of NC 12 would complicate the Town's efforts to improve the safety for bicyclists and pedestrians on NC 12 and would encourage faster speeds through the Town.

Finally, we would like to reiterate that only a bridge alternative, without the widening of NC 12, would be consistent with the Town's adopted Land Use Plan as evidenced by the following statements included in the Plan:

- GOAL #26: Ensure a safe, efficient transportation system with NC 12 remaining a two-lane facility and the construction of a mid-Currituck County bridge.
- POLICY #26a: Duck supports the construction of a mid-Currituck County bridge and maintenance of the existing two-lane configuration of NC 12 with the Duck Trail along NC 12 through Duck.
- OBJECTIVE #26a: Lobby for the construction of a mid-Currituck County bridge.
- OBJECTIVE #26b: Lobby for maintaining NC 12 as a two-lane facility in its present configuration through Duck.
- OBJECTIVE #26d: Encourage the provision of a safe, efficient transportation system given State and local finances, topography, geography, and natural systems and surrounding land uses and development.

In closing, we would support a decision by the NCTA to carry forward the current recommended MCB4 alternative as the preferred alternative to be included in the Final Environmental Impact Statement. We believe this alternative best meets the stated purpose and need for the project while recognizing and mitigating the potential environmental and community impacts within the project area and within the Town of Duck.

Once again, thank you for the opportunity to comment on the Mid-Currituck Bridge project. If there is any further assistance we can provide regarding these comments or any other items necessary to support your efforts, please feel free to contact us at any time.

Sincerely,

Dave Wessel
Mayor

cc: Members of the Duck Town Council
Senator Marc Basnight
Representative Timothy L. Spear
Build the Bridge-Preserve Our Roads, Inc. (BB-PR)
Dare County, Currituck County, Town of Southern Shores, Town of Kitty Hawk, Town of Kill Devil Hills, Town of Nags Head, Town of Manteo

A RESOLUTION OF THE TOWN COUNCIL OF THE TOWN OF DUCK, NORTH CAROLINA, SUPPORTING THE RECOMMENDED ALTERNATIVE, MCB4, OF THE NCTA AND FHWA AS IDENTIFIED IN THE DEIS DATED MARCH 2010

Resolution No. 10-03

WHEREAS, the North Carolina Turnpike Authority (NCTA), a division of the North Carolina Department of Transportation (NCDOT), in cooperation with the Federal Highway Administration (FHWA), is evaluating proposed transportation improvements in the Currituck Sound area, including the consideration of the construction of a Mid-Currituck Bridge; and

WHEREAS, as a part of this evaluation process, a Draft Environmental Impact Statement (DEIS) has been published with the objective of providing the public and decision-makers with appropriate and relevant information to make an informed decision on which transportation improvement alternative to select for implementation; and

WHEREAS, the DEIS includes three chapters: a Purpose of and Need for Action, Alternatives, and Affected Environment and Environmental Consequences and also includes a recommended alternative; and

WHEREAS, the purpose of the proposed project is to substantially improve traffic flow on the project area's thoroughfares, i.e. NC 12 and US 158, substantially reduce travel time for persons traveling between the Currituck County mainland and the Currituck County Outer Banks, and to substantially reduce the hurricane clearance time for residents and visitors who use US 158 and NC 168 during coastal evacuation; and

WHEREAS, five detailed alternatives, identified as ER2, MCB2/C1, MCB2/C2, MCB4/C1 and MCB4/C2 plus a No-Build Alternative, are under consideration as a part of the DEIS; and

WHEREAS, among other factors, four factors are paramount to the selection of a project alternative for implementation: 1. Minimizing impacts to communities, cultural resources, and natural resources; 2. Effectiveness in meeting the project's purpose and need; 3. Cost and affordability; and 4. The ability to meet a variety of state and federal regulatory requirements; and

WHEREAS, based on extensive study of these four factors and the consideration of plethora of additional information, the NCTA and the FHWA have identified MCB4 as the Recommended Alternative; and

WHEREAS, MCB4 is characterized by the construction of two-lane toll bridge across the Currituck Sound with approach roads in Currituck County, a third outbound evacuation lane on US 158 between NC 168 and the Mid-Currituck Bridge as a hurricane evacuation lane or using the existing center turn lane as a third outbound evacuation lane, adding for evacuation use only, a third outbound evacuation lane on US 158 between the Wright Memorial Bridge and NC 12 as a hurricane evacuation improvement or using the existing center turn lane as a third outbound evacuation lane and widening NC 12 to four lanes and a median in the Currituck Outer Banks from Seashell Lane to the intersection of NC 12 and Mid-Currituck Bridge; and

WHEREAS, MCB4 would not require additional improvements to NC 12 within the Town of Duck, including the widening of NC 12 within the Town limits, thus being less costly than other alternatives and not creating adverse impacts to the Duck Community.

NOW, THEREFORE, BE IT RESOLVED, this 5th Day of May, 2010, that the Town Council and the citizens of the Town of Duck, North Carolina, do hereby strongly support the North Carolina Turnpike Authority's (NCTA) and the Federal Highway Administration's (FHWA) designation of MCB4 as the Recommended Alternative of the Mid-Currituck Bridge Study Draft Environmental Impact Statement; and

BE IT FURTHER RESOLVED, that the Town Council does hereby encourage the NCTA, in cooperation with the FHWA, to proceed with the preparation of Final Environmental Impact Statement and Record of Decision for the Mid-Currituck Bridge Study as quickly as is practical and to begin construction of MCB4 as the preferred alternative.

Adopted this 5th day of May 2010.

Mayor

ATTEST:

Robert O. Oakes, Jr.
Mayor

Wayne Gray
Mayor Pro Tem

Cliff Ogburn
Town Manager

Town of Nags Head
Post Office Box 99
Nags Head, North Carolina 27959
Telephone 252-441-5508
Fax 252-441-0776
www.townofnagshead.net

Doug Remaley
Commissioner

Anna D. Sadler
Commissioner

M. Renée Cahoon
Commissioner

MAY 2 4 2010

May 20, 2010

David W. Joyner, Executive Director
State of North Carolina Turnpike Authority
1578 Mail Service Center
Raleigh, NC 27699-1578

Re: Support of Alternative MCB4 for mid-Currituck County bridge

Dear Mr. Joyner:

On behalf of the Town of Nags Head Board of Commissioners, I request your consideration of the attached resolution.

The resolution expresses the Town of Nags Head's support of Alternative MCB4 as identified in the Draft Environmental Impact Statement dated March 2010 for a mid-Currituck County bridge.

Thank you for your consideration.

Sincerely,

Robert O. Oakes, Jr.
Mayor, Town of Nags Head

ROO/cfm

Attachment

Resolution No. 10-05-013
BOC Meeting May 5, 2010

A RESOLUTION OF THE BOARD OF COMMISSIONERS OF THE TOWN OF NAGS HEAD, NORTH CAROLINA, SUPPORTING ALTERNATIVE MCB4, OF THE NCTA AND FHWA AS IDENTIFIED IN THE DEIS DATED MARCH 2010

WHEREAS, the North Carolina Turnpike Authority (NCTA), a division of the North Carolina Department of Transportation (NCDOT), in cooperation with the Federal Highway Administration (FHWA), is evaluating proposed transportation improvements in the Currituck Sound area, including the consideration of the construction of a Mid-Currituck Bridge; AND

WHEREAS, as a part of this evaluation process, a Draft Environmental Impact Statement (DEIS) has been published with the objective of providing the public and decision-makers with appropriate and relevant information to make an informed decision on which transportation improvement alternative to select for implementation; AND

WHEREAS, the DEIS includes three chapters: a Purpose of and Need for Action, Alternatives, and Affected Environment and Environmental Consequences and also includes a recommended alternative; AND

WHEREAS, the purpose of the proposed project is to substantially improve traffic flow on the project area's thoroughfares, i.e. NC 12 and US 158, substantially reduce travel time for persons traveling between the Currituck County mainland and the Currituck County Outer Banks, and to substantially reduce the hurricane clearance time for residents and visitors who use US 158 and NC 168 during coastal evacuation; AND

WHEREAS, five detailed alternatives, identified as ER2, MCB2/C1, MCB2/C2, MCB4/C1 and MCB4/C2 plus a No-Build Alternative, are under consideration as a part of the DEIS; AND

WHEREAS, among other factors, four factors are paramount to the selection of a project alternative for implementation: 1. Minimizing impacts to communities, cultural resources, and natural resources; 2. Effectiveness in meeting the project's purpose and need; 3. Cost and affordability; and 4. The ability to meet a variety of state and federal regulatory requirements; AND

WHEREAS, based on extensive study of these four factors and the consideration of plethora of additional information, the NCTA and the FHWA have identified MCB4 as the Recommended Alternative; AND

WHEREAS, MCB4 is characterized by the construction of two-lane toll bridge across the Currituck Sound with approach roads in Currituck County, a third outbound evacuation lane on US 158 between NC 168 and the Mid-Currituck Bridge as a hurricane evacuation lane or using the existing center turn lane as a third outbound evacuation lane, adding for evacuation use only, a third outbound evacuation lane on US 158 between the Wright Memorial Bridge and NC 12 as a hurricane evacuation improvement or using the existing center turn lane as a third outbound evacuation lane and widening NC 12 to four lanes and a median in the Currituck Outer Banks from Seashell Lane to the intersection of NC 12 and Mid-Currituck Bridge; and

WHEREAS, MCB4 would not require additional improvements to NC 12 within the Town of Duck, including the widening of NC 12 within the Town limits, thus being less costly than other alternatives and not creating adverse impacts to the Duck Community.

NOW, THEREFORE, BE IT RESOLVED, this 5th Day of May 2010, that the Town of Nags Head Board of Commissioners does hereby support the North Carolina Turnpike Authority's (NCTA) and the Federal Highway Administration's (FHWA) designation of MCB4 as the Recommended Alternative of the Mid-Currituck Bridge Study Draft Environmental Impact Statement; AND

BE IT FURTHER RESOLVED, that the Town of Nags Head Board of Commissioners does hereby encourage the NCTA, in cooperation with the FHWA, to proceed with the preparation of Final Environmental Impact Statement and Record of Decision for the Mid-Currituck Bridge Study as quickly as is practical and to begin construction of MCB4 as the preferred alternative.

Adopted this 5th day of May 2010.

Robert O. Oakes, Jr., Mayor
Town of Nags Head

ATTEST:

Carolyn F. Morris, Town Clerk

Town of Southern Shores

5375 N. Virginia Dare Trail, Southern Shores, NC 27949

Phone 252-261-2394 / Fax 252-255-0876

info@southernshores-nc.gov

www.southernshores-nc.gov

Resolution 2010-05-01

A RESOLUTION OF THE SOUTHERN SHORES TOWN COUNCIL APPROVING THE NORTH CAROLINA TURNPIKE AUTHORITY DRAFT ENVIRONMENTAL STUDY ALTERNATIVE MCB4 AS THE ONLY ALTERNATIVE FOR CONSTRUCTION OF THE MID-CURRITUCK BRIDGE ACCEPTABLE TO THE TOWN OF SOUTHERN SHORES AND REJECTING ANY FUTURE IMPLEMENTATION OF ALTERNATIVE MCB2'S FUTURE PLAN FOR ADDRESSING STORM WATER ISSUES ON NC 12 IN SOUTHERN SHORES

WHEREAS, the Town of Southern Shores is a quiet, residential community maintaining a commitment to preserve the unique natural environment, and

WHEREAS, the North Carolina Turnpike Authority (NCTA) Mid-Currituck Bridge Study Draft Environmental Impact Statement (DEIS) of March 2010 proposes as the recommended alternative for construction of the Mid-Currituck Bridge to be Alternative MCB4, and

WHEREAS, this Alternative MCB4 does not recommend any alterations to NC 12 through the Town of Southern Shores,

NOW THEREFORE, BE IT RESOLVED that the Southern Shores Town Council is in total support of Alternative MCB4 as the only acceptable bridge construction alternative; and

BE IT FURTHER RESOLVED that the Southern Shores Town Council recognizes that NC 12 storm water drainage problems need to be addressed, but the Southern Shores Town Council opposes the plan proposed in Alternative MCB2 as a future means for remediating the storm water drainage issues, and

BE IT FURTHER RESOLVED that the Southern Shores Town Council will work with the North Carolina Department of Transportation (NCDOT) to develop an acceptable means of addressing storm water drainage on NC 12.

Adopted this 12 day of May 2010.

TOWN OF SOUTHERN SHORES SEAL

ATTEST: _____ Town Clerk

_____ Mayor

Appendix C

Non-Governmental Organization Comments on the DEIS

C. Non-Governmental Organization Comments on the DEIS

SOUTHERN ENVIRONMENTAL LAW CENTER – JUNE 7, 2010 ..... C-2

NATURE CONSERVANCY – JUNE 7, 2010 ..... C-13

SOUTHERN ENVIRONMENTAL LAW CENTER

Telephone 919-967-1450 | 200 WEST FRANKLIN STREET, SUITE 330 CHAPEL HILL, NC 27516-2559 | Facsimile 919-929-9421

June 7, 2010

Ms. Jennifer Harris
NC Turnpike Authority PBS&J
1578 Mail Service Center 5200
Raleigh, NC 27699-1578
(jennifer.harris@ncturnpike.org)

Re: Draft Environmental Impact Statement for Mid-Currituck Bridge

Dear Ms. Harris;

On behalf of the Audubon North Carolina, North Carolina Wildlife Federation, Environmental Defense Fund, and the Wilderness Society, the Southern Environmental Law Center submits the attached comments on the above-referenced Draft Environmental Impact Statement (DEIS), prepared by the North Carolina Turnpike Authority, a division of the North Carolina Department of Transportation, and the Federal Highway Administration (the "Transportation Agencies"). The DEIS analyzes the impacts of the proposed alternatives for the Mid-Currituck Bridge project ("the Toll Bridge").

In our comments, we identify a number of issues related to the proposed Toll Bridge that we believe require significantly greater disclosure and analysis to comply with the National Environmental Policy Act ("NEPA") and other federal and state laws prior to the potential permitting of this project. The key shortcomings of the DEIS include the following:

- The DEIS presents inflated estimates of traffic and population growth in the project area under the "no-build" scenario, skewing the analysis of the Toll Bridge's purpose and alternatives in favor of construction.
- The DEIS fails to analyze the Toll Bridge's secondary and cumulative impacts, claiming without basis that it would not significantly encourage development along the northern Outer Banks or cause any significant environmental impacts associated with that increased development.
- The DEIS fails to adequately support or explain its recommendation of the Toll Bridge alternative, a $600 million investment to reduce travel time to a small strip of shifting, hurricane-prone barrier peninsula unsuitable for intensive development, especially in light of climate change.

C-2

- The DEIS does not acknowledge or evaluate how the Toll Bridge would contribute to nonpoint source runoff, affecting habitat for wintering waterfowl and essential primary and secondary nursery areas for various fish species.

The immense scale, cost, and impact of this project calls for an especially thorough review under NEPA. The DEIS, however, belies any notion that the Transportation Agencies undertook an objective evaluation, which might have favored a transportation investment at odds with the North Carolina Turnpike Authority's narrow charge under N.C. Gen. Stat. 136-176(b)(2): "construction of the Mid-Currituck Bridge." The numerous and significant shortcomings of the DEIS prevent meaningful review of the Project, its many far-reaching direct and secondary impacts, and potential less damaging alternatives. Given the magnitude of these deficiencies, we urge the Transportation Agencies to revise their analysis of alternatives and impacts according to the recommendations set forth herein and to issue a revised Draft Environmental Impact Statement for public review and comment.

Sincerely,

J. David Farren
Senior Attorney

Julie Youngman
Senior Attorney

Thomas M. Gremillion
Associate Attorney

cc: Tim Gestwicki, North Carolina Wildlife Federation
Sam Pearsall, Environmental Defense Fund
Brent Martin, The Wilderness Society
John F. Sullivan, FHWA
Secretary Gene Conti, NCDOT
Heinz J. Mueller, USEPA
Steven Lund, USACE
Gregory Hogue, USFWS
Melba McGee, NCDENR
Marla Chambers, NCWRC
Polly Lespinasse, NCDWQ

Angie Rodgers, NCNHP
Juan Santamaria, ACS Infrastructure Development, Inc.
Walker Golder, Audubon North Carolina

INTRODUCTION

The Mid-Currituck Bridge would span seven miles of wetlands and coastal sound to access the northernmost strip of North Carolina's Outer Banks, which measures less than a mile wide for most of its length. The Currituck Banks barrier peninsula, separated from North Carolina's mainland by marshes and the Currituck Sound, is part of a dynamic barrier island system. Ocean overwash, high shoreline erosion rates, inlet formation, and other impacts generally associated with barrier islands make the project area ill-suited for the large-scale infrastructure and intensive development that would result from construction of the Toll Bridge contemplated in the Draft Environmental Impact Statement ("DEIS"). At the same time, those natural processes are instrumental in creating nesting habitat, feeding grounds, and fish nurseries for the abundant wildlife found in some of the last remaining natural areas on the northern Outer Banks, including a State Natural Area, a State Estuarine Preserve, State Game Lands, and National Wildlife Refuge lands, all located just a few miles from the planned terminus of the Toll Bridge. On the mainland side of the Sound, the Toll Bridge would encroach upon the Maple Swamp Gordonia Forest, designated a Significant Natural Heritage Area.

Currituck County and state transportation officials first hatched their plans for a bridge across the Mid-Currituck Sound in the 1970s. In 1975, the state Board of Transportation adopted a formal resolution favoring the Project. Since then, the Project has been the subject of numerous studies, each of which have concluded that other transportation improvements would better suit the needs of area residents with less taxpayer dollars, and cause far less damage to the environment. In 1998, the first DEIS for this Project was issued, but it was never followed by a Final EIS. According to the transportation agencies, a "majority" of those who spoke up at public hearings or submitted written comments on the project "expressed opposition to a Mid-Currituck Bridge because of natural resource impacts, the belief that the project would not solve hurricane evacuation needs, and the expectation that the project would facilitate development on the Outer Banks." [P&N Doc 1-9]

Now, in the new, current DEIS, the Transportation Agencies have refashioned the Mid-Currituck Bridge as a toll bridge, which may cost as much as $12 per crossing. But the potential of this project to generate toll revenue does not alter the basic calculus regarding whether it is feasibility and whether it belongs among the state's transportation priorities. Tolls would pay for only a fraction of the Bridge's cost. The project would require state "gap funding" appropriations over the next thirty years that are worth nearly $300 million today. The state would also back several hundred million dollars of loans and "toll revenue bonds." This public funding and debt capacity could be put to better use devoting them to North Carolina's pressing transportation needs. For example, it could address neglected maintenance and repair needs in the vicinity of the project, including the replacement of the Bonner Bridge over Oregon Inlet. The continued promotion of the Mid-Currituck Toll Bridge reflects the peculiar status of the North Carolina Turnpike Authority, which continues to pursue an independent transportation agenda, out of step with emerging federal and state policies on infrastructure investment, energy, and environmental stewardship, despite the passage of a law last summer "transferring the functions and funds" of the agency to the North Carolina Department of Transportation.[1]

[1] On July 17, 2009, Governor Perdue signed House Bill 1617, "an Act transferring the functions and funds of the North Carolina Turnpike Authority to the Department of Transportation to conserve expenditures and improve

The Mid-Currituck Bridge is an ill-conceived project with or without tolls, and with or without the limited involvement of a private sector partner. As the DEIS points out, this involvement is contingent upon the selection of a Toll Bridge alternative. The private partner consortium, led by the Spanish conglomerate Grupo ACS, is expected to contribute only $80 million, approximately ten percent of the project's construction costs, leaving the bulk of the remainder to be borne by North Carolina taxpayers. For Grupo ACS's investment to pay off, moreover, during the summer high season nearly 20,000 cars per day would need to pass over the Bridge and through Corolla, what is now an unincorporated community of some 500 permanent residents and 30 public beach access parking spaces. These financial plans implicate massive new investments in real estate and infrastructure, which would be highly vulnerable to hurricanes, sea level rise, erosion, and other phenomena that will exact ever higher costs as climate change impacts worsen.

The rigor of the Transportation Agencies' evaluation of this project under NEPA should have been commensurate with its scale, cost, and regional importance. Instead, the Transportation Agencies have issued a DEIS that suffers from multiple inaccuracies, omissions and other shortcomings. The DEIS fails to account for induced population growth, advancing the false claim that building a bridge where none currently exists would have no effect on the total amount of traffic in the area. As a result, the DEIS mischaracterizes the Toll Bridge's ability to advance the stated objectives for the project: relieving congestion and expediting hurricane evacuation. It also fails to adequately assess the Toll Bridge's impact on wildlife, including various endangered species, on water quality, on fisheries, and on the overall quality of experience for visitors and residents along the Outer Banks. These shortcomings prevent the meaningful and informed evaluation of this project as required by NEPA. The Agencies should issue a new DEIS that fully addresses these issues and compares the project's benefits to a viable existing road upgrade alternative before proceeding to the Final EIS phase.

C-4

I. NEPA

The National Environmental Policy Act, 42 U.S.C. § 4321 et seq. (NEPA), embodies a broad national commitment to protecting and promoting environmental quality. Robertson v. Methow Valley Citizens Council, 109 S. Ct. 1835, 1845 (1989). The preparation of an "environmental impact statement" or "EIS" satisfies the twin aims of NEPA: (1) to ensure that agency attention will be focused on the probable environmental consequences of the proposed action, and (2) to assure the public that the agency has considered environmental concerns in making its decision. North Buckhead Civic Ass'n v. Skinner, 903 F.2d 1533, 1540 (11th Cir. 1990). Most importantly, the EIS serves as a springboard for public comment and incorporates the critical views of other federal, state, and local agencies. Id.; Robertson, 490 U.S. at 349.

The adequacy of an EIS depends on whether the agency followed the procedure required by law in its preparation. North Buckhead, 903 F.2d at 1540. The preparer of an EIS "must go beyond mere assertions" and provide sufficient data and reasoning to enable a reader to evaluate the analysis and conclusions and to comment on the EIS. Silva v. Lynn, 482 F.2d 1282, 1287

Efficiency." Since the enactment of the law, however, the Turnpike Authority's management structure has remained essentially unchanged, and a separate board of directors continues to direct the Authority. Text of the bill is available at http://www.ncleg.net/Sessions/2009/Bills/House/HTML/H1617v4.html.

(1st Cir. 1973). An EIS requires the agency to take a "hard look" at environment impacts, and "an agency's hard look should include neither researching in a cursory manner nor sweeping negative evidence under the rug." Natl. Audubon Soc. v. Navy, 422 F.3d 174, 194 (4th Cir. N.C. 2005).

Equally important, an EIS provides the basis for a decision under Section 404(a) of the Clean Water Act, 33 U.S.C. § 1344(a), which authorizes the Corps of Engineers to issue permits for the discharge of dredged or fill materials into wetlands or other waters. The Corps must deny applications for section 404 permits if "[t]here is a practicable alternative to the proposed discharge that would have less adverse effect on the aquatic ecosystem, so long as such alternative does not have other significant adverse environmental consequences." 33 C.F.R. § 320.4(a)(i).

A. Purpose and Need

1. Project Needs and Goals

The DEIS states that the "purpose" of the Toll Bridge is to address the following needs:

- The need to reduce congestion along US 158 and NC 12.
- The need to reduce travel times "between the Currituck County mainland and the Currituck County Outer Banks."
- The need to reduce hurricane evacuation times from the areas along the Outer Banks currently accessible via US 158 and NC 12. (DEIS 1-3.)

As evidence of these needs, the DEIS cites projections of traffic congestion in 2035. The DEIS indicates that the worst congestion would occur "on US 158 east of the Wright Memorial Bridge and NC 12 in Southern Shores and parts of Duck." (DEIS 1-4.) The DEIS describes how traffic delays (with the No-Build Alternative) are projected to affect a "representative trip from the Currituck County mainland to the Currituck County Outer Banks." (DEIS 1-4.) It also states that hurricane evacuation times, defined as the time from when the first evacuee leaves until all evacuees have reached safety, from the northern Outer Banks are currently exceeding the state standard 18 hours, and will reach 36 hours by 2035 with the No-Build Alternative. (DEIS 1-5.)

2. Regulatory Framework

CEQ regulations require the Agencies to provide a statement specifying "the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action." 40 CFR § 1502.13. As the defined purpose of a proposed action may greatly affect the feasibility of alternatives, an agency "may not define the objectives of its action in terms so unreasonably narrow that only one alternative from among the environmentally benign ones in the agency's power would accomplish the goals of the agency's action," Citizens against Burlington, Inc. v. Busey, 938 F.2d 190, 196 (D.C. Cir. 1991). As another court explained, it is unreasonable for an agency "to narrow the objective of its action artificially and thereby circumvent the requirement that relevant alternatives be considered." City of New York v. Dep't

of Transp., 715 F.2d 732, 743 (2d Cir. 1983). Doing so would make the EIS a foreordained formality. Citizens Against Burlington, Inc., at 196. Instead, agencies must look hard at the factors relevant to the defined purpose. Once an agency has considered the relevant factors, it must define goals for its action that fall somewhere within the range of reasonable choices. Id.

3. Deficiencies in the Purpose and Needs Section

The DEIS's discussion of purpose and needs does not meet the requirements of NEPA. The only need that the Toll Bridge might actually address—reducing travel times "between the Currituck County mainland and the Currituck County Outer Banks"—is impermissibly narrow. By all accounts other than the current DEIS, including that of the previous 1998 DEIS, the Toll Bridge would exacerbate traffic congestion in the area and lengthen hurricane evacuation times.

The DEIS makes clear that the Toll Bridge would connect two parts of Currituck County that are currently accessible to one another only by traveling through part of Dare County. The DEIS does little to explain, however, how this connection between the two sides of Currituck County addresses any sort of significant need. In the 1998 DEIS for this project, the Transportation Agencies cited an objective to "provide more efficient public services to Currituck Outer Banks." (DEIS 1-10.) Collaborating state and federal agencies criticized this characterization of the project purpose, pointing out, for example, that "Currituck and Dare Counties have already demonstrated cooperative arrangements on the provision of [public] services," and that "based on continuing development in the Corolla area, improved access is not a critical need for development."[2] The current DEIS omits any reference to public services on the Currituck County Outer Banks. Instead, it emphasizes travel delays during the summer high season to the area. But while the Toll Bridge would undoubtedly reduce travel time for those making the "representative trip" between "the approximate endpoints of a Mid-Currituck Bridge,"[3] the DEIS gives little reason to believe that this benefit justifies the enormous economic and ecological costs of the Project.

Similarly, the traffic congestion projections cited in the DEIS fail to establish a compelling need for the Toll Bridge. Considering that most of the development along the Outer Banks is dedicated to summer vacation rentals, the reported congestion is unsurprising. More remarkable is the underlying assumption in the DEIS that traffic volume along NC 12 and US 158 will continue to grow, nearly doubling by 2035 and producing staggering delays during the summer weekend days. These projections are inconsistent with the Transportation Agencies' own studies, which note that traffic volumes along US 158 have "exhibited little growth in the most recent five year period" and that "[t]raffic levels on NC 12 between Southern Shores and Corolla appeared to be down," possibly indicating that "congestion along this road has reached a saturation point and become a deterrent to traffic growth."[4]

[2] Comments of Heinz J. Muller, US EPA (April 30, 1998).

[3] Parsons Brinckerhoff. Statement of Purpose and Need, at 6 (October 2008), *available at* www.ncturnpike.org.

[4] Wilbur Smith Associates. Preliminary Traffic and Revenue Report, at 2-5 (Jan. 2007) *available at* www.ncturnpike.org.

To the extent that traffic congestion represents a problem in the project area, the Toll Bridge would not help to solve it. The DEIS points out that on weekend days during the summer high season, "congestion occurs on NC 12 just south of Southern Shores and Duck and on US 158 east of the Wright Memorial Bridge." (DEIS 1-3.) Notably, travelers would not likely use the Toll Bridge to access these areas. Travelers using the Bridge would, however, add to the existing traffic along NC 12 in the Corolla area, and along US 158 and US 168 north of the proposed mainland terminus. The 1998 DEIS acknowledged this traffic growth effect. It conceded that "the future development allowed by the bridge would result in the congestion on NC 12 returning to or exceeding current levels by 2020."[5] This prompted criticism, with EPA noting that "[s]trangely, this project is not designed to reduce congestion on the main roadways but is narrowly geared to address travel to the uppermost Outer Banks."[6]

The current DEIS attempts to blunt this line of criticism by denying that the Toll Bridge would, in fact, cause more vehicles to travel to the area. The DEIS references a 2035 Traffic Alternatives Report that depicts the same number of cars traveling along the US 158 mainland arterial directly north of the Toll Bridge under the future "Build" and "No Build" scenarios.[7] In other words, the DEIS claims that over an hour of travel time savings would not persuade any additional drivers to visit the northern Outer Banks. Neither the DEIS nor the 2035 Traffic Alternatives Report explain this counterintuitive conclusion, which ignores an abundance of carefully documented empirical studies that link traffic levels to available road capacity. As one meta-analysis of over fifty traffic studies concludes: "There is no question that road improvements prompt traffic increases."[8]

In North Carolina, federal courts have recognized these traffic inducing effects of large highway infrastructure projects. In Sunset Beach, North Carolina, the Transportation Agencies claimed that replacing a one-lane, pontoon bridge with a high-level, fixed-span bridge would not cause any traffic increases or induce additional development. See *Mullin v. Skinner*, 756 F. Supp. 904 (E.D.N.C. 1990). The Federal District Court for the Eastern District of North Carolina rejected that claim, explaining that induced traffic growth follows from the "irrefutable reality that the easier it is to get somewhere, the more people will be inspired to do so." Id. at 917; see also Sierra Club v. United States DOT, 962 F. Supp. 1037, 1043 (D. Ill. 1997) (rejecting an EIS based on the "implausible assumption that the same level of transportation needs will exist whether or not the tollroad is constructed.") Compared to the situation in Sunset Beach, the Mid-Currituck Toll Bridge would make it even easier for travelers, particularly from points north of the project area, to access the North Carolina Outer Banks, because it would establish a new route of access altogether. The DEIS, however, falsely claims that the improvement would not inspire any new visitors to go there.

[5] 1998 DEIS p. 2-59. *Compare id.* Table 2-16, p. 2-56 (53,000 vehicles per day estimated at US-158 near Coinjock under 2020 "No-Build" scenario) *with id.* Table 2-18, p.2-61 (58,600 vehicles per day under 2020 "Build" scenario at same location).

[6] Comments of Heinz J. Muller, US EPA (April 30, 1998).

[7] Parsons Brinckerhoff. 2035 Traffic Alternatives Report, at 13-14 (March 2009) *available at* www.ncturnpike.org.

[8] Robert Cervero, "Induced Travel Demand: Research Design, Empirical Evidence, and Normative Policies." Journal of Planning Literature 17:3 (2002) at 17.

Finally, the DEIS points out that North Carolina General Statute § 136-102.7 establishes a "Hurricane Evacuation Standard" of 18 hours from the time of a hurricane warning, a standard that "was already exceeded at 27 hours in 2007 for evacuees leaving the Outer Banks via NC 168 and US 158." (DEIS 1-5.) This law does not establish a need for the Toll Bridge. If anything, the law—which explains that the standard shall "be used for any bridge or highway construction project" under NCDOT authority—augers against its construction. Although the DEIS claims that the Toll Bridge would reduce hurricane evacuation times, this claim is based on the assumption that the Toll Bridge would not cause any growth in travel to the Outer Banks. That assumption is not scientifically credible or legally defensible. In fact, as the US Army Corps of Engineers pointed out in its comments on the previous DEIS, the transportation agencies should have disclosed the impacts associated with "hurricane evacuation time increase" resulting from the Project.[9]

B. Consideration of Alternatives

1. The Proposed Alternatives

The DEIS describes five detailed study alternatives, one of which ("ER2") involves widening the Wright Memorial Bridge, US 158, and NC 12 and constructing an interchange between US 158 and NC 12 on the Outer Banks, but not building a bridge. The other four alternatives are bridge variations, two of which include one combination of road improvement and widening components and two of which include a different combination of road improvement and widening components. For each pair of bridge alternatives, there are also several choices of bridge approach and hurricane evacuation designs. The DEIS recommends one of two possible bridge alternatives, and makes no recommendation regarding the approach and hurricane evacuation design options presented in the DEIS for those alternatives. The DEIS explains that bus transit, ferry service, shifting rental times, and transportation system management alternatives were also considered, but eliminated from further consideration because they would make only "a minimal reduction in congestion and travel time." (DEIS 2-41.)

2. Regulatory Framework

NEPA directs agencies to prepare a "detailed statement" of alternatives to the proposed federal action. 42 U.S.C. § 4332(C)(iii). CEQ regulations require agencies to "[r]igorously explore and objectively evaluate all reasonable alternatives." 40 C.F.R. § 1502.14(a). An "informed and meaningful consideration of alternatives - including the no action alternative - is an integral part of the statutory scheme." Friends of Southeast's Future v. Morrison, 153 F.3d 1059, 1065 (9th Cir. 1998). The agency must "[d]evote substantial treatment to each alternative considered in detail, including the proposed action, so that reviewers may evaluate their comparative merits." 40 C.F.R. § 1502.14(b). Only those alternatives that are deemed to be unreasonable can be eliminated from the study. 40 C.F.R. § 1502.14(a). Detailing all realistic possibilities forces the agency to consider the environmental effects of a project and to evaluate those against the effects of alternatives. Piedmont Heights Civic Club Inc. v. Moreland, 637 F.2d 430, 436 (5th Cir. 1981).

[9] Comments of C.E. Shuford, US Army Corps of Engineers (May 12, 1998)(emphasis added).

The EIS must consider alternatives to the proposed action that may partially or completely meet the proposal's goal and it must evaluate their comparative merits. Natural Resources Defense Council v. Callaway, 524 F.2d 79, 93 (2d Cir. 1975). Considering alternatives that only partly meet the project goals allows the decision maker to consider whether meeting part of the goal with less environmental impact may be worth the tradeoff with a preferred alternative that has greater environmental impact. North Buckhead, 903 F.2d at 1542. The treatment of alternatives in an EIS must be judged against a "rule of reason" in order to permit a reasoned choice among the various options. Druid Hills Civic Ass'n v. Federal Highway Admin., 772 F.2d 700, 713 (11th Cir. 1985).

3. Deficiencies in the Analysis of Alternatives Section

Reflective of the Turnpike Authority's narrow focus, the DEIS devotes inadequate treatment to Toll Bridge alternatives. In a single sentence, the DEIS eliminates the ferry service alternative from consideration because, according to the document, ferries would be costly as well as ineffective, and "would require substantial dredging in the Currituck Sound." (DEIS 2-41.) Another technical report, the Alternatives Screening Report, provides the analysis of these options. Notably, the Report only considers conventional ferry service, and on a very large scale. It fails to address comments made in response to the previous DEIS requesting that the agencies investigate whether very shallow draft ferries could meet the project purposes without extensive damage to submerged aquatic vegetation (SAV) and other resources in the Sound. A system of modern, high-speed, shallow-draft ferries and water taxies could serve high volumes of passengers even in fairly shallow waters. The San Juan Islands, Channel Islands National Park, and Cumberland Island National Seashore are examples of popular tourist destinations reached by ferry. Likewise, Ocracoke and Bald Head Islands, Cape Lookout National Seashore, and Hammocks Beach State Park have all been connected to the mainland only by ferry boats for their entire histories, and yet remain among the most popular tourist destinations on the North Carolina coast. In light of the many advantages of ferries and the many examples of successful ferry systems, the cursory analysis in the DEIS and rejection of ferries as an alternative for this relatively lightly developed area is unjustified.

Similarly, the DEIS barely mentions a bus transit service alternative. Agency comments on the previous 1998 DEIS noted that "[p]ublic bus transit would benefit travel on NC 12 and it should have some appeal and feasibility because of the narrow, linear nature of the Outer Banks and seasonal tourist travelers."[10] The current DEIS, however, refers again to the Alternatives Screening Report for further explanation of why bus transit would reap only "minimal" benefits. (DEIS 2-41.) That report does not define a bus transit alternative, explaining that "specific design and operational characteristics of the Bus Transit Alternative were not developed pending a finding on whether or not the potential benefits of transit made it an option worth pursuing in further detail."[11] According to the report, the study team found that transit was not an option worth pursuing further based on a hypothetical 16.8 mile trip. As the report explains: "It was assumed that if the bus under uncongested conditions takes longer to make this trip than an automobile under worst-case congested conditions (No-Build Alternative), then it could be

[10] Comments of Heinz J. Muller, US EPA (April 30, 1998).

[11] Parsons Brinckerhoff. Alternatives Screening Report, at 38 (October 2009), *available at* www.ncturnpike.org.

concluded that transit would offer no benefit."[12] Because the time needed for passengers to "walk to the bus," "wait for the bus," "ride the bus with the bus stopping every one-half mile for one minute to take on passengers, and walk to their destination," would be greater than the driving time under congested conditions, the report concludes that "it is likely that bus transit would be little used if provided."[13] Notably, such an evaluation would support the elimination of much, if not most, existing bus transit across the country. The Report does not support its transit analysis with references to other authorities, or explain why its trip comparison is an appropriate criteria for determining the demand for transit or its usefulness for mitigating congestion along the Outer Banks.

Further, the DEIS fails to provide an adequate explanation of why the improve existing "ER2" and "No-Build" alternatives do not meet the project purpose and need in comparison with the Bridge alternatives. This deficiency relates back to the unrealistic traffic projections for the project area. The DEIS does not expressly present these projections, however, but instead presents a chart with metrics such as "congested vehicle miles traveled," and "hurricane evacuation benefit." In support of its conclusion that the Bridge alternatives best achieve these objectives, the DEIS refers to both the Alternatives Screening Report and the 2035 Traffic Alternatives Report. The DEIS does not adequately disclose that its analysis relies on the assumption that the same number of cars would travel through the project area to the Outer Banks, regardless of whether a bridge is built, existing roads are expanded, or no new road capacity is added at all. In fact, these different scenarios would result in significant differences in traffic volume that must factor into any meaningful analysis of alternatives. Until this is done, the upgrade alternative cannot be eliminated.

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C. Environmental Impacts

An EIS must contain a full and fair discussion of significant environmental impacts and the impacts must be discussed "in proportion to their significance." Citizens Against Burlington, Inc. v. Busey, 938 F.2d 190, 200 (D.C. Cir. 1991). Here, the DEIS has improperly given short shrift to the impacts to natural resources that would be caused by construction of the Toll Bridge alternative. The DEIS portrays the area's natural resources as hopelessly compromised by existing development, and suggests, without support, that the Toll Bridge will not significantly compound existing stresses on water quality, wildlife habitat, fisheries, and waterfowl populations. In fact, development restrictions and other carefully targeted policies can help to reduce these stresses on the environment, just as targeted improvements to existing roadways can help to reduce traffic congestion during the peak tourist season and hurricane evacuations. The Toll Bridge, however, would fundamentally alter the ecological and socioeconomic character of the area. The DEIS gives only a superficial analysis of the Bridge's direct environmental impacts, and perhaps most egregiously, refuses to even acknowledge the significant indirect and cumulative impacts that this project would cause by spurring intensive development along the shifting sands of the North Carolina Outer Banks. A new DEIS should address these issues, as discussed below.

[12] Id. at 39.
[13] Id. at 39.

1. Indirect Effects

a. Regulatory Background

NEPA and CEQ regulations require the Agencies to consider the "indirect effects" of a proposed action. Dep't of Trans. v. Public Citizen, 541 U.S. 752, 763-64 (2004). Indirect effects are defined as those effects that are "caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable." 40 C.F.R. § 1508.8(b).

Of particular relevance to this project, indirect effects include induced growth. 40 C.F.R. § 1508.8(b); Mullin, 756 F. Supp. at 917. Other induced growth effects include patterns "of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems." 40 C.F.R. § 1508.8(b). Consideration of induced growth and related issues "furthers the National Environmental Protection Act's information and public awareness goals." City of Carmel-by-the-Sea v. United States DOT, 123 F.3d 1142, 1162 (9th Cir. 1997); see also National Wildlife Federation v. Coleman, 529 F.2d 359, 374 (5th Cir. 1976) (indirect impacts of proposed highway included development that would be encouraged around the highway interchanges); City of Davis v. Coleman, 521 F.2d 661, 675 (9th Cir. 1975) ("growth-inducing effects of the . . . Interchange project are its reason d'etre, and with growth will come growth's problems: increased population, increased traffic, increased pollution."); Sierra Club, 962 F. Supp. at 1043 (finding that use of the same socioeconomic forecast for the build and no-build alternatives "creates a self-fulfilling prophecy that makes a reasoned analysis of how different alternatives satisfy future needs impossible.").

b. The DEIS's Consideration of Induced Growth

The 1998 DEIS for this Project acknowledged that the Bridge would induce a significant increase in development along the Currituck Outer Banks and the rest of the project area. For example, it estimated that "the bridge would allow an estimated 2,473 additional homes along Currituck Outer Banks."[14] Nevertheless, the 1998 DEIS gave little consideration to the indirect and cumulative impacts caused by the increased development, concluding that the impacts "would be similar for the Bridge and No-Build Alternatives."[15] Comments from almost every federal and state government agency involved in the project indicated that this conclusion was wrong and that the analysis was inadequate to satisfy the National Environmental Policy Act:

> "This project cannot be thoroughly evaluated without a comprehensive discussion of secondary and cumulative impacts."[16]
>
> "[H]urricane evacuation time increase and increased traffic congestion should be included in the secondary and cumulative impacts section. Specifically, the new bridge will promote greater development in a high hazard, storm prone area."[17]

[14] 1998 DEIS at 4-48, Table 4-19.
[15] *Id.* at 4-60.
[16] Comments of Cyndi Bell, NCDENR Division of Water Quality (April 21, 1998).
[17] Comments of C.E. Shuford, US Army Corps of Engineers (May 12, 1998).

The DEIS "appears to base levels of development on the opinions of local realtors."[18]

"[The DEIS] states, 'The potential for negative impacts to water quality would be similar for the Bridge and No-Build Alternatives.' . . . we disagree with the above statement. . . ."[19]

"The basic issue that must be addressed is whether it is appropriate for NCDOT/FHWA to consider any alternative that would support levels of Outer Banks development incompatible with long-term environmental quality."[20]

"The Division continues to be concerned with the secondary and cumulative impacts associated with the bridge alternatives."[21]

"[T]he 'No-Build' alternative would not promote the adverse secondary and cumulative impacts (water and sewer projects and increased traffic on NC 12, which is already at capacity according to NCDOT traffic counts) associated with providing quicker access to the Currituck County Outer Banks."[22]

"The DEIS accurately notes that the project is not likely to directly affect these [endangered] species since no construction is proposed for beach areas. However, the influence of an increased human presence, both as day visitors and seasonal residents, would extend for many miles both north and south of the eastern bridge terminus."[23]

"[I]t should be noted that providing quicker access to Currituck Outer Banks would not only accelerate development but would also promote increased traffic and the potential for water quality degradation resulting from the direct discharge of stormwater from the bridge deck into Currituck Sound. . . . The community's ability to deal effectively with any increased need for additional water use, wastewater treatment and other infrastructures is a very important part of the success of this proposal and should be considered throughout the planning stages of this project."[24]

Twelve years have passed since these comments were submitted on the first DEIS for this project. The new DEIS provides virtually no specific information regarding why any of the above concerns should have lessened. Indeed, the current DEIS now presents less analysis of indirect impacts, making only conclusory statements such as that "[f]orecast development would be the predominant contributor to cumulative impacts, irrespective of whether a detailed study alternative is implemented," and "the extent of development on the Outer Banks by 2035 would be the same with or without the bridge." (DEIS xx, Table S-1). The DEIS fails to support this

[18] Comments of Lynn W. Mathis, NCDENR Division of Coastal Management (April 23, 1998).

[19] Comments of Andreas Mager, Jr., National Marine Fisheries Service (April 16, 1998).

[20] Comments of Heinz J. Muller, US EPA (April 30, 1998).

[21] Comments of Sare E. Winslow, NCDENR Division of Marine Fisheries (March 9, 1998).

[22] Comments of Franklin T. McBride, NC Wildlife Resources Commission (April 27, 1998).

[23] Comments of Nicholas L. Graf, US Fish and Wildlife Service (May 28, 1998).

[24] Comments of Melba McGee, Environmental Review Coordinator, NCDENR (April 29, 1998).

assertion or to present an adequate analysis of the significant secondary and cumulative effects that clearly would result from building the Toll Bridge.

The DEIS's brief analysis of induced development is internally inconsistent, seemingly claiming that the transportation improvements described in the DEIS would both facilitate development and have no effect on development. On the one hand, it maintains that "lack of transportation improvements and associated growing congestion could constrain development under the No-Build Alternative." But at the same, the DEIS claims that "transportation improvements have little effect on the demand for and rate of development," and in any event, the project area "is already largely developed." (DEIS 3-89.) The DEIS does not clarify the meaning of "developed." Recent estimates, however, put the total number of vacation rental properties along the Outer Banks north of the Wright Memorial Bridge at approximately 4,500. So if the DEIS is correct in its prediction that the area is already "largely developed," the construction cost of the Toll Bridge comes to well over $100,000 per vacation rental property serviced.[25]

The various sources cited by the DEIS indicate that the project area is not intensively developed. According to the Currituck County Land Use Plan (hereinafter "2006 Land Use Plan"), "the northern Outer Banks area contained a total 3,100 residential lots," of which "436 (15%) were developed,"[26] leaving significant room for development to be encouraged. The DEIS cites population and growth estimates from the 2006 Land Use Plan as support for its conclusion that the Toll Bridge "would not notably contribute to cumulative impacts." (DEIS 3-96.) But the 2006 Land Use Plan predicts that "the Mid-County Bridge will have a huge influence on development patterns throughout much of Currituck County," and that "pressure for additional development in Corolla and especially Carova will increase dramatically with improved access to these two areas."[27] Similarly, the DEIS reports that a "Vision Plan" for the area does "not indicate a net increase in overall business or residential development on the Outer Banks related to the detailed study alternatives." (DEIS 3-91.) In fact, the "Vision Plan" makes the vague assertion that "Corolla and Carova are fairly well developed already," but it further warns that "[c]urrently, there does not exist proper infrastructure to support the quantity and type of businesses the Mid-Currituck Sound Bridge will draw—access to central water and sewer, garbage collection, effective stormwater management, and the Internet . . . ." These infrastructure needs, like the Bridge's other indirect impacts, similarly receive less consideration in the current DEIS than in the 1998 version of the document.

The DEIS claims that the bridge would not affect the level of development on the Currituck Outer Banks in part because existing area land use plans would limit any such growth. According to the DEIS, "current development regulation and past trends associated with implementation of these plans are indicative of the local jurisdictions' commitments to implement these plans as they stand." (DEIS 3-89.) The Transportation Agencies made a similar claim in the Mullin case to defend their conclusion that a "new bridge will not spur significant

[25] *See* N.C. Turnpike Authority, the Mid-Currituck Development Group, and Arup. Mid-Currituck Sound Bridge Phase II Research Study, at 6 (Oct. 12, 2009)("

[26] Currituck County. 2006 Land Use Plan. (Cert. by Coastal Resources Commn. Sept. 25, 2008) *available at:* http://www.co.currituck.nc.us/documents-plans.cfm

[27] 2006 Land Use Plan at 5-6.

increased development at Sunset Beach." Mullin, 756 F. Supp. at 921. In no uncertain terms, the Federal District Court for the Eastern District of North Carolina rejected the Agencies' suggestion that land use regulations would remain static, calling it "so utterly devoid of common sense and inconsistent with NEPA that it cannot be taken seriously." Id. The court went on to conclude that it "did not need plaintiffs' experts to tell it that zoning changes inevitably follow development pressures. To believe otherwise is to ignore reality." Id. The DEIS nevertheless repeats this approach, failing to take the requisite "hard look" at the environmental impacts of growth induced by the bridge.

The DEIS indicates that the Transportation Agencies have a responsibility to "minimize impacts associated with the US 158/Mid-Currituck Bridge Interchange itself," but otherwise the "significant cumulative effects . . . associated with continued development . . . would be the responsibility of Currituck County." (DEIS 3-97.) This is a derogation of the Agencies' analysis and disclosure duties under NEPA. The Agencies should issue a new DEIS that evaluates all of the likely indirect effects of the Toll Bridge versus other alternatives, and also identifies and discusses available mitigation strategies.

2. Significant Impacts on Natural Resources

Laboring under the assumption that the Toll Bridge would not cause any additional development along the Outer Banks, nor even attract any additional day visitors, the DEIS completely ignores some of the most significant impacts associated with the Toll Bridge. As one court has explained, for an agency "to ignore the indirect effects that result from its actions would be to . . . wear blinders that Congress has not chosen to impose." Riverside Irr. Dist. v. Andrews, 758 F.2d 508, 512 (10th Cir. 1985). Here, the DEIS fails to adequately address and evaluate the likely substantial impacts, including the indirect effects of induced traffic and development, on the following significant natural resources:

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a. Impacts to Waterfowl

The DEIS does not adequately address adverse impacts on waterfowl in Currituck Sound, given the area's significance as waterfowl habitat, especially for large numbers of wintering and migrating birds. Currently, the DEIS focuses more on the history of waterfowl use of the area, rather than on future effects of the Toll Bridge on waterfowl. On page 3-39, the DEIS reports reductions in waterfowl numbers as if it were a reason to give less consideration to the needs of waterfowl, instead of acknowledging that development impacts have contributed to much of the previous decreases and the development stimulated by the Toll Bridge would further contribute to the decline of waterfowl populations in the area. The proposed bridge is likely to directly reduce or remove habitat, including foraging areas, for waterfowl through the loss of wetlands and the birds' food sources found there. It would also pollute the waters used by waterfowl with runoff from the bridge and roads. The increased traffic, with its accompanying increased activity, noise, and potential for direct collisions between birds and vehicles, could disturb waterfowl, fragmenting and reducing the area's utility as resting and wintering habitat, and eventually causing sensitive species to abandon the area altogether. Among the birds that will be affected are waterfowl (including ducks, geese, swans, etc.), waterbirds (including ospreys and various species of terns), shorebirds (including plovers and sandpipers), marsh birds (including

rails and bitterns), wading birds (including herons, egrets, and ibis), and the occasional bald eagle.

These effects should be acknowledged and examined. The DEIS should also consider construction methods and technologies to discourage birds from perching and nesting on or around the bridge itself, in order to reduce the likelihood of collisions.

b. Fisheries

The DEIS fails to adequately support its conclusion that the Toll Bridge "would not have a substantial long-term adverse impact" on designated fisheries and submerged aquatic vegetation (SAV) habitat in the area. (DEIS 3-50.) In fact, it presents information that that is inconsistent with this conclusion. For example, the Essential Fish Habitat Technical Report notes that the bridge would "introduce a new source of pollution (via bridge runoff)" that may justify various mitigation measures as the "amount of runoff and associated impacts to water quality are dependent upon the method implemented to manage bridge runoff."[28] At the same time, the report indicates that it assumes no mitigation measures would be in place to treat runoff, yet without further discussion of the amount of runoff and associated impacts to water quality that would occur under that scenario, it concludes that no substantial long-term effects would result. With respect to secondary and cumulative impacts of the Bridge on fish habitat, the DEIS and its supporting documents again fail to acknowledge factors, such as increased storm water run-off, increased erosion, increased wetlands fill for commercial and residential structures, and overfishing, related to increased access to the area, nor is there any discussion of possible mitigation strategies.

c. Currituck National Wildlife Refuge, Natural Heritage Areas and other environmentally significant areas

The DEIS includes inadequate analysis of impacts on numerous barrier island areas and ecosystems in the vicinity of the Project that are environmentally significant. Thousands of acres of pristine coastal habitat are maintained for the public's enjoyment by numerous groups, including the federal and state governments, the National Audubon Society, the Nature Conservancy, and other non-profits. The areas include Currituck National Wildlife Refuge, Pine Island Audubon Sanctuary, Nature Conservancy land, Currituck Banks National Estuarine Reserve, and at least ten other Natural Heritage Areas. They provide habitat for the federally protected sea turtles and other species listed on p. 3-53 of the DEIS, as well as the many bird species listed above in section C(3)(a), wild horses, deer, fox, raccoons, wild hogs, etc. The remoteness and abundance of wilderness are clearly an important part of the reason people live in and visit the area. Besides the many nature preserves and natural areas listed above, other tourist attractions also center around outdoor activities like kayaking, hiking wilderness trails, visiting the Outer Banks Center for Wildlife Education, viewing the local wild horse herd, bird watching, etc.

[28] CZR Incorporated. Essential Fish Habitat Technical Report (November 2009) at 24, *available at* www.ncturnpike.org

Construction of a Toll Bridge would adversely impact these areas and attractions, and reduce not only the quality of the experience for visitors but also the economic vitality of the nature-related tourism industry, through increased traffic, encroaching development in or near the natural areas, and the accompanying noise, water and air pollution, wildlife habitat fragmentation and degradation, etc. For those areas north of the end of NC 12, the impacts would also include either increased traffic on the fragile beach or the construction of a paved road access (for instance, an extension of NC 12) through the pristine natural areas. Depending on the tide and the state of the beach, many vehicles per day drive on the beachfront section of the National Wildlife Refuge, already degrading the beach and disrupting any wildlife attempting to nest, forage, or rest there. Additional driving on the Refuge and beach areas would further degrade those resources.

These impacts should be acknowledged and examined in more detail. Currently, the DEIS acknowledges the existence of some areas, but focuses primarily on the Natural Heritage Areas in the immediate project area and barely assesses the effects on them at all. Table 3-5 purports to contain an analysis of "Permanent Impacts to Biotic Communities," but groups communities in large categories and presents the information in a cursory manner with little underlying data. In so doing, the DEIS fails to enable a reader to evaluate the analysis and conclusions and to comment on it, in violation of NEPA.

d. Wildlife Habitat In Maple Swamp

The DEIS's analysis of impacts on ecologically significant areas on the mainland side of the Sound is also inadequate. Most notably, the large area known as Maple Swamp and its unique Gordonia forest would be bisected by any of the options that involve construction of a Toll Bridge, either by construction of a road on fill or by bridging it. Although the forest has been degraded already by logging and clear-cutting, this fact is not clearly acknowledged in the DEIS. This past degradation is not justification for downplaying the Toll Bridge's impacts on the area, but rather a reason for increased concern and protective measures. Among other issues, the recent clear-cutting will cause more severe flooding in the area of the planned bridge terminus.

Further degradation of the forest and of wildlife habitat – through fragmentation, runoff pollution, etc. – are likely significant effects of the project. The DEIS discusses briefly a plan for providing wildlife passage under a road through pipes and culverts, but does not explain, for instance, how these would be useful to wildlife when they are filled with water. In general, the DEIS provides scant analysis of these effects, and any proffered mitigation, that is insufficient to pass muster under NEPA.

e. Air Quality

The DEIS dismisses air quality concerns, particularly regarding mobile source air toxics, without sufficient support. The DEIS reasons that the Toll Bridge would actually improve air quality because it would reduce vehicle miles traveled and congestion. As discussed above, however, the traffic projections for this project are not credible. If past experience and peer-reviewed traffic studies are any indication, the Toll Bridge would generate higher traffic volumes and congestion would meet or exceed current levels within a few years. The added capacity of the Toll Bridge, however, would mean that the traffic jams involve more cars, and more sources

of mobile source air toxics, as well as carbon monoxide and other pollutants which tend to accumulate in areas with large concentrations of traffic, creating "hot spots" of contamination. A new DEIS should consider these air quality effects, based on a realistic analysis of future traffic with the Bridge. In particular, it should examine air quality impacts in the immediate vicinity of the planned interchange of US 158 and the Toll Bridge.

II. WATER QUALITY

A. Regulatory Background

The Clean Water Act (CWA) prohibits the discharge of any pollutant by any person into waters of the United States unless such discharge is made in compliance with various CWA sections, including section 404. 33 U.S.C. §§ 1251 et seq. Section 404 establishes a permit program to regulate the discharge of fill material into waters of the US and is overseen by the Corps of Engineers. Central to the permit decision process is whether the proposed discharge activities will comply with the CWA § 404(b)(1) guidelines (40 C.F.R. § part 230). If it does not, a permit will be denied. 33 C.F.R. § 320.4(a)(1).

The guidelines provide that discharges will not be permitted if there is a practicable alternative to the proposed discharge that would have less adverse impact on the aquatic ecosystem. 40 C.F.R. § 230.10(a). An alternative is "practicable" if it is available and capable of being done after taking into account cost, existing technology, and logistics in light of overall project purposes. 40 C.F.R. § 230.10(a)(2). The section 404(b)(1) alternatives analysis overlaps significantly with the NEPA alternatives analysis. Under the section 404(b)(1) guidelines, it will be presumed that there are practicable alternatives to discharge activity that occurs in but is not dependent upon wetlands or waters of the U.S. 40 C.F.R. § 230.10(a)(3); see also Buttrey v. United States, 690 F.2d 1170, 1180 (5th Cir. 1982).

B. The DEIS's Consideration of Water Quality Impacts

The DEIS estimates that construction of the recommended Toll Bridge alternative would require filling between forty to fifty-two acres of wetlands. The DEIS also recognizes that run-off from the bridge platform would impact water quality in the Currituck Sound, although it fails to adequately quantify and analyze these impacts. These impacts on wetlands require a Section 404 permit from the U.S. Army Corps of Engineers. Due to the deficient alternatives analysis, as discussed above, the DEIS provides an insufficient basis to conclude that, "in light of overall project purposes," the Toll Bridge qualifies as the least environmentally damaging practicable alternative. 40 C.F.R. § 230.10(a)(2).

The DEIS also fails to adequately disclose and consider water quality impacts. According to the DEIS, water quality in the project area already "is undergoing substantial degradation because of the area's increasing population, changes in agricultural practices, and urbanization and industrialization of the region." (DEIS 3-28.) The DEIS indicates that these phenomena will continue, irrespective of whether the Bridge provides a new point of access to the Outer Banks. "Impacts to salinity, water supply and wastewater treatment should not result from any of the detailed study alternatives," according to the DEIS. (DEIS 3-29.) The DEIS fails

to support this claim, and indeed, mischaracterizes the project's likely effect on water quality, ignoring altogether secondary and cumulative effects on water quality.

The DEIS intimates that water quality in the project area has declined to a point where any additional contaminants introduced as a result of the Bridge would lack an independent significance. But a recent decline in the water quality of Currituck Sound and the rest of the Albemarle-Pamlico estuarine system demands greater, not less, consideration in the DEIS of how this project would contribute to water pollution. By exacerbating existing stresses to the system, the Bridge's impacts may have a greater effect on overall water quality than if they occurred in isolation. Moreover, the DEIS exaggerates the extent of the existing degradation, shifting the frame of reference from the project area ("closed to harvesting shellfish"), to waters "within 1.0 mile downstream of the project area" (not classified as "High Quality Waters"), to the area "crossed by the detailed study alternatives" (not designated as an "Anadromous Fish Spawning Area"). (DEIS 3-28.) In reality, while existing development in the project area has affected water quality, the Currituck Sound and the waters feeding into it continue to serve important ecological functions, supporting fisheries and wildlife habitat, which in turn support important tourism and recreational interests. A new DEIS should adequately address how the bridge could impact these interests, and identify appropriate mitigation measures.

In order to adequately address water quality impacts, the DEIS must include a rigorous analysis of secondary and cumulative impacts. This should include consideration of the increased storm water run-off caused by development in the area, and specific abatement measures to control storm water run-off, as well as the costs associated with those measures. A new DEIS should also address sewage and water treatment issues, particularly along the Outer Banks. According to the 2006 Land Use Plan, over 95% of residents rely on "individual on-site wastewater systems," i.e. septic tanks, even though "soils with severe septic system limitations dominate the County."[29] According to the plan, "failing septic systems" are a problem, with significant numbers of households drawing their potable water from individual wells, which are susceptible to cross-contamination. Individual wells are the only source of water in the Carova area. Water treatment facilities serve other parts of the project area, such as Corolla, but demand already meets the available capacity. A new DEIS should discuss the economic and ecological costs of providing water and sewage service to new development facilitated by the Bridge.

III. THE COASTAL BARRIER RESOURCES ACT

First passed in 1982 and subsequently strengthened in 1990, the Coastal Barrier Resources Act (CBRA) is intended to "minimize the loss of human life, wasteful expenditure of Federal revenues and the damage to fish, wildlife, and other natural resources associated with the coastal barriers . . . by restricting future Federal expenditures and financial assistance which have the effect of encouraging development of coastal barriers." 16 USCS § 3501(5)(b). The Act establishes the John H. Chafee Coastal Barrier Resources System, which designates specific areas as undeveloped coastal barriers. Both the lands and adjacent wetlands above and below the terminus of the Mid-Currituck Bridge are listed as units in the Barrier Resources System. Roughly ten miles separates Unit NC-01, which encompasses Pine Island to the north of Duck, and Unit L01P, which begins at the end of NC 12 north of Corolla. According to the Act, "no

[29] 2006 Land Use Plan at 5-5.

new expenditures or new financial assistance may be made available under authority of any Federal law for any purpose within the System, including . . . the construction or purchase of any road, . . . or bridge or causeway to, any System unit." 16 USCS § 3504(a)(2).

The Mid-Currituck Bridge is inconsistent with the CBRA. While the Bridge would not directly enter into areas designated under the Act, it would support development in those areas. Federal courts have read the Act to mean that "[f]urther federal assistance, with certain limited exceptions, for development within or access to those areas is banned." Cape May Greene, Inc. v. Warren, 698 F.2d 179, 189 (3d Cir. 1983) (emphasis added). The exceptions carved out in the Act apply to "maintenance" and "replacement" of "essential links," in the transportation network, such as the Bonner Bridge. In contrast, this project would provide a new link to areas that, according to the U.S. Fish and Wildlife Service, "were made ineligible for direct or indirect Federal financial assistance that might support development." The DEIS relegates its discussion of the Act, and the disclosure of much of the project study area's status, to section 5.7.5 of a "Community Impact Assessment Technical Report." That report acknowledges that the listed areas include "lands in private ownership," but fails to explain how this project would not promote development that is inconsistent with the CBRA.

IV. COASTAL ZONE MANAGEMENT ACT

Congress enacted the Coastal Zone Management Act to help coastal states preserve, protect, and develop the nation's coastal areas. 16 U.S.C. § 1452. North Carolina's Coastal Area Management Act ("CAMA"), N.C. Gen. Stat. §§ 113A-100 et seq., furthers those objectives.

As the implementing regulations explain:

> (c) The 1974 Legislature found that "the coastal area, and in particular the estuaries, are among the most biologically productive regions of this state and of the nation," but in recent years the area "has been subjected to increasing pressures which are the result of the often conflicting needs of society expanding in industrial development, in population, and in the recreational aspirations of its citizens."
>
> (d) "Unless these pressures are controlled by coordinated management," the act states, "the very features of the coast which make it economically, aesthetically, and ecologically rich will be destroyed."

15A N.C. Admin Code 07H.0102(c)-(d). The regulations go on to explain that, "[t]o prevent this destruction," the act calls for the identification of "types of areas – water as well as land – in which uncontrolled or incompatible development might result in irreversible damage," with the goal being to "ensure the compatibility of development with the continued productivity and value of certain critical land and water areas." 15A N.C. Admin Code 07H.0102(e).

Under CAMA, coastal counties are required to adopt land use plans, and the Coastal Resources Commission may designate "Areas of Environmental Concern," or "AECs," where unpermitted development is prohibited. N.C. Gen. Stat. §§ 113A-110, 113. Local area land use plans, once approved, become part of the North Carolina Coastal Management Plan that is overseen by the North Carolina Division of Coastal Management.

In AECs, development requires permits and the Division of Coastal Management "shall deny an application for a permit upon finding . . .that the proposed development would contribute to cumulative effects that would be inconsistent" with the objectives of the Act, such as protecting against "significant adverse effect on the conservation of public and private water supplies," and "significant adverse effect on wildlife or fresh water, estuarine or marine fisheries." Id. at § § 113A-120(a)(10); 113-229(e). Under federal regulations, before making a final decision on an action such as the proposed project, the federal agency must assess whether it is consistent with area land use plans and notify the North Carolina Division of Coastal Management ("NCDCM"). 15 C.F.R. §§ 930.36, 930.41.

As the DEIS explains, a "CAMA major permit would be required for all of the detailed study alternatives." (DEIS 3-49.) According to the DEIS and its supporting documents, failure to build the bridge would be inconsistent with area land use plans. But while some area land use plans cite construction of the Mid-Currituck Bridge as an express transportation objective, the Toll Bridge would also impact AECs directly and by subsequent development activities. If a development project violates general or specific use standards for an AEC, a permit must be denied, even if local land use plans include the project.

The DEIS relies on the statistic that AECs "encompass less than 3 percent of the land covered by CAMA in North Carolina's 20 coastal counties"[30] to justify the short shrift it gives impacts on them. AECs, however, are prevalent in the vicinity of this project. Under CAMA, there are four categories of AECs: the estuarine and ocean system (15A N. C. Admin. Code 07H.0200), the ocean hazard system (15A N. C. Admin. Code 07H.0300), public water supplies (15A N. C. Admin. Code 07H.0400), and natural and cultural resource areas (15A N. C. Admin. Code 07H.0500). The 2006 Land Use Plan recognizes "two categories of AECs . . . the estuarine system AECs and ocean hazard system AECs."[31] In its CAMA section, the DEIS acknowledges that AECs in only the first category exist in the immediate Project area, that is, the "estuarine and ocean system" subcategories of coastal wetlands, estuarine waters, coastal shorelines, and public trust coastal waters and submerged lands, but the DEIS does not even show where these areas are located on the various maps presented in its various reports. (Compare DEIS at 3-48 to 3-49 with 2006 Land Use Plan, Map 3.1.)

The DEIS fails to adequately evaluate even the direct impacts of the Toll Bridge on estuarine AECs it acknowledges. In particular, CAMA requires that "uses" of estuarine waters, such as the dredging and fill associated with the Toll Bridge, be "consistent with the management objectives of this rule." 15A N.C. Admin. Code 07H .0206(d). The management objective of the estuarine waters rule is "[t]o conserve and manage the important features of estuarine waters so as to safeguard and perpetuate their biological, social, aesthetic, and economic values." 15A NCAC 07H .0206(c)-(d). The DEIS fails to address the apparent inconsistency between the Toll Bridge and this objective, or explain the plan for complying with those standards.

[30] Parsons Brinckerhoff. Community Impact Assessment Technical Report (Nov. 2009), at 5-33 *available at* www.ncturnpike.org

[31] 2006 Land Use Plan, p.3-3.

Further, the DEIS declines to mention that land use plans designate "virtually Currituck County's entire oceanfront coastline," as "ocean erodible area" (the other category of AEC listed in the 2006 Land Use Plan) that is "subject to longterm erosion and significant shoreline changes."[32] The DEIS claims that "the greatest impact to Coastal Area Management Act (CAMA) resources . . . would be associated with shading by a Mid-Currituck Bridge," but this claim is not adequately supported. As discussed above, the secondary effects of this project would extend far beyond these limited direct impacts. The 2006 Land Use Plan identifies far more AECS and other sensitive areas that would be affected. For instance, Map 3.5 of the Plan shows the many environmentally fragile areas in close vicinity to the Toll Bridge, including anadromous fish spawning areas and significant Natural Heritage Areas, while Map 3.6 indicates that much of the county land qualifies as environmental hazard Class III, where "the impact of development may cause serious damage to the function of natural systems."[33] Copies of these maps are enclosed. Ignoring or downplaying the impacts to these areas is inconsistent with the goals of CAMA.

In addition to falling short of the requirements under NEPA, the DEIS does not adequately consider how these impacts may undermine area land use plans for the purposes of state and federal coastal management laws. In fact, as described elsewhere in these comments, the direct and indirect impacts on these areas, including areas designated as Ocean Erodible Areas, would be significant. For instance, just as a new bridge would surely enable access and increase development north of Corolla and Carova, it would increase the number of vehicles driving on the beach to access the houses (both existing and new) that are located north of the end of NC 12, which would increase erosion on the fragile barrier island shoreline. Already, "the Swan Beach area midway between Carova Beach and Corolla has higher erosion rate factors ranging from 4.5 to 8.5 feet/year," according to area land use plans.[34] Although the General Use Standards for Ocean Hazard Areas do not specifically ban driving on the beach, development in these areas must comply with management objectives that include "preserving the natural ecological conditions of the barrier dune and beach systems." 15A N.C. Admin. Code 07H.0303, .0306(f). In this and other ways, building a bridge would encourage development and traffic that is inconsistent with the goals of CAMA. The DEIS fails to acknowledge these apparent planning conflicts, or to explain why the Toll Bridge should nevertheless qualify for a CAMA permit.

V. CLIMATE CHANGE

The DEIS acknowledges that "potential accelerated sea level rise resulting from climate change" will likely affect the project area in a significant way. (DEIS 3-64) But the DEIS analysis of climate change related impacts is incomplete and misleading. Climate change will make the North Carolina Outer Banks less hospitable to human development and an even more inappropriate situs for massive infrastructure like the Toll Bridge. EPA's recent finding that greenhouse gases "endanger both the public health and the public welfare of current and future generations" was based in part on the impacts of climate change on coastal areas. The agency

[32] Id.

[33] Id. at 3-8.

[34] Id. at 3-16.

cites "evidence that Atlantic hurricanes have already become more intense," as well as "increased risk of storm surge and flooding in coastal areas from sea level rise and more intense storms," and "adverse impacts from sea level rise such as land loss due to inundation, erosion, wetland submergence, and habitat loss." 74 Fed. Reg. 66496, 66498 (December 15, 2009). The cost of rebuilding, relocating, and fortifying existing development to cope with these impacts is already projected to be monumental. By encouraging additional development in the areas most vulnerable to climate change, the Toll Bridge would add to these liabilities.

As one joint federal agency analysis recognizes, "choices made today about the location and design of transportation infrastructure can have a large impact on the feasibility and cost of accommodating rising sea level in the future."[35] Yet while the DEIS and its technical report acknowledge that climate change will cause significant sea level rise in the project area, including permanent inundation of much of the project area, the Transportation Agencies arrive at the absurd conclusion that "a Mid-Currituck Bridge would be a useful asset in reducing the impact of sea level rise on the project area's road system." This is because, unlike much of the rest of the road system, it would remain above water, and therefore provide "the only way off the Currituck County Outer Banks." (DEIS 1-7.) This logic is flawed. By stimulating investment in road capacity and other infrastructure that would eventually remain permanently under water, the Toll Bridge would worsen the impacts of climate change. A new DEIS should include an objective analysis of the costs associated with these impacts, including the threat of hurricanes to intensive development in the area, increased bridge maintenance costs, reduced availability of fresh water and developable land on the Outer Banks, and other factors that would all seem to militate against the construction of a $600 million bridge to the area.

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CONCLUSION

We request that the Transportation Agencies revise their analysis of alternatives and impacts according to the recommendations set forth herein and issue a revised Draft Environmental Impact Statement for public review and comment.

[35] James G. Titus, USEPA. "Preparing for Sea-Level Rise" *in* Coastal Sensitivity to Sea-Level Rise: A Focus on the Mid-Atlantic Region. (2009), at 150, *available at* http://www.climatescience.gov/Library/sap/sap4-1/default.php

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June 7, 2010

Ms. Jennifer H. Harris, P.E.
North Carolina Turnpike Authority
1578 Mail Service Center
Raleigh, NC 27699-1578

RE: Comments on the NC Turnpike Authority's Mid-Currituck Bridge DEIS

Dear Ms. Harris,

The Nature Conservancy has received and reviewed the Draft Environmental Impact Statement (DEIS) regarding the proposed construction of a new bridge across the Currituck Sound, and/or widening of several roadways in the area. The DEIS describes in detail five alternatives—two bridge options, MCB2 & MCB4, each with two crossing options C1 & C2 and a road widening option, ER2, that does not include a bridge. The DEIS also gives cursory attention to a "no build" alternative. Based on the DEIS, the North Carolina Turnpike Authority (NCTA) recommends alternative MCB4. No recommendation was made regarding selection of crossing option C1 or C2.

The Nature Conservancy appreciates the opportunity to provide comments on the DEIS and its recommendations. Here we detail our concerns regarding the proposed Mid-Currituck Bridge construction options, as well as the road widening option. After review of the DEIS, we strongly recommend more in-depth analyses of alternative concepts not carried forward as detailed alternatives in the DEIS including multiple "no build" options, as well as a more thorough investigation of the impacts of sea-level rise on the longevity of proposed transportation infrastructure.

Direct and indirect impacts of build alternatives
As indicated, the NCTA has identified MCB4 as the recommended alternative for meeting the project's goals of relieving traffic congestion and decreasing hurricane evacuation times in the project area. We feel that the DEIS has insufficiently addressed the direct and indirect environmental impacts of the build options—the bridge options in particular—and that these effects deserve closer scrutiny before a final recommendation is made. Our specific concerns to this effect are described below.

Any of the bridge options would have significant, direct, negative impacts on the terrestrial and aquatic communities in the region. Specifically, bridge construction would adversely impact the biota of Maple Swamp – a state Significant Natural Heritage Area

that represents one of the largest and northernmost stands of loblolly bay (*Gordonia lasianthus*) forest remaining. Past impacts to this area coupled with the proposed bridge options may push this ecosystem beyond recovery.

Further, all bridge options would adversely alter the existing hydrology of this system, impacting wildlife habitat availability and wildlife movement patterns. In addition to the two crossing scenarios C1 & C2, the NCTA has proposed two "design options" for bridge construction on the mainland side. Option A places a smaller bridge over Maple Swamp for the approach to the main bridge over Currituck Sound. Option B consists of an approach to the bridge along a road constructed on filled areas of Maple Swamp. Though both options would significantly alter the area's hydrology, Option B would likely have a much greater impact, and consequently would have more of a negative impact on the region's biota. Though we do not advocate in favor of either design option, if one must be selected, we recommend Option A.

Under all bridge scenarios, the alterations to the system would take place within the larger context of global climate change. Sea-level rise is of particular concern in North Carolina's northeastern coastal region due to the low elevation of this landscape. Therefore, careful consideration needs to be given to any proposed structures that may further limit the ability of natural communities to respond to climate-induced changes. We do not feel that the DEIS adequately addressed this issue, and we recommend incorporating a more refined assessment of the implications of climate change for the environmental impacts of the proposed project, as well as for future traffic and development patterns.

There would also be considerable direct impacts to the aquatic habitats of Currituck Sound and the Outer Banks landing area where the proposed bridge would terminate. The bridge and landing structures would negatively impact existing submerged aquatic vegetation (SAV) beds through modification of shading, siltation and current patterns. Additionally, these structures would function as a point source of storm water runoff, resulting in the degradation of estuarine water quality in Currituck Sound. Though potentially less extensive, selection of the road widening option would also necessitate shoreline filling and armoring to protect infrastructure from wave action and storm events, further removing palustrine emergent wetlands, palustrine forested wetlands, and SAV from the system.

Any of the bridge options, though not the road widening option, as proposed would also disrupt wildlife use throughout Currituck Sound, particularly for, but not limited to, waterfowl and wading birds which utilize the area as foraging, overwintering and nesting habitat. The proposed bridge alternatives are located in close proximity to an existing rookery for egrets, herons and ibis on nearby Monkey Island and may have a devastating impact on this bird community. The proposed bridge alternatives would also essentially bisect the Sound, Maple Swamp and other wetlands, significantly impacting the flight pattern of these birds as they travel to and from their foraging habitats.

The five build options presented in the DEIS would likely also have adverse impacts on Essential Fish Habitat (EFH) due to increased turbidity and sedimentation from runoff, shading and fragmentation of SAV's, and general loss of habitat. Loss of EFH would likely result in a reduction in native fish abundance, which could have both biological and socio-economic repercussions.

There is also considerable potential for lasting indirect and cumulative impacts on the region's fragile natural environment. The proposed bridge and/or widening of existing roadways, if constructed, would undoubtedly increase the number of visitors to this remote and ecologically sensitive area, setting the stage for increased residential and commercial development, and further compromising the ecological integrity of the area. These indirect impacts of the proposed project have not been fully considered in the DEIS and merit further attention.

Summary
After reviewing the DEIS, we find that each of the "build" options would result in considerable damage to the natural environment. We also find that the DEIS provides insufficient detail regarding the potential for "no build" options to meet transportation needs. The current DEIS quickly dismisses other "no build" means of expanding the transportation infrastructure such as ferries, bus transit systems and shifting rental times. These alternatives have been successfully implemented in other sensitive coastal ecosystems, thus cursory rejection of these options is unwarranted. We encourage the NCTA to seek additional information on these possible alternatives prior to making a final decision on how to proceed.

The Nature Conservancy appreciates the opportunity to provide feedback on the project's development at this stage, and would welcome future occasions to participate in the review process. Please feel free to contact me with any questions regarding this response, either via email at cburns@tnc.org or by phone at (919) 403-8558 ext 1022.

Sincerely,

Catherine E. Burns, Ph.D.
Director of Science