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U.S. Army Corps of Engineers
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Re: Comments on Draft Environmental Impact Statement (DEIS) for the Installation of a Terminal Groin Structure at the Eastern End of Ocean Isle Beach, Extending Into the Atlantic Ocean, West of Shallotte Inlet (Brunswick County, NC) (SAW2011-01241)

Mr. Crumbley:

Please accept the following comments on the proposed terminal groin project on Ocean Isle Beach Shorelines Management Project on behalf of the N.C. Coastal Federation. For the past 33 years the federation has been taking an active role in the protection of North Carolina's coastal water quality, habitat and public beach access.

The Draft Environmental Impact Statement (DEIS) for Ocean Isle Beach Shorelines Management Project is incompliant with the National Environmental Policy Act (NEPA) and the Council of Environmental Quality's requirements for writing an Environmental Impact Statement. The way it is written, including its omission is also misleading. The DEIS does not provide the public and decision-makers with the thorough and comparable analysis of reasonable alternatives, thus confining the public information to narrow, selective and targeted information that supports only the preferred alternative. Further, the flawed document denies the residents of Ocean Isle Beach an unbiased analysis of the project so that they can make an informed decision about whether to fund this project with local funds.



The DEIS Fails to Rigorously Explore and Objectively Evaluate all Reasonable Alternatives

40 CFR 1502.14 requires the DEIS to provide clear basis for choice among options: (a) *“rigorously explore and objectively evaluate all reasonable alternatives...”*; and (b) *“devote substantial treatment to each alternative examined in detail including the proposed action so that reviewers may evaluate their comparative merits.”* DEIS fails on both of these accounts.

First, though the official purpose of the DEIS is stated at the beginning of the document, the information that follows is too narrow in scope, and essentially becomes an editorial simply supporting the terminal groin option. This is made very clear by the stated purpose of the engineering report and the numerical study that is attached to the DEIS. It states it has been done to, *“refine the terminal groin’s design and develop a recommended plan which includes groin construction and strategic placement of beach fill.”*¹ Thus, this report that is used as the technical basis for the selection of the preferred alternative simply analyzes one alternative in detail and fails to rigorously explore other alternatives.

The document is biased toward the preferred alternative, and this bias is observed in DEIS’s treatment of alternatives analysis, affected environment and consequences. Thus the DEIS fails to rigorously explore and objectively evaluate all reasonable alternatives.

Second, the DEIS does not treat all alternatives in the same fashion. It is biased in favor of a terminal groin. The DEIS is relying on the modeling tool Delft3D to analyze the alternatives. However, modeling was only done for Alternative 1 and 5. Modeling results for Alternative 3 are omitted and modeling of Alternative 4 has not even been done. This prevents the reviewer from comparing the results across all alternatives.

The presentation that Coastal Planning and Engineering (CPE) gave to the Ocean Isle Beach Town Board at a meeting in Ocean Isle Beach on March 20, 2014 (Appendix 1) further shows the bias toward the terminal groin. During that meeting the town board voted to select the preferred alternative. However, the CPE presented cost estimates only for alternatives 1, 2 and 5, as it can be observed in the presentation. It also showed only one modeling slide for both alternatives 3 and 4 regardless that the two alternatives refer to two very different actions. Thus, the town board voted for the preferred terminal groin alternative without seeing how alternatives 3 and 4 responded to the town’s needs. This demonstrates that analyses of alternatives 3 and 4 were only later added to the DEIS. This is transparent in the obvious unequal treatment the DEIS gives to these two alternatives compared to alternatives 1,2 and especially 5.

Further, the DEIS compares all alternatives to modeled Alternative 1, also called “the current conditions.” However, given the inaccuracy of the modeling tool as well as its

¹ Appendix C, p.2, emphasis added

inability to model existing and observed conditions, discussed further below, assuming Alternative 1 as a basis of comparison is inherently wrong and provides fundamentally flawed conclusions.

Thus, the DEIS failed to devote substantial treatment to each alternative and to allow for comparable analysis among alternatives.

DEIS relies on flawed Delft3D model and its inaccurate results as basis for its chosen preferred alternative

The chosen Delft3D modeling tool as used for indicating shoreline changes in Shallotte Inlet produced inaccurate results. Potential reason for this could be that this tool is “not really designed to be shoreline change models or to model the impacts of engineering activities ‘on the beach.’ They focus on water movement, not sand movement.”²

However, the DEIS reveals many additional details that make the model and its results an inadequate basis for the selection of the most practicable alternative.

The modeling tool failed to accurately indicate the observed erosion rates for Holden Beach. For example, the final calibration of the model predicted that the beach would erode between stations HB300 and HB340; the actual observation in reality was that the beach accreted at every station.³ The model also predicted no change or slight erosion from HB340 to HB360; in reality the beach accreted at each station.⁴ The model only correctly predicted that erosion would occur at six monitoring locations and at three of those sites the predicted erosion was less than half of the observed erosion.⁵ The model was so inaccurate on Holden Beach that it predicted a loss of approximately 70 cy/ft at HB400 when in reality the beach accreted approximately 80 cy/ft.

Finally, the model failed to predict erosion on Ocean Isle Beach accurately. Appendix C states that “the model is able to reproduce the general erosion patterns along Ocean Isle Beach - high erosion rates from Shallotte inlet to Profile OI_65 (Chadbourn Street) with stable beaches further to the west (see Figure 40).”⁶ What it does not say is that the erosion rate estimates approximated observed erosion rates. In the areas most critical to the EIS - between OI_15 and OI_45 - modeled erosion rates were significantly different than observed rates.⁷

² Pilkey et al. 2013.

³ Appendix C, p. 55

⁴ Id.

⁵ Id.

⁶ Id. p. 58

⁷ Id. p. 53

Further, the model failed to indicate the observed direction of longshore sediment transportation. The DEIS states that “most sources have estimated the net sediment transport direction to be from east to west along the majority of Ocean Isle Beach”⁸ However, the model used in DEIS indicated the opposite “the net longshore transport based on the model results was from west to east, even along the midpoint of Ocean Isle Beach.”⁹ Though the model was adjusted, the final calibration predicted that sand would still move in the wrong direction for more than a mile.¹⁰

All the reasons shown above demonstrate that the model failed in its essential function. Thus, the Corps should not use the model for making the decision about the preferred alternative.

The Economic Analysis in the DEIS is Flawed and Misleading

The DEIS is biased in overestimating negative economic effects of erosion and costs for non-groin alternatives and in underestimating costs related to groin alternative. Further, the economic analysis of alternatives is fundamentally flawed because it attributes to the town the costs borne by entities other than the applicant.

a. DEIS compares incongruent timelines

First, the shoreline was modeled only for 3 years whereas economic effects of erosion are estimated for 30 years. This incongruence renders the 30-year economic impacts as stated in the DEIS questionable. The DEIS defends this by saying that “the model results are by no means intended to represent predictions of what changes to expect in the future with certainty, as this would require an ability to predict future weather and oceanic conditions.” However, as shown above the model cannot indicate known erosion rates and known direction of longshore sediment transport under the known weather conditions.

b. DEIS overestimates economic impact of erosion

The DEIS claims that that 238 parcels, 45 of which have homes situated “east of station 15+00 (located just west of the Shallotte Boulevard)”¹¹ are vulnerable to erosion in the next 30 years. However, the DEIS does not provide clear identification of mentioned parcels. Consulting county GIS map (Figure 1) reveals that there are no 238 parcels on dry land in the mentioned location, unless the DEIS is counting the submerged properties. By performing visual inspection of the map it stands that approximately 54 parcels are on dry

⁸ Appendix C. p. 58

⁹ Id.

¹⁰ Id. p. 59

¹¹ DEIS, p. 25

land and about 184 are submerged. This is misleading because the submerged properties have already been under water for a number of years and thus are now a public trust resource.

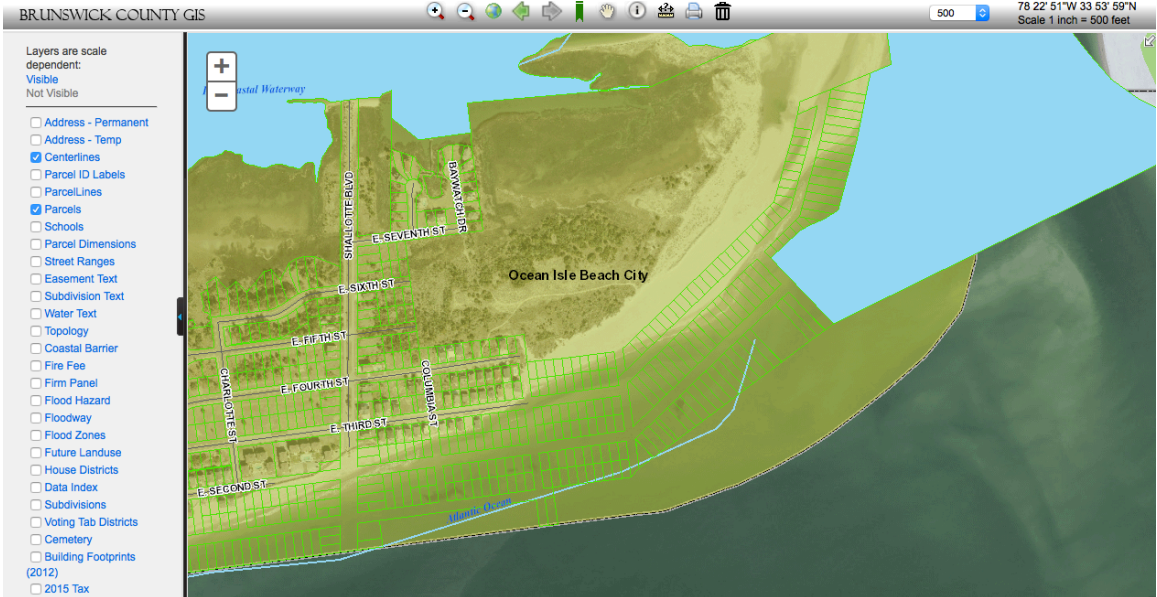


Figure 1: Aerial map of properties east of Shallotte Boulevard in Ocean Isle Beach. Source: Brunswick County GIS¹²

c. The economic analysis of the alternatives is flawed.

First, the economic impact under the Alternatives 1 is overestimated. The engineering report claims the total economic impact of Alternative 1 over 30 years to be \$35,148,000.¹³ However, about 69 percent of this amount pertains to the value of lost parcels and lost structures. The applicant’s reliance on the value of lost parcels and structures is misleading because the town’s financial loss but the parcel and structure owners’.

Rather, the town is only at loss of the property tax income that these parcels and structures are providing. The majority of the parcels claimed to be affected are currently submerged and contribute only a \$100 per parcel tax value to the town. Thus, the economic impact of the lost structures and parcels, as it pertains to the town as the applicant is grossly overstated.

Further, the total economic cost for Alternative 1 over the 30-year period of \$101.49 million¹⁴ as stated in the DEIS is unsubstantiated because it includes the \$66.44 million of the cost borne by the federal government as part of the federal storm reduction project.

¹² <http://gis.brunscoco.net/gisweb/gis.aspx/>
¹³ Appendix B, p. 28
¹⁴ Id., p.29

Second, the costs for Alternative 4 are grossly exaggerated. The DEIS estimates that the timeline for the positive effects of Alternative 4 on the island would be 20 years, thus bringing the initial periodic nourishment requirement to a biannual basis.¹⁵ The choice of a 20-year timeline for positive effects is blatantly unsupported. The DEIS mentions this is based on documentation of aerial photography, but these are not shown or discussed in the document.¹⁶ Further the DEIS states that this timeframe “was based on historic behavior of the inlet at the time that elapsed between the stable condition and the mid 1960’s to the eroded condition that began to manifest in the early 1980’s (Figure 4.9 in the Appendix B)”¹⁷. The reference to the historic behavior is not applicable because it refers to the opposite – the time it took for the end of the island to erode. In the case of Alternative 4 the island would experience accretion and not erosion. The mentioned figure 4.9 does not depict this historic behavior but rather a 2001 post-construction survey of Shallotte Inlet. Finally, the DEIS recognizes that other inlet channel realignment projects such as the Bogue Banks project have had positive effects on the near shoreline in only six years.¹⁸

The chosen timeline and the stated need for frequent nourishment grossly inflate costs of Alternative 4 hence making it undesirable compared to the preferred alternative.

For these reasons, the assessment of economic impacts of Alternative 1 is overestimated and misleading. The DEIS needs to provide a map that clearly delineates affected properties and shows the property tax that these contribute to the applicant.

DEIS fails to comply with federal Laws

a. The DEIS fails to comply with the NEPA

The NEPA assures public participation in federal projects that may have a significant effect on the environment. The Environmental Protection Agency states that: “the public has an important role in the NEPA process, particularly during scoping, in providing input on what issues should be addressed in an EIS and in commenting on the findings in an agency's NEPA documents.”¹⁹ Further, NEPA puts important emphasis on the transparency of the process and public involvement from the early stages and during all its facets, beginning with scoping.

43 CFR § 46.235 describes scoping as, “a process that continues *throughout* the planning and early stages of preparation of an environmental impact statement.” During the 3-year process of the DEIS development in the case of Ocean Isle Beach only one (1) scoping

¹⁵ DEIS, table 3.3, p.33

¹⁶ Id, p.33

¹⁷ Id. p. 123

¹⁸ Appendix B, p. 48

¹⁹ <http://www.epa.gov/compliance/basics/nepa.html>

meeting was held. The meeting was attended by a Project Review Team (PRT) composed of federal and state agencies, non-governmental organizations, local municipality staff and other interested parties to fulfill the public involvement requirements. During this stakeholder meeting, held in the early stages of the process, in March 2013, the applicant's consultant provided a general overview of the project. Since that time the project has proceeded without further stakeholder participation. The Corps failed to involve the public in further development of the document. It also failed to inform the public about the status of the DEIS development until the DEIS was submitted for public comment on January 23, 2014.

This single meeting was insufficient to inform the public and collect relevant public input. During the meeting no information about the project alternatives, which are the heart of NEPA, was presented or discussed. Thus, these meetings failed to comply with the basic tenant of NEPA which is transparency though public involvement.

40 CFR §1502.8 requires the DEIS to be written in plain language and use appropriate and easily understandable graphics. However, the DEIS is purposefully confusing. First, it lacks a clear, mapped delineation of the project area. Instead, it interchangeably refers to the project area with station numbers, street names, distances, among others, making it difficult to understand what area it is referring to. Second, the DEIS requires the reader to continuously shift back and forth between the main document and the appendices making it complicated to follow the analyses. The overall document is convoluted and fails to comply with the CEQ's requirement of being easily understandable to the general public.

b. DEIS fails to comply with the Endangered Species Act

16 U.S.C. §1536(a)(2) requires the Federal agency to be in consultation with the Secretary to ensure that its activities do not result in destruction or adverse modification of critical habitat. This is achieved specifically by the Section 7 consultation prescribed by the ESA. This provision of the ESA mandates the federal agency to commence a consultation process with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service to show that the proposed project is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of the habitat of such species. As a result of such consultation the USFWS issues a biological opinion on the effects of the project, unless it determines that the proposed project will not likely affect any listed species or critical habitat.

40 CFR §1502.25 requires the lead agency to draft the EIS *concurrently* with analyses required under other laws such as Fish and Wildlife Coordination Act and the Endangered Species Act, among others. Further, 40 CFR 1501.6(1) states that the lead agency shall, "Request the participation of each cooperating agency in the NEPA process at *the earliest possible time.*"

The Corps has failed to comply with these requirements and to request the Section 7 consultation with the required federal agencies. The DEIS provides neither information about whether the Section 7 process has occurred nor any findings pertaining to the Section 7 requirement.

Nevertheless, the USFWS has previously stated its opinion on the matter. In his email (Attachment B) to Corps regarding the terminal groin at Shallotte Inlet the Service's official stated:

*"The issues are clear. A project of this nature will destroy the ecological functioning of this inlet and the surrounding areas. The science is unequivocal. I see no unique issues or areas of significant uncertainty. We oppose this project. There is nothing more to discuss."*²⁰

The email further continues by stating that parts of the inlet are a designated critical habitat for wintering populations of piping plover. The USFWS designated critical habitat for the wintering populations of piping plovers on July 10, 2001. Areas containing primary constituent elements that constitute critical habitat were designated in eight states, including 18 units on the North Carolina coast, which includes Shallotte Inlet Complex and the project area.

In designating critical habitat the USFWS identified the following factors that may affect piping plover survival or use of the area which include:

- Recreational activities (motorized and pedestrian),
- Inlet and shoreline stabilization
- Dredging of inlets that can affect spit (a small point of land, especially sand, running into water) formation
- Beach maintenance and nourishment
- Pollution (e.g., oil spills)

Without the information pertaining to Section 7, the information in Chapter 6 of the DEIS, "Avoidance and Minimization", is incomplete. Therefore, the Corps' preferred alternative decision is premature and favors a terminal groin without support, which may not be the least environmentally-damaging, practicable alternative. Further, the monitoring and mitigation plan cannot be developed for this project until an official consultation process with USFWS is initiated and its biological opinion issued.

The DEIS fails to comply with fundamental federal laws that were put in place to make the federal projects a transparent, participatory process and to protect the public trust of natural resources.

²⁰ Email from W. Laney, FWS, to C. Weaver, NCDENR, (Dec. 19, 2011).

DEIS's analysis of the effects on the environment is inaccurate and incomplete

The DEIS fails to properly evaluate direct, indirect and cumulative impacts to the environment. For its analysis of these impacts the DEIS relies on dubious Delft3D modeling results. This renders the analysis unreliable. The analysis is limited to only one year following the construction. The analysis of cumulative impacts fails to account for a number of already managed and hardened inlets along the coast of North Carolina, some of which are adjacent (i.e. Masonboro Inlet) to Shallotte Inlet.

Under the Clean Water Act, the Corps is only able to permit the least environmentally-damaging, practicable alternative (LEDPA). The proposed alternatives can be categorized into non-structural and structural. The effects of these vary in that those of structural alternatives have permanent effects, while those of non-structural vary. Among the non-structural alternatives, Alternative 4 is the one that has the least negative effect on wet beach habitat, adjacent dry beach habitat and back beach habitat, as well as on aquatic communities.

Further, Alternative 4 and the other non-structural alternatives would maintain habitat for piping plover on Ocean Isle Beach and allow critical habitat for piping plover to remain in Shallotte Inlet and on Holden Beach.

Conversely, the proposed terminal groin structures would have significant, permanent impacts to these areas. They would permanently damage substrate, eliminate wet beach habitats and the associated benthic organisms, significantly modify dry beach habitats, and result in dense vegetation of sparsely vegetated back beach habitats. The groin would also eliminate habitat for all shorebirds that rely on relatively unvegetated back beach, wet beach and intertidal habitats. The groin would therefore have the greatest adverse environmental impacts of any of the alternatives.

Conclusion

The Delft3D model that the DEIS is heavily relying on to chose the LEDPA is a meaningless tool for this purpose. It failed to predict known erosion rates and known longshore sediment transport under the known weather conditions. Hence it is illogical that its results be used as a sole basis to decide the best approach in Ocean Isle Beach's shoreline management project. The failure of the model renders the entire DEIS and its analyses invalid.

In fact, the only alternative not modeled, Alternative 4, is the LEDPA and the Corps must accept it as the preferred alternative. In its analysis of Alternative 4, the DEIS concludes that if it were implemented, *"the inlet should respond to the new 'permanent' channel*

position and alignment with a wholesale shift in the ebb tide delta to the west resulting in the accumulation of the sediment on the west side of the ebb and tide delta. As a result of the reconfiguration of the ebb and tide delta, the shoreline on the west end of Ocean Isle Beach should respond in much the same manner as it was observed between 1954 and 1965 during which time the east end of the island accreted.”²¹

For the reasons described above, the DEIS has failed to comply with the requirements established by NEPA and with other federal laws. Therefore, we respectfully request that the Corps issue a revised DEIS addressing the issues raised in these comments.

Thank you for considering these comments. Please contact me at (252) 393-8185 or anaz@nccoast.org if you have any questions regarding their content.

Sincerely,



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Cc:

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²¹ DEIS p. 32

