



August 1, 2016

Via U.S. and Electronic Mail

Mr. Mickey Sugg
U.S. Army Corps of Engineers
69 Darlington Avenue
Wilmington, NC 28403
Mickey.T.Sugg@usace.army.mil

Re: Final Environmental Impact Statement (FEIS) for the Figure Eight Island Shoreline Management Project SAW-2006-41158

Dear Mr. Sugg:

Please accept the following comments on the proposed terminal groin project on Figure Eight Island, on behalf of the North Carolina Coastal Federation (federation). The comments included address the U.S. Army Corps of Engineers' (Corps) responses to the federation's previously submitted comments on the Supplemental Environmental Impact Statement (SEIS), some of which are included in Appendix I of the Figure Eight Island Shoreline Management Project Final Environmental Impact Statement (FEIS).

Permit Processing

- 1) Failure to make the permit application for which public comments are being sought available to public.*

The public notice published on June 29, 2016 states that the Corps has released the Final Environmental Impact Statement (FEIS) for the Figure Eight Shoreline Management Project, and has received an application from the Figure "8" Beach Homeowners Association, Inc. requesting Department of the Army authorization to protect resident homes and infrastructure by installing a terminal groin structure along the southern shoulder of Rich Inlet and to conduct a supplemental beach renourishment on approximately 4,500 linear feet of oceanfront beach and 1,400 linear feet of back barrier shoreline on Figure Eight Island, in New Hanover County, North Carolina. The public notice then solicits comments by August 1 on the FEIS and the permit application.

This letter contains comments on the FEIS. However, it was impossible for us to comment on the permit application because this document was not made available for public review during this public comment period. We requested a copy of the permit application from Mr. Mickey Sugg (Appendix A) on July 1, 2016. Mr. Sugg advised us to file a Freedom of Information Request to obtain it. That request was filed by our attorney at the Southern



Environmental Law Center (SELC) on June 29, 2016. As of today, the Corps has not met its obligation to provide the requested information, even though the 20 business days deadline has passed.

The federation believes there is information in the permit application that we need to review in order to be able to fully comment on this proposed activity. Information we are seeking in the application includes detailed designs of the project; the names and qualifications of the engineers and consultants who compiled the application for the applicant; the impact and footprint of filling 1,400 linear feet of back barrier shoreline on fish habitat and wetlands; mitigation plans for impacts to wetlands; and impact to private properties where the project is proposed to be built, as easements to construct the project have still not been obtained from these property owners.

We request that the public comment period be extended to afford the public ample time to obtain and review the actual permit application.

2) Failure to assure an impartial and objective consultant.

Early on in the EIS process, the federation and other organizations raised serious objections to the Corps allowing a third party consultant with a long history of work with the applicant to be hired to prepare the EIS analysis. A copy of one of our letters of objections is attached in Appendix B of this letter. We stated that we did not believe that this consultant could prepare a document that would provide fair and balanced analysis of all alternatives. In response to our concerns, the Corps provided us with the following signed statement by the consultant:

*“We, Coastal Planning & Engineering, Inc. do hereby certify that we have not entered into and, **during the lifetime of the EIS preparation, will not enter into any agreement affording us or any Subcontractors that we may hire with any direct or indirect financial interest in the planning, design, construction or operation of the Figure Eight Island Inlet and Shoreline Management Project [emphasis added]**, Action ID. 2006-411185-067, located along the northern portion of Figure Eight Island and within Rich Inlet, at the New Hanover/Pender County Line, north of Wilmington, North Carolina, except with regard to the preparation of the EIS.”*

To complete our review of the FEIS, we need to have additional time to receive and review the permit application to determine the role that Coastal Planning & Engineering or its subcontractors played in its preparation. Clearly, under this signed agreement, the third party consultant hired to prepare the EIS was not to engage in any other work for the applicant related to this project during the lifetime of the EIS preparation. The EIS is still under review, and is likely to be reviewed through legal actions where this consultant will be asked to testify. Clearly the concurrent work on the permit application that is now occurring, if done by the same consultant that is developing the EIS, is inappropriate, and

places a huge cloud over the independence of the FEIS from the applicant and its consultants. This concern is further supported by detailed comments provided in this letter that address the lack of fair and objective analysis of all project alternatives. **If it turns out that the consultant has violated this signed agreement, then the FEIS should be rejected by the Corps and retired.**

3) Failure to meet basic prerequisites for implementation of the project.

On October 13, 2014 the Southern Environmental Law Center submitted to the Corps on our behalf a letter stating, among other concerns, that the Corps had not met basic prerequisites for implementation of the proposed project by allowing the applicant to continue the process without securing property rights necessary to construct the project (Appendix C). The Corps has not demonstrated that “the applicant possesses or will possess the requisite property interest to undertake the activity proposed in the application” as mandated by 33 CFR §325.1(d)(8). In its response on November 6, 2014, the Corps asserts it has no responsibility to ensure the applicant’s property ownership, but that the applicant needs to ensure this compliance through the State of North Carolina law, and that by signing the permit application it so assures (Appendix D).

If built, as shown in Figure 1, the proposed groin would cross a number of private properties. Several of those property owners have publicly stated they will not provide property easements to allow building of the proposed structure on their property. In particular, these are the landowners who will not allow the structure on their property:

1. Mr. Paul Sclafani and Ms. Ellen Waters, with address 520 Beach Road North, Figure Eight Island (#1 on Figure 1)
2. Mr. Allan and Vicki Goldenberg, with address 528 Beach Road North, Figure Eight Island (#2 on Figure 1)
3. Mr. David Morrisette and Ms. Darrow Stockdale, with address 530 Beach Road North, Figure Eight Island (#3 on Figure 1)

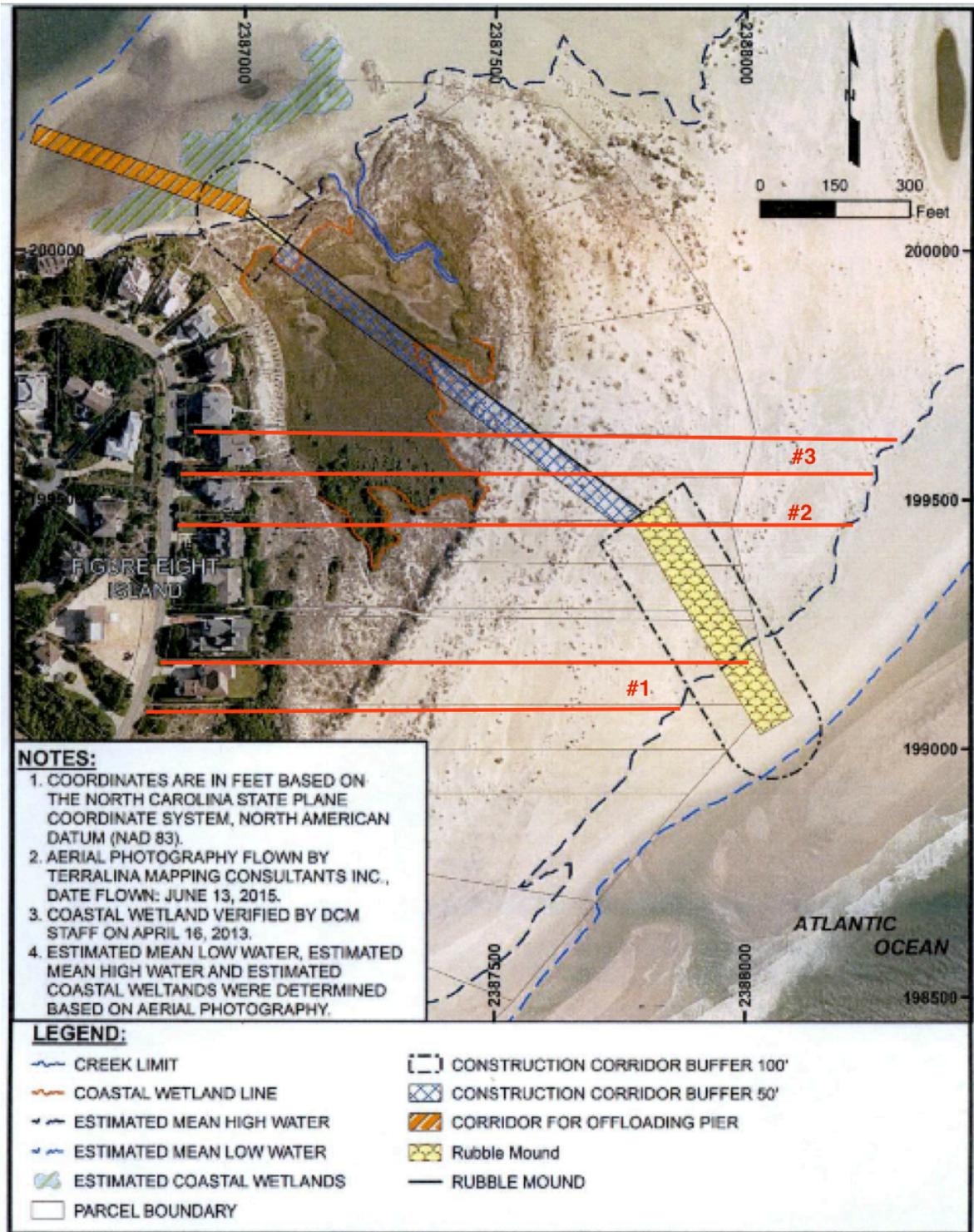


Figure 3. Centerline of the terminal groin, construction corridor, and offloading pier.

Figure 1: Location of properties that need to allow easements for the groin to be built.¹

¹ FEIS, p. 73

This shows that the permit applicant has not secured property ownership for the project construction, as the Corps suggested in its response letter cited above.

Below, the federation outlines remaining concerns that have not been resolved in the FEIS or addressed properly in responses to comments from the federation and other organizations and government agencies.

The Final Environmental Impact Statement fails to follow the standards and regulations in accordance with the National Environmental Policy Act (NEPA). Additional failures include:

- 1) Inadequate use of modeling tools and use of unreliable, biased results;
- 2) Lack of sufficient data in the Shoreline Management Plan;
- 3) Insufficient analysis of environmental impacts;
- 4) Preposterous economic analysis;
- 5) Irrelevant comparison to Oregon Inlet groin project; and
- 6) Most importantly, the failure to recognize that the only legally appropriate option at this time is to accept Alternative 2 as the preferred alternative.

Incompliance with NEPA

The FEIS regarding the proposed terminal groin project at Figure Eight Island continues to fail to meet the basic requirements of NEPA. In the first paragraph of Chapter 1, the Corps states that “full and fair discussion of significant environmental impacts” will be provided and that decision-makers and the public will be informed of “reasonable alternatives, which would avoid or minimize adverse impacts”.² However, it is clear that the Corps’ analysis and report are still slanted to promote the preferred alternative of the terminal groin (Alternative 5D: Terminal Groin at a More Northerly Location with Beach Fill from Nixon Channel and Other Sources), despite evidence that other alternatives would be more natural, less damaging, and in many cases more practical and economical.

In spite of the Corps’ pledge to honor the federal standards outlined under NEPA, it is obvious that it has not made the necessary changes in the FEIS to: (a) establish a strong purpose and need for this project; (b) rigorously explore and fairly evaluate all alternatives; (c) provide clear and concise information; and (d) provide an objective analysis rather than erroneously justifying the preferred alternative.

In our comment letter addressing the SEIS, we express these concerns, but the only reply is a blanket statement, devoid of any reasoning that the EIS “has fulfilled all the requirements pursuant to 40 CFR 1502”.³ In the FEIS, the Corps neglects to address these concerns, so in fact it is not fulfilling all of the requirements of 40 CFR 1502. The Corps’ response to the federation’s comment is a complete deflection.

² FEIS, p. 1

³ FEIS, Appendix I, Comment 62

If the Corps is unwilling to amend the FEIS to address our comments, then it should at least acknowledge what was said and explain why these comments are not valid by showing how they are dealt with in the FEIS.

Inadequate use of modeling tools and unreliable results

The responses to comments and the changes made to the FEIS in regard to concerns about the accuracy and reliability of the modeling tools are minimal and inadequate. After the federation submitted a number of comments in regards to the insufficiencies of the modeling process detailed in the SEIS, the following problems still remain:

- 1) *The FEIS still does not contain modeling for Alternative 1 (No Action).*

As it stands, the FEIS still does not contain modeling for Alternative 1. The Corps justifies this in its response to our comment by merely saying, “The Economic Appendix (Appendix G) has been corrected to indicate future damages under Alternative 1 were based on the continuation of the erosion rates measured between 1999 and 2007 not on the results of the Delft3D model”.⁴ Here, the Corps openly states that the economic analysis was not derived from modeling results, but rather from a shortcut analysis involving erosion rates from 1999 to 2007. No logic is provided for selection of this time period, and the Corps still fails to include actual modeling results for Alternative 1.

While Alternative 1 involves no action in the project area, it is still necessary that modeling be included in the analysis, to allow for an objective comparison of Alternative 1 to other alternatives. The Corps should include modeling and analysis of Alternative 1 prior to making any final decisions about what the best method is for shoreline management of Figure Eight Island near Rich Inlet.

- 2) *The purpose and need for installing a terminal groin on Figure Eight Island, near Rich Inlet, is not justified by the analysis.*

In addition to failing to include a comparable analysis of Alternative 1 in the FEIS, the Corps fails to justify why the terminal groin project is needed, since the north end of the island near Rich Inlet is currently accreting. The Corps added aerial images to the FEIS from 2010, 2013, and 2015 to Chapter 2 to “show the recent change in channel position and alignment, which supports the apparent initiation of the channel migration back toward Hutaff Island”.⁵ However the images do not look significantly different. The amount of erosion from the slight shifting of the inlet to the north is not drastic and does not warrant taking such severe action as installing a hardened, essentially permanent structure, like a terminal groin.

⁴ FEIS, Appendix I, Comment 67

⁵ FEIS, Appendix I, Comment 68

More importantly because this is a tidal delta, there are subtle shifts in the alignment of the islands, which cause erosion and accretion to shift back and forth between Figure 8 Island and Hutaff Island. This is a natural process on barrier islands. As stated in the Rich Inlet History section in the FEIS, the delta is actually very stable, due to its relatively large tidal prism.⁶ In fact, Rich Inlet has migrated within a narrow corridor of only 500 meters (1,600 ft) from 1938 until the present, according to Dr. William J. Cleary of the University of North Carolina at Wilmington (UNCW).⁷

The Corps refutes these facts, which are included in its own report, by saying, “If the channel orientation continues to move to the north, this change is expected to be followed by a period of renewed erosion on the north end of Figure Eight Island”.⁸ Cyclical erosion and accretion are to be expected near inlets, as stated and cited in the Engineering Report of the FEIS.⁹ The way to deal with these issues is not to build terminal groins. The Corps should provide sound evidence for why Figure Eight Island is imminently threatened and why this terminal groin project is currently needed.

- 3) *Fundamental flaws with the modeling applications and the data used for analysis, the manipulation of model results, and other concerns previously voiced by the federation have not been addressed or changed in the FEIS.*

From the deliberate exemption of aspects of their modeling analysis that do not support the preferred Alternative 5D to the avoidance of fully responding to comments submitted in response to their SEIS, the Corps has not provided any changes to the document or any reasoning to defend the modeling analysis and results. Of the many concerns that were voiced by the federation in a comment letter regarding the SEIS for Figure Eight Island, the Corps selectively chose to respond to only a few, and even those responses were often evasive and uninformative.

Remaining, unaddressed problems (which were included in a previous comment letter to the Corps in regards to the Figure Eight Island SEIS) with the modeling analysis include:

- a. The modeling tools implemented, GENESIS and Delft3D, have been shown to do a poor job of predicting shoreline change.¹⁰ Despite these inadequacies, the Corps continues to rely on the results of these models as the primary crutch for defending the terminal groin project.
- b. The parameters of the model are unfit for coming to any kind of sound, scientific conclusions. The model is based on conditions between 1999 and 2007 at Rich Inlet (when Figure Eight Island was experiencing erosion), and yet is applied to 2012

⁶ FEIS, p. 17

⁷ Ibid.

⁸ FEIS, p. 19

⁹ FEIS, Appendix B, p. 21

¹⁰ Pilkey, O., Young, R., Cooper, A. 2013. Quantitative modeling of coastal processes: A boom or a bust for society? The Geological Society of America. Special paper 512. 135-144.

conditions (when Figure Eight Island was actually accreting).¹¹ While the assumption is that at some point in the future the inlet will start moving back toward Figure Eight Island, resulting, once again, in erosion, it is still erroneous to apply the parameters and data in this way and to assume that the results will somehow be reliable.

- c. Regardless of the unreliability of the models used in the FEIS, the Corps fails to apply model results universally across analysis of all alternatives. It is clear that bits and pieces of the results are used when it is favorable for promoting the preferred Alternative 5D.

The Corps should redo the modeling analysis, integrating data that do not represent a time period of chronic erosion in the inlet's history, as that distorts model results. Additionally the Corps should universally apply model results to the equal consideration of all alternatives. Finally, the federation has requested, on several occasions, the underlying data and assumptions used by the modelers from the Corps without success (Appendix E of this letter)¹². Failure to provide a complete agency record for how these models were conducted means that it is impossible for any independent reviewer to fully analyze the validity of the modeling information presented in this report.

Failure to include sufficient data in Shoreline Management Plan

In accordance with Coastal Policy Reform Act of 2013 (SB 151 §113A-115.1.(e)(5)), the permit applicant is required to create an inlet management plan that is "reasonable" and does "not impose requirements whose costs outweigh the benefits".¹³ Specifically, this state law requires that the inlet management plan do the following:

- a. Describe the post-construction activities that the applicant will undertake to monitor the impacts on coastal resources.
- b. Define the baseline for assessing any adverse impacts and the thresholds for when the adverse impacts must be mitigated.
- c. Provide for mitigation measures to be implemented if adverse impacts reach the thresholds defined in the plan.
- d. Provide for modification or removal of the terminal groin if the adverse impacts cannot be mitigated.¹⁴

It is the federation's belief that the Corps not only has not fulfilled the requirements of this state law, but also that it utilizes inadequate data in its failed attempt to do so. While

¹¹ FEIS, Appendix B

¹² In its November 13, 2012 response to the North Carolina Coastal Federation's October 11, 2012 request for full reports on model calibration, verification processes, predictive runs and sensitivity analyses for Delft3D and Genesis T models, the U.S. Corps of Engineers states that "...the Wilmington District does not have possession of the requested data."

¹³ FEIS, p. 65

¹⁴ N.C. Legislature: Senate Bill 151, p. 3

<http://www.ncleg.net/Sessions/2013/Bills/Senate/PDF/S151v7.pdf>

detailed, yet convoluted and flawed information is included on how shoreline change thresholds that would trigger mitigation will be calculated, there is little detail included in regards to a monitoring plan and mitigation measures. In our comment letter on the SEIS, we have expressed serious concern about the flawed mitigation threshold calculations where the Corps suggests using past shoreline trends as a basis for determining future mitigation thresholds. In this method, the Corps uses obsolete shoreline data and arbitrarily selects a two-year waiting period before any mitigation takes place.

The mitigation measures are inadequately described in two brief paragraphs at the end of the plan.¹⁵ Additionally, in response to comments from the federation and other organizations regarding the lack of adequate data used in the Shoreline Management Plan¹⁶, the Corps fails to respond fully to these concerns.

Specifically in its mitigation threshold determination, we still maintain that the Corps insufficiently justifies its use of shoreline trends from a shorter time period. Beyond this, the more overarching concern is that the Corps purposely excludes the most recent accretion period from 2006-present in its analysis, saying in its response that “[this] change in shoreline behavior may have been short-lived”¹⁷, without providing any scientific evidence. In reality, this response is entirely incorrect and is in fact shown to be false in Dr. Cleary’s study, which the Corps cites. According to the study, Dr. Cleary concludes, despite several erosion episodes at the northern portion of Figure Eight Island, the past seven decades of oceanfront shoreline change were characterized by a “*net progradation*”.¹⁸

The Corps contradicts its own referenced literature (Dr. Cleary’s history of Rich Inlet) again, by repeatedly stating that Rich Inlet is “erratic” and by using this assumption to make the false conclusion that identifying trends in the Inlet’s behavior would be “meaningless”.¹⁹ Dr. Cleary’s report, summarized in the FEIS, explains the relative stability of the inlet, which directly contradicts the Corps’ assertions:

“This study indicated that unlike many inlets in the region, Rich Inlet has migrated within a relatively narrow corridor of approximately 500 m (1,600 ft) from 1938 to present. This relative stability can likely be attributed to the Inlet’s large tidal prism of 18 x 106 m³ (636 x 106 ft³ with positive correlation between an inlet’s tidal prism and inlet stability), as well as the topography of the underlying Oligocene siltstone with Rich Inlet likely occupying an ancestral location of Futch Creek during a lower stand of sea-level (Cleary, pers. comm.).”²⁰

¹⁵ FEIS, p. 496-497

¹⁶ FEIS, p. 477

¹⁷ FEIS, Appendix I, Comment 72

¹⁸ FEIS, Appendix B, Subpart A, p. 56

¹⁹ FEIS, Appendix I, Comment 71

²⁰ FEIS, p. 17

The plan for monitoring the terminal groin at Figure Eight Island lacks detail, but explains that for the first two years there would be two surveys done a year to observe the impact that the structure is having on the coastline.²¹ There are certain “response triggers” in place for 1) if the shoreline change within two adjacent transects exceeds the lower 90% confidence limit, as is outlined in Table 6.3 of the Shoreline Management Plan²² and 2) if the mean high water shoreline encroaches within 40 feet of an ocean front structure, road, or other infrastructure on Figure Eight Island. In the case of the shoreline change rates, however, the response to these is cause for alarm and thus requires waiting two years in what is known as a “verification period” before any mitigation efforts are taken. The only mitigation measures proposed for the encroachment of the shoreline on structures on the island is beach nourishment, which is a costly and potentially unproductive strategy in long-term erosion mitigation. Therefore, the monitoring and mitigation strategies outlined in the Shoreline Management Plan fall short of being detailed or practical.

In general, the only mitigation measure proposed in the Shoreline Management Plan is beach nourishment. Many previous efforts on N.C. coasts to utilize beach nourishment as a solution to remedy chronic erosion have been unproductive. Other than beach nourishment, the only other option proposed by the Corps is that, “In the event the negative impacts of the terminal groin cannot be mitigated with beach nourishment or possible modifications to the design of the terminal groin, the terminal groin would be removed”.²³ The removal of a terminal groin is a very complex and costly process, and no detail is included in the document to outline the severity and costs of these consequences.

The Corps should revise the management plan to utilize analysis from a longer period that includes the most recent years (2006 - present) of accretion on Figure Eight Island, thereby updating its expected shoreline changes for given transects and the mitigation thresholds accordingly.

The Corps should also utilize this analysis in revisiting whether Alternative 5D is the best option for the island. Finally, the Corps should investigate further mitigation measures, in the case that the terminal groin has unintended negative impacts on surrounding areas.

Insufficient analysis of effects on the natural environment

The Corps’ analysis of environmental effects in the FEIS is flawed. Few changes have been made by the Corps to address concerns raised by the federation in their comments on the SEIS and the changes made are, in most cases, insufficient. As noted in our previous comment letter, the federation’s primary issues with the FEIS are that the Corps: (1) continues to utilize outdated aerial maps when analyzing effects on existing habitat; (2) is in compliance with the Endangered Species Act; (3) underestimates the impacts on wildlife habitat; and (4) fails to properly address concerns about potential harm caused to delineated wetlands.

²¹ FEIS, p. 496

²² FEIS, p. 489

²³ FEIS, p. 497

1) *The 2006 aerial maps used in the FEIS have not been corrected and continue to be outdated.*

In its assessment of environmental impacts, the Corps uses a 2006 aerial map to delineate wetlands and bases modeling on inlet conditions from 2006. The data collected from these maps and models are significantly outdated, as they are a decade old, and we addressed this concern in our comments on the SEIS.²⁴ To respond to these concerns, the Corps has updated the FEIS to include modeling based on 2012 shoreline conditions. However, this addition is obsolete, as the Corps continues to base significant portions of its analysis on the 2006 modeling.

The Corps explains in its review of the environmental effects that Figure 4.1, which is utilized for the wetland delineation within what it refers to as the 'Permit Area', is "based on the 2006 conditions".²⁵ The Corps also explicitly states that the "Delft3D model runs used the 2006 condition of the inlet and adjacent shorelines and the same input parameters (tides, waves, wind, etc.).²⁶ The 2006 model is relied upon for most of the analysis with little attention given to the 2012 model.

In its response to the federation's' comments, the Corps defends these choices by suggesting that it used the outdated data "in order to conduct a comparative analysis equally for the environmental and economic impacts for all alternatives".²⁷ The federation finds this reasoning to be faulty and inappropriate. Limited data for the economic analysis do not qualify as logical reasons to use outdated data for the environmental impact analysis when more recent and relevant data are available and accessible. The Corps should recreate the environmental impact analysis using current data so that true conclusions can be made on the probable impacts of different alternatives on the surrounding environment.

Additionally, the federation noted in comments on the SEIS that the Corps failed to evaluate indirect impacts to upland beach habitat, particularly in Table 5.1, and that it did not indicate whether the impacts were positive, negative or both.²⁸ The Corps responded by saying that the table "has been modified." However, upon examination, the only change made to the table is the addition of positive and negative signs, indicating whether the changes in the area of a habitat type were positive or negative.

Such limited change is insufficient as the Corps still fails to demonstrate what impacts will be imposed on upland habitat and whether the changes in the acreage of different habitat types will be beneficial or detrimental to our coastal environments. The lack of clear congruence between acreage changes and environmental effects leads the federation to

²⁴ FEIS, Appendix I, Comment 74

²⁵ FEIS, p. 101

²⁶ FEIS, p. 204

²⁷ FEIS, Appendix I, Comment 70

²⁸ FEIS, Appendix I, Comment 75

conclude that the Corps continues to inadequately analyze the environmental effects. As such, the federation rejects the current habitat impacts assessment. The Corps should redo this assessment, in order to come to a clear conclusion on the full spectrum of environmental impacts that the proposed project would have on nearby ecosystems.

2) The Corps does not comply with the Endangered Species Act.

The Corps is required by Section 7 of the Endangered Species Act (ESA) to consult with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fishery Service (NMFS) during development of the FEIS, in order to determine whether actions taken by the Corps as outlined in the FEIS could “jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species.” Yet, as the federation noted in a comment letter regarding the SEIS and as is apparent in the FEIS, there is no documentation of any sort of consultation with USFWS or the NMFS.²⁹

The Corps has suggested that consultation occurred during the scoping period, specifically the PDT meetings. Scoping, however, is not the same as completing an official consultation. They are entirely different processes. Though the Corps does additionally indicate that it has begun formal consultation, its failure to do so before completing the Final EIS renders the analysis of environmental effects, particularly to endangered and threatened species unsupported and inappropriate.

Important to the consultation process is the completion of a Biological Opinion by an expert from USFWS and/or NMFS, who reviews the proposed activities and their effect on endangered and threatened species. As it stands, the FEIS contains no Biological Opinion, despite the Corps’ indication that it has submitted Biological Assessments for review by USFWS and NMFS.³⁰ Without a Biological Opinion, the Corps cannot adequately and thoroughly discuss potential environmental, particularly ecological, effects as it lacks the expertise. Without consultation and provision of a Biological Opinion, the Corps fails to comply with the ESA. The Corps should take measures to correct their noncompliance with the ESA.

3) The potential negative impacts on species and habitat are understated.

In its estimation of impacts on wildlife habitat, the Corps has failed to fully elucidate all potential effects on endangered and threatened species. Specifically, it has not accounted for the potential loss of the wintering grounds of the Piping Plover. Many populations of the Piping Plover from the Great Lakes region tend to winter in coastal North Carolina.³¹

²⁹ FEIS, Appendix I, Comment 76

³⁰ Ibid.

³¹ U.S. Fish and Wildlife Service. Piping Plover Critical Habitat Questions and Answers.

<https://www.fws.gov/plover/q&a.html>

Construction of a terminal groin during these key wintering months will undoubtedly disturb this already threatened species.

While the Corps repeatedly suggests that building the groin during the winter months will mitigate the disturbance of endangered and threatened species, it is ignoring the impact the groin would have on the Piping Plover, a very important species in the region. The federation noted this underestimation in their comments on the SEIS. While the response by the Corps would suggest that it has amended the document to account for this failure, no clear changes have been made and the same inappropriate plan for winter construction remains.

4) The Corps does not thoroughly address concerns about detrimental effects to wetlands.

The federation raised concerns in the previous comment letter about the lack of mitigation plan for adverse impacts to delineated wetlands located in the upland areas of the north side of Figure Eight Island that would be disturbed by construction of the groin.³² This concern is significantly under-addressed in the Corps' response and in the updated document. The Corps merely states that the impact on the wetlands "are considered temporary" and that if it discovers long-term impacts during the construction process it will then implement measures to mitigate such impacts.

However, the Corps fails to explain how it determined the impacts to be "temporary," as opposed to permanent or long-term. It also does not indicate how impacts will be determined later in the construction design process nor what mitigation measures will be undertaken if impacts occur. These possibilities, which are very likely, must be planned for and disclosed ahead of time. The Corps should, first, update the document to defend its stance that harm to wetlands will be temporary and, second, provide mitigation measures to be taken in the case of damage done to wetland areas.

Preposterous economic analysis

The economic assessment provided in Appendix G of the FEIS shows little to no improvement from the SEIS. There is a lack of consistency, transparency, and accuracy for the cost estimates for all alternatives. As it stands now, the economic assessment is riddled with bias towards the preferred Alternative 5D, preventing objective comparison between all possible alternatives. The updated FEIS for Figure Eight Island continues to contain the following errors and issues:

1) The Corps continues to utilize faulty modeling, which directly affects the accuracy of the economic analysis.

The 2006 shoreline parameters were wrongly applied to 2012 conditions, resulting in unreliable future predictions, as is discussed in the modeling section above. If the 30-year

³² FEIS, Appendix I, Comment 78

predicted modeling outcomes are inaccurate, then any predicted cost estimates are also inherently inaccurate. The economic analysis is necessary for conducting a fair comparison of costs across all alternatives. The Corps should redo the modeling and subsequently adjust the economic analysis to take these changes into account. Until these measures have been taken, any economic analysis of alternatives is invalid.

2) The cost of Alternative 5 is grossly underestimated.

There continues to be a large discrepancy between the costs quoted in the SEIS and the costs approximated from the Coastal Resource Commission (CRC) Science Panel's report on the financial costs of a terminal groin. While Appendix G attempts to provide the cost structure and estimates of the terminal groin, there is an evident failure to explain *why* there is such an inconsistency between the estimates in the FEIS and the estimates in the CRC report.

For example, the Corps claims that maintenance of the proposed terminal groin will cost approximately \$25,000/year,³³ while the CRC report estimates maintenance costs at \$1.1 million/year.³⁴ In the FEIS, the Corps does not acknowledge this disparity, and offers no explanation for how the \$25,000/year was calculated.

This trend for underestimation continues when it comes to mitigation and monitoring costs. These underestimated costs show a bias towards the preferred alternative and limit the ability to make a fully informed decision. The Corps should recalculate these costs and reflect the changes in an updated economic analysis.

3) A too-high discount rate is utilized in the economic analysis.

While the Corps provides estimates for three different discount rates (2%, 4.25%, and 6%), the 6% discount rate is chosen as the discount rate to present the annualized net present values. The use of this 6% discount rate leads to a skewed calculation of costs. The higher discount rate lends itself to lower present costs. In the case of pricing a terminal groin, utilizing a higher discount rate can be very biasing.

Terminal groins and their construction have a very high *initial* cost. Using the 6% discount rate results in lower present costs for the terminal groin, and higher overall costs for the other alternatives that have lower initial costs. The Corps should update the cost analysis to use a more moderate discount rate, such as 4.25%, which is "the standard practice for civil works projects by the USACE".³⁵ Doing so would present a fair, unbiased, and accurate comparison of the costs associated with each alternative.

³³ SEIS, p. 93

³⁴ N.C. Division of Coastal Management. Coastal Resources Commission. Terminal Groin Final Report.

³⁵ FEIS, Appendix G, p. 4

- 4) *The cost analysis associated with Alternative 3 is grossly overestimated due to the failure to acknowledge that the channel is currently in an optimal location that would not require relocation.*

Alternative 3 (Rich Inlet Management with Beach Fill) requires that the “the channel [be moved] approximately 304.8 m (1,000 ft) to the southwest of its present location”.³⁶ The described necessary channel relocation has an initial cost of \$17.1 million.³⁷ However, this initial cost is unnecessary. Upon closer review of the channel today, it is clear that the inlet is already in its optimal location. Figure 3.4c³⁸ shows the optimal channel location, while Figure 2.5³⁹ shows the current channel location (see images below). In comparing the two figures, which look near identical, it is clear that the channel is already in the optimal location.

³⁶ FEIS, p. 41

³⁷ FEIS, p. 54

³⁸ FEIS, p. 49

³⁹ FEIS, p. 21

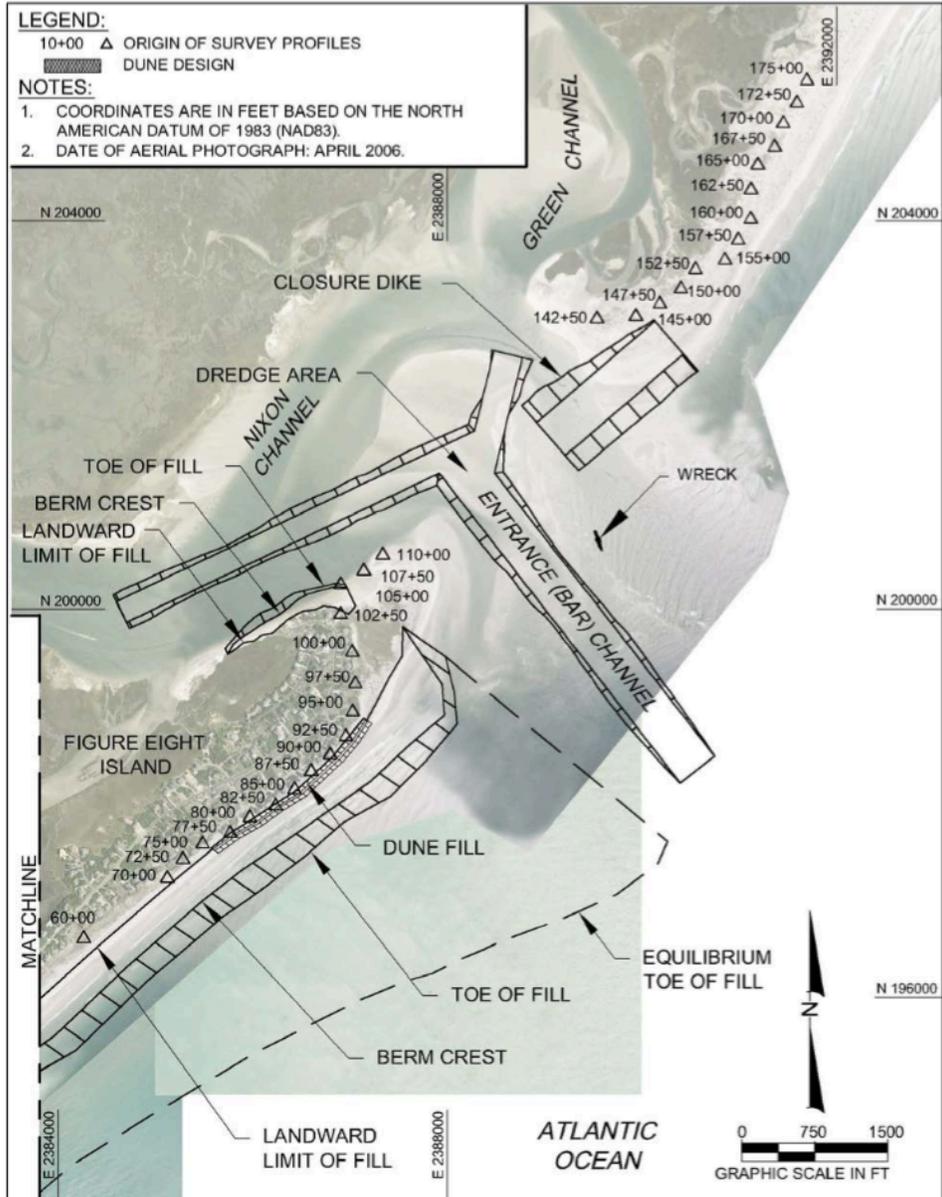


Figure 3.4c. Alternative 3: Optimal channel design, closure dike, and northern portion of beach fill; 2006 shoreline conditions.



Figure 2.5. January 2015 photo of Rich Inlet (USACE database).

Thus, Alternative 3 is overestimated by at least \$17.25 million in costs. Without the need for channel relocation, Alternative 3 is tentatively estimated at \$46.2 million.⁴⁰ This drastic drop in estimated costs makes Alternative 3 a viable option fiscally. The Corps should reanalyze the location of the inlet and the associated estimated costs, since it is clear that the Rich Inlet Channel is already in its optimal location.

Aside from the unnecessary channel relocation costs that were included, the costs for channel maintenance also seem overstated. In Appendix G of the FEIS, the Corps estimates \$7.705 million in channel dredging and beach nourishment every 5 years or \$63.5 million over a 30-year planning horizon.⁴¹ Examining historical costs of similar inlet dredging activities in the area, the N.C. Beach and Inlet Management Plan from April 2011 shows that the average costs for dredging are much lower than \$7.705 million per project. Tables IX-73 through IX-81 show these costs for all of the inlets in N.C.⁴² For example, the report stated that dredging activities for the entire Region 2a, which includes Carolina Beach Inlet,

⁴⁰ FEIS, p. 54

⁴¹ FEIS, Appendix G, p. 17

⁴² N.C. Dept. of Environment and Natural Resources. April 2011. N.C. Beach and Inlet Management Plan (BIMP). 125-127. <https://ncdenr.s3.amazonaws.com/s3fs-public/Coastal%20Management/documents/PDF/BIMP/BIMP%20Section%20IX-%20Region%202%20Formatted.pdf>

Masonboro Inlet, Mason Inlet, *and* Rich Inlet averaged approximately \$1 million per year.⁴³ Considering this \$1 million per year includes Rich Inlet *and* three other inlets, the estimated cost of \$7.705 million every five years (which is \$1.541 million per year) is more than likely largely exaggerated in the costs for Alternative 3.

The federation believes, were the Corps to reanalyze the costs of Alternative 3, that it would find the option of channel management to be the least environmentally damaging, practical alternative for Rich Inlet.

5) Finally, the economic analysis does not consider the economic value of the environment.

In response to voiced concerns by the federation, the Corps defends the lack of an environmental impact analysis, regardless of the admittedly “substantial” value,⁴⁴ under the guise that “in the absence of formal valuation efforts, their precise magnitude remains unknown”.⁴⁵ While it opts out of trying to value environmental factors in their analysis, the Corps proudly reports likely erroneous financial costs based off unreliable modeling, which it openly admits to be unreliable.

Understanding and monetizing ecosystem services that will be affected by the proposed Alternative 5D is an important aspect of understanding the true costs of the project. Without including the ecosystem costs, there is not an accurate picture of the cost of any of the alternatives. Ecosystem impacts should include the direct and indirect costs of an alternative, including, but not limited to, the effects on marine life, beach access, and aesthetic value of our prized coastlines and waters. Omitting these ecosystem impacts renders the economic analysis of the alternatives incomplete, as the ecosystem impact of a terminal groin is vastly different than the ecosystem impact of taking no action, for example.

The Corps should revise its economic analysis to take all of these concerns into account before making any final decisions on the best alternative for Figure Eight Island’s shoreline management proposal.

Comparison to Oregon Inlet groin project continues to be irrelevant

The Corps contends that the Oregon Inlet project, on the whole, was considered to be successful in mitigating shoreline erosion as a direct result of its terminal groin project. However, as we stated in our comment letter on the SEIS, given the wide range of factors surrounding Oregon Inlet, it is extremely arbitrary to attribute the shoreline’s success to one single variable. Not to mention that many factors associated with Oregon Inlet distinguish it from Rich Inlet. Despite these dissimilarities, the Corps uses Oregon Inlet as a

⁴³ N.C. BIMP, p. IX-125

⁴⁴ FEIS, Appendix I, Comment 83

⁴⁵ Ibid.

reference point to indicate what would happen if the proposed Figure Eight Island terminal groin were approved.

Furthermore, the Corps fails to acknowledge the exacerbated erosion that occurred on Pea Island as a result of the Oregon Inlet terminal groin. Stan Riggs and Dorothea Ames documented this side effect in a study from 2009.⁴⁶ So, even if the inlets were geographically and dynamically similar enough to make reasonable predictions based on the experience at Oregon Inlet, the Corps is still at fault for omitting the negative effects on the surrounding environment of the Oregon Inlet.

The Corps' responses to concerns about the vast differences between Oregon and Rich Inlet by saying, "The EIS acknowledges the difference between the Figure Eight's proposal and other terminal groins in NC, but *disagrees* that all the information is irrelevant and not useful in making general assessments".⁴⁷ The fact that the Corps uses its general opinion to respond to this comment shows the very ideology that leaves many sections of the EIS lacking depth and sound reasoning. The fact of the matter is that an EIS is not supposed to be an editorial constructed by agencies with no interest in taking the time and effort to prepare a complete report. Legally, it is to be an objective document, with a conclusion based off of scientific evidence, such as the study by Riggs and Ames mentioned above.

If the Corps used data within the realm of reason (accurate cost estimates, data models, current shoreline measurements, etc.) then there would not be a question of whether or not its decisions are sound. However, it instead chooses to base its preferred alternative off of longstanding assumptions and generalizations. These assumptions lead to the improper comparison between Oregon Inlet and Rich Inlet, and subsequently, the flawed acceptance of convention over fact.

Negligence in failing to determine Alternative 2 as the preferred alternative

Currently, due to the highly biased and unreliable the modeling and economic analysis that were conducted for the FEIS for Figure Eight Island, the federation does not recommend taking any action until further analysis is done. Therefore, the preferred alternative is Alternative 2. However, it should be noted that after subsequent analysis is done to correct all of the insufficiencies that we have described, the federation believes that Alternative 3 could be the most viable, economical, and least environmentally damaging alternative.

According to Figures 3.4c and 2.5 in the FEIS (see images above), which show the current channel location and the Alternative 3 "optimal channel location," the channel is already in its ideal alignment, perpendicular to the shoreline. Thus, the economic analyses of inlet

⁴⁶ Riggs, S.,R. and Dorothea V. Ames. 2009. Impact of the Oregon Inlet terminal groin on downstream beaches of Pea Island, NC Outer Banks.
[http://core.ecu.edu/geology/riggs/IMPACTS%20OREGON%20INLET%20TERMINAL%20GROIN%2011-30-09%20\(2\).pdf](http://core.ecu.edu/geology/riggs/IMPACTS%20OREGON%20INLET%20TERMINAL%20GROIN%2011-30-09%20(2).pdf)

⁴⁷ FEIS, Appendix I, Comment 79

relocation have exaggerated the estimated costs, by including \$17.1 million in costs associated with realigning the channel, as is highlighted above.

In addition to this inaccuracy in regard to Alternative 3, the Corps states in the FEIS that “based on the results of the Delft3D model simulations, maintenance of the new channels connecting to both Nixon Channel and Green Channel will probably not have to be maintained on a regular basis”.⁴⁸ Therefore, costs associated with the upkeep of the channel would be reduced, as well. If the Corps were to include an accurate cost analysis by taking these factors into account, Alternative 3 would likely be the preferred alternative.

As the Corps says itself, “Under Alternative 3, the main ocean bar channel would be maintained in a position and along an alignment that would produce favorable shoreline changes on the extreme north end of Figure Eight Island”.⁴⁹

Conclusion

For the reasons listed and explained in detail above, the Corps should reject the EIS for the Figure Eight Island Shoreline Management Project. Based on the major flaws and deficiencies of the current document, it would be impossible for the Corps to make a sound decision in finding the least environmentally damaging, practical alternative (LEDPA) for Figure Eight Island. The absence of an extensive and objective analysis in the EIS does not allow for further action to be taken, as the Figure Eight Island Shoreline Management Project is currently incompliant with the Clean Water Act and the National Environmental Policy Act. The federation strongly believes that the only option is Alternative 2, which involves taking no action, until a fair analysis is conducted in the future.

Thank you for your consideration. Please contact me at (252) 393-8185 or anaz@nccoast.org if you have any questions or concerns.

Sincerely,



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⁴⁸ FEIS, p. 39

⁴⁹ Ibid.