

February 28, 2020

Tyler Crumbley, PWS  
Project Manager  
U.S. Army Corps of Engineers – Wilmington District  
69 Darlington Avenue  
Wilmington, North Carolina 28403

**Subject: Action ID No. SAW-2019-01155 (Town of Sunset Beach)  
Maintenance Dredging of S. Jinks Creek, Bay Area, and Feeder Channel  
Response to USACE January 31, 2020 Request for Additional Information**

Dear Mr. Crumbley,

Please accept the following information on behalf of the Town of Sunset Beach as an additional response to address concerns expressed during the public commenting period for the South Jinks Creek, Bay Area, and Feeder Channel system permit application. Specifically, the information below responds to the Department of the Army's January 31, 2020 letter requesting additional clarification on the following:

- Purpose and Need;
- Avoidance and Minimization measures;
- Alternatives Analysis; and
- Cumulative Impacts.

The responses below are provided in relation to the item of concern and their area of reference as stated in the respective January 31 letter.

**Purpose and Need:** *“Please provide additional data to support the claim of need for the beach front placement.”*

**Response:** The project's purpose and need is to provide the Town of Sunset Beach with a long-term management solution for maintaining navigation access throughout the east end of Sunset Beach. The project will also help the Town document a pier head alignment for future development along North Shore Drive. The Town of Sunset Beach understands the concerns expressed regarding the proposed beach front placement and is actively researching alternate sites to satisfy the project requirements. However, beach placement of the compatible material is inferred or required by the North Carolina General Statutes (NCGS). Specifically NCGS 113-229 (h1) states “...beach-quality sand may be placed on the affected downdrift ocean beaches or, if placed elsewhere, an equivalent quality and quantity of sand from another location shall be placed on the downdrift ocean beaches”. NCGS 113-229 (h2) continues by mandating beach quality sand must be maintained within the littoral system. The referenced statute states “Clean, beach quality material dredged from navigational channels within the active nearshore, beach or inlet shoal systems shall not be removed permanently from the active nearshore, beach or inlet shoal system. This dredged material shall be disposed of on the ocean beach or shallow active nearshore area where it is environmentally acceptable and compatible with other uses of the beach”.

The Town of Sunset Beach has previously and continues to explore other options and locations for beach placement, including stockpiling the material for future use. The Town originally contacted the Town of Ocean Isle Beach (OIB) to inquire if they would be interested in receiving the material. Correspondence with OIB revealed they did not consider the volume of material sufficient enough to cost share or participate in the project. OIB is willing to accept the material, but does not believe the material offers a substantial benefit to their shoreline. Also, the Town of Sunset Beach requested use of a USACE material placement facility (DA 311) to store the beach material until a use could be identified. However, federal guidance provided in February 2017 prohibits this historically practiced action.

Therefore, the Town of Sunset Beach identified the area of most need within the littoral system boundaries, and closest to the proposed project to place the beach compatible material. Figure 1 below, provided by Ken Richardson with the North Carolina Division of Coastal Management (DCM), demonstrates the proposed beach placement site as eroding between 1981 and 2016. Please note, the Town did not use this shoreline change data to determine the beach placement site, but the data corroborates their decision.

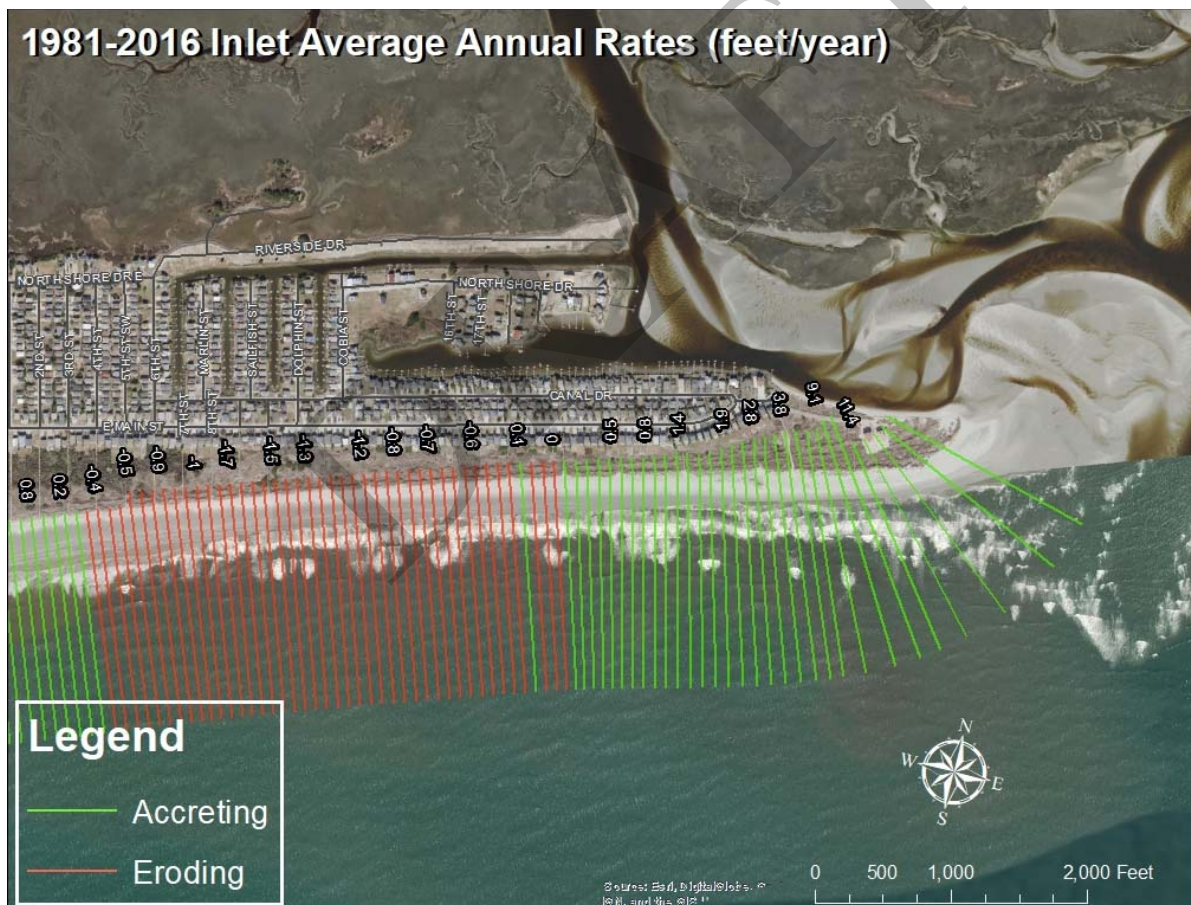


Figure 1. DCM Shoreline Migration Rates for the east end of Sunset Beach (1981-2016)

Based on the comments received from the beach front property owner's, the Town intends to move the beach placement site to a more publically acceptable site. This may include, among other options, material placement on an accreting shoreline, placement on OIB, or truck hauling to an alternate beach

placement site. The beach placement option allows the beneficial reuse of the compatible material in a similar fashion as multiple USACE-Wilmington District navigation projects. The intent is to maintain the sediment in the active littoral zone so that it may add to the overall benefit of the region while also helping to control project costs.

It should also be noted that the beach placement component of the proposed project was fully reviewed and vetted through the Coastal Area Management Act (CAMA) Major Permit review process, during which no significant issues or concerns were raised.

**Avoidance and Minimization:** *“The avoidance and minimization descriptions provided in the application were insufficient for this office to determine that the proposed impacts from dredging and subsequent placement of the dredged material are unavoidable and have been minimized, or that compensatory mitigation would not be required at the proposed disposal area(s). Please also further describe why the slopes for the dredging footprint of Jinks Creek are proposed for a 5:1 slope, where the slopes for other dredge areas are proposed at 3:1.”*

**Response:** The Town of Sunset Beach has worked with the resource agencies to avoid and minimize potential impacts to the waters of the United States through coordination efforts since 2016, including three (3) coordination meetings and one (1) on-site discussion. The Town minimized the dredging footprint to avoid potential impacts to shellfish and adjacent Primary Nursery Areas (PNA) by removing North Jinks Creek from the proposed project. The Town focused on addressing the areas of primary shoaling and removed the areas believed to be experiencing milder shoaling patterns. This required the Town to request and receive a variance from the North Carolina Administrative Code (NCAC) to avoid providing a consistent depth in the connection from the project area to a ‘deep water’ source. For this project, the deep water source refers to the Atlantic Intracoastal Waterway (AIWW) or the Atlantic Ocean.

15A NCAC 07H.0208 (b) (F) requires the establishment of a consistent depth between any proposed dredging and connecting waters. However, in response to potential shellfish impacts in North Jinks Creek, and coordination efforts with the North Carolina Division of Marine Fisheries (DMF), the North Carolina Division of Water Resources (DWR), USACE, and DCM, the Town removed North Jinks Creek from the project area. This action required approval or variance from the NCAC, which was granted on February 12, 2020 by the North Carolina Coastal Resources Commission (CRC).

By removing North Jinks Creek from the project, the Town may now focus on the navigable waters experiencing the highest or most prominent shoaling trends. South Jinks Creek has experienced shoaling, presumably from Tubbs Inlet, resulting in a constricted channel width approaching 10-ft wide during low tide periods. Figure 2 demonstrates the shoaling patterns experienced between 2008 and 2017 in South Jinks Creek. The images show the navigable channel in South Jinks Creek becoming constricted against the eastern shoreline of Sunset Beach. Dredging in this area will provide access through heavily shoaled areas and help facilitate recreational navigation to the AIWW.



**Figure 2. South Jinks Creek (A) October 2008 & (B) November 2017 (Image provided by Google Earth)**

The proposed dredging will also provide access to the South Jinks Creek as a destination for small pleasure craft and recreational fishing vessels. The constricted waterway currently in South Jinks Creek does not afford recreational or fishing vessels the opportunity to anchor. If vessels attempted to anchor they would either block access to the current waterway in its existing condition or risk incurring damage due to insufficient water depth.

Therefore, the referenced avoidance and minimization measures, along with those committed to by the Town through federal and state coordination, provides a balanced project that does not require compensatory mitigation. This is further reflected by the review of multiple state and federal agencies tasked with managing the coastal and estuarine environments of North Carolina. To date, no environmental agency has provided any indication the proposed project creates a significant concern for adverse impacts. This is demonstrated through review of the attached referenced documents:

- Coastal Area Management Act Major Permit No. 79-19 from the N.C. Division of Coastal Management (10/28/19)
- 401 Water Quality Certification from the North Carolina Division of Water Resources (DWR) (August 01, 2019).
- Memorandum from the North Carolina Division of Marine Fisheries (DMF) to DCM providing no objection to the project (July 19, 2019).
- National Marine Fisheries Service (NMFS) letter offering no additional EFH (Essential Fish Habitat) conservation measures (August 2, 2019)
- US Fish & Wildlife Service (FWS) letter accepting the reasonable and prudent measures (RPM's) and terms and conditions (T&C's) proposed for the project with only a request for coordination with FWS and the North Carolina Wildlife Resources Commission (WRC) during construction to avoid potential impacts to wintering and nesting shorebirds and their habitat (July 29, 2019).
- WRC letter providing comments on the project requesting only to limit beach placement to between November 16 and March 31 (August 09, 2019).

The proposed side slopes for South Jinks Creek show a 5:1 gradient based on the type of material expected and the potential for additional storage capacity. Based on similar projects, non-cohesive sandy material may not provide a stable slope with a more aggressive gradient. Attempts to dredge or force the steeper slope may result in material sloughing or collapsing. This action would force material into the channel footprint and create a premature need for additional future maintenance dredging. A 5:1 slope helps to provide a stable incline that would be less susceptible to material sloughing.

A 5:1 slope also provides additional capacity to contain future sediment shoaling and increase the maintenance interval for future dredging events. Assuming a six (6-ft) foot infilling area between -6 MLW and 0 MLW, the 5:1 side slope provides an additional 2.7 cy/lf (cubic yard per lineal foot) storage capacity along the channel side slopes compared to a 3:1 slope. Over the approximate 1,750 lf channel in South Jinks Creek, this could amount to an additional storage capacity of 4,725 cubic yards (CY), or roughly 12% of the proposed 40,500 CY dredge volume. Therefore, providing the 5:1 side slope could help extend future maintenance intervals and reduce unnecessary construction impacts.

**Alternatives Analysis:** *“Please provide an evaluation of the proposed alternatives as required under Section 404(b) (1) Guidelines for projects that include the discharge of dredged or fill material.”*

**Response:** The attached Jinks Creek Hydrodynamic Modeling Report shows the analysis of three (3) different channel designs extending from the AIWW confluence with Jinks Creek and through the project area. The differing designs provide alternate dredge depths and widths for a potential channel through north and south Jinks Creek as follows:

- Alternative 1 (Conceptual) – 100-ft Wide Channel at -7 MLW (ft) extending from the AIWW confluence with Jinks Creek to the current project terminus.
- Alternative 2 (Maximum) – 100-ft Wide at -7 MLW (ft) extending Alternative 1 through Tubbs Inlet.
- Alternative 3 (Preferred) – 40-ft wide at -5 MLW (ft) in North Jinks Creek and 80-ft to 100-ft wide at -7 MLW in South Jinks Creek.

The analysis does not evaluate the no action alternative, but review of Figure 2 shows the recent shoaling patterns experienced in South Jinks Creek. Under the no action scenario, a loss of navigable access to South Jinks Creek, the Bay Area, and Feeder Channel systems should be expected.

Please note, other options to maintain navigable access to deep water were evaluated early on in project development and scoping. However, the proposed project as defined provides the lowest potential for adverse environmental impacts based on input from State and Federal resource consultations. Alternative options to improve recreational navigation access for the Town include dredging a channel through Tubbs Inlet or establishing navigable access through Eastern Channel, which travels behind Ocean Isle Beach to the AIWW.

**Alternative Analysis:** *“Please provide additional information regarding the off-site alternatives for disposal of dredge material (both compatible and non-compatible) in the proposed upland disposal site or another site with capacity. The practicability of this alternative, along with others must be presented in order to determine that all alternatives were considered for environmental impacts and practicability.”*

**Response:** The Town of Sunset Beach has conducted several searches to identify suitable material placement sites. These include discussions with OIB, the navigation branch of the USACE – Wilmington District, the Town of Oak Island, the Division of Coastal Management and residents of Sunset Beach. However, in accordance with North Carolina General Statutes (NCGS) 113-229 (h1) and 113-229 (h2), the *beach-quality sand (must) be placed on the affected downdrift ocean beaches or, if placed elsewhere, an equivalent quality and quantity of sand from another location shall be placed on the downdrift ocean beaches. Clean, beach quality material dredged from navigational channels within the active nearshore, beach or inlet shoal systems shall not be removed permanently from the active nearshore, beach or inlet shoal system. This dredged material shall be disposed of on the ocean beach or shallow active nearshore area where it is environmentally acceptable and compatible with other uses of the beach*". Therefore, the alternative to place beach compatible material in an upland landfill fails to provide consistency with the NCGS.

The Town also investigated if the compatible material could be stockpiled in a USACE material placement facility (DA311) until a beach placement use could be identified. However, federal guidance issued in February 2017 prohibits the Town from utilizing this historically available placement option. The Town continues to look at options of stockpiling compatible material at alternate sites, but this option most likely would require the purchase of lands as an additional expenditure. Beach placement allows the beneficial reuse of the compatible material in a fashion similar to multiple USACE-Wilmington District navigation projects. The intent is to maintain the sediment in the active littoral zone so that it may add to the overall benefit of the ecosystem while also helping to control project costs.

The Town also evaluated the option of providing the compatible material to OIB, as described above. Although OIB would be willing to accept the material, they were not willing to cost share on the project due to the minimal benefit the proposed dredge volume (40,500 CY) would provide for their eroding shoreline. The Town also held conversations with DCM on the potential to truck haul the compatible material to Oak Island. DCM determined this action would require a variance request from NCGS 113-229 (h2) to remove the material from the beach or inlet shoal system extending from Shallotte Inlet to Little River Inlet.

Based on these investigations, the Town proposed to place the beach compatible material along its own shoreline as the least cost alternative where it would be environmentally acceptable, practicable, and compliant with the NCGS.

**Alternative Analysis:** *"Please also address the potential for reduction in dredging depths and dredging areas to meet the project purpose without significant impacts to dredged areas, the beachfront, and other resources in the vicinity. Please detail the criteria reviewed and why they were deemed not practicable for this project. Please compare the costs, logistics, and other factors, in detail, of the proposed project to the off-site alternatives of dredge placement. Most importantly, please describe why an alternative that includes solely the dredging of the feeder (Channel), the Bay Area channel and a smaller footprint of S. Jinks Creek (and to a shallower depth with reduced removal volumes) does not meet the stated purpose of the project (navigation) with minimization of impacts to Jinks Creek proper and the oceanfront and nearshore resources."*

**Response:** Dredging only the Feeder Channel and the Bay Area could potentially sever navigation access to the AIWW and the Atlantic Ocean if the current shoaling patterns in Jinks Creek continue. Review of Figure 2 demonstrates increasing shoaling patterns occurring between 2008 and 2017. If the pattern demonstrated in the figure continues, navigable access from the Feeder Channel and Bay

Area could be expected to decrease without including South Jinks Creek, which would provide a safe navigable channel to the AIWW for recreational users. In addition, a reduction in dredging depth or footprint would increase the required frequency for maintenance events due to the reduced storage capacity to manage sediment shoaling. Thus, a shallower dredging or smaller footprint could increase the potential for adverse impacts and the long-term financial resources necessary to maintain the project. The most prominent resource impacts occur during or as a result of dredging activities. Limiting the frequency of dredging will avoid unnecessary construction impacts and disturbances to the environment. Dredging deeper and less frequently would minimize negative impacts to marine resources compared to more frequent shallow dredging. This would specifically apply to larval fish in the water column and benthic invertebrates in the sediment. Therefore, expanding the dredge frequency should allow the habitats in Jinks Creek and the beachfront to recover with minimal interruptions for minor construction events.

Reducing the dredge depth for navigation would also not allow the Town to provide a navigable waterway in accordance with recommended standards from national engineering associations. The American Society of Civil Engineers (ASCE)<sup>1</sup> and the World Association of Waterborne Transport Infrastructure (PIANC)<sup>2</sup> both recommend 3-ft under keel (MLLW) clearance plus 10% as a design depth in sheltered waters for vessel motion.

**Alternative Analysis:** *“Please provide additional data to support the comments...that were used in determining that “The project will not affect the tidal prism” nor cause significant environmental impacts to the aquatic environments located within the proposed dredging footprint and beach placement areas.”*

**Response:** The attached Jinks Creek Hydrodynamic Modeling Report shows the analysis of three (3) different channel designs extending from the AIWW confluence with Jinks Creek and through the project area. The modeling analysis evaluates the potential change in tidal velocities and flow rates created by the multiple design alignments. The analysis evaluates the changes to determine how they may impact the existing shoaling or scour potential in Jinks Creek. The analysis calculates depth averaged velocities and average flow rates based on the bathymetry and tidal input representing each design scenario. The results indicate Alternative 3 (which most closely resembles the current proposal) would not create a significant change in the tidal patterns for Jinks Creek and the surrounding waters. The change in tidal velocities should range below three (3%) percent for normal or spring tide conditions and extreme storm scenarios. Based on the data transects sampled, the modeling indicates the largest increase in maximum velocities would equal approximately 2.6% (0.07 ft/sec) and would occur approximate to the AIWW confluence with Jinks Creek. The modeling suggested the maximum velocity change would occur during normal or spring tide conditions as opposed to extreme storm conditions. Spring tide modeling also suggested the maximum velocities traveling towards Ocean Isle Beach from Tubbs Inlet would experience a slight decrease in magnitude.

The flow rate measurements determined from the modeling also suggest Alternative 3, Preferred Alternative, would not significantly change the shoaling or scouring patterns within the study area. Table 1 provides the percent increase in flow rate measured at each of the 10 transects referenced in the modeling analysis. The largest increase in the flow rate occurs during the spring tide analysis

---

<sup>1</sup> ASCE (2015) Manual No. 50 – Planning and design guidelines for small craft harbors.

<sup>2</sup> PIANC (2016) Guidelines for marina design. Report 149, part 2. RecCom working group 149.

adjacent to the North Jinks Creek 'S' curve alignment (T4) and equals approximately 3.2% for the flood tide cycle. Although generally the ebb tide flow rates experience a higher percent change at all transects, the flood tide flow rates remain significantly higher in magnitude. Therefore, the analysis considers the changes experienced during the flood tide cycle as the controlling values. The calculations for the extreme storm conditions provide similar results compared to the spring tide analysis. The largest percent increase for the flood tide cycle occurs adjacent to the AIWW confluence (T3) and equals approximately 1.9%.

Based on these results and the complete modeling analysis, the Town does not consider the proposed project would create significant impacts to the tidal prism nor create significant environmental impacts to the aquatic environments located in Jinks Creek. Note, all three alternatives included in the modeling analysis provide a larger dredge footprint and depth than the current proposal. Therefore, the potential for the current design to cause adverse impacts should be considerably less than any of the alignments analyzed. It should also be noted that the N.C. Division of Marine Fisheries fully vetted this proposal during the CAMA Major Permit review process and did not determine that the project represented the potential for significant adverse impacts to aquatic resources.

**Table 1. Average Flow Rates for the Preferred Alignment (Flood Tide Cycle)**

Transect		Spring Tide Conditions			Extreme Storm Conditions		
		2016 Existing Conditions	Preferred Alignment	Percent Change (%)	2016 Existing Conditions	Preferred Alignment	Percent Change (%)
AIWW Confluence	T1	3,140 cfs	3,190 cfs	1.6%	-	-	-
	T2	1,450 cfs	1,440 cfs	-0.7%	-	-	-
	T3	2,450 cfs	2,520 cfs	2.9%	3,720 cfs	3,790	1.9%
'S' Curve Alignment	T4	2,790 cfs	2,880 cfs	3.2%	-	-	-
	T5	3,230 cfs	3,300 cfs	2.2%	5,680 cfs	5,770 cfs	1.5%
	T6	4,220 cfs	4,290 cfs	1.7%	-	-	-
Tubbs Inlet	T7 <sup>1</sup>	5,740 cfs	5,840 cfs	1.7%	13,090 cfs	13,270 cfs	1.4%
	T8	12,110 cfs	12,200 cfs	1.0%	-	-	-
	T9	1,230 cfs	1,230 cfs	0.0%	-	-	-
	T10	2,180 cfs	2,170 cfs	-0.5%	-	-	-

1. Flood tide flow rates are considered the governing values and therefore, the ebb flow values have been removed for clarity, except for Transect T7. Along this transect the ebb tide flow rates provide the governing conditions.
2. Spring tide conditions simulated from Nov. 13, 2004 (13:15) to Nov. 20, 2004 (13:15).
3. Extreme storm conditions simulated from Sept. 20, 1989 (10:30) to Sept. 22, 1989 (18:29) [Hurricane Hugo].
4. (-) indicates transect was not included in the analysis.

**Cumulative Impacts:** *“..please provide additional information regarding the potential direct, indirect, and cumulative effects of the dredging and placement proposals on the affected environment.”*

**Response:** Navigation dredging is a common occurrence in coastal North Carolina by both federal and non-federal interest. In the case of Jinks Creek, the State of North Carolina identified the likely



need for navigation dredging in the 1970's and declined designating the creek as a Primary Nursery Area to help facilitate the dredging practice. As demonstrated in the attached letter from NMFS dated August 02, 2019, "*The State of North Carolina did not designate the area as a PNA during the 1970s because the creek was a navigational route from the Atlantic Intracoastal Waterway to the Atlantic Ocean*". Therefore, the potential impacts created by navigational dredging have been anticipated for over forty years.

However, the Town of Sunset Beach understands the concern of the impacts and has worked with the environmental agencies to limit the risk. This includes removing North Jinks Creek from the project plan and seeking a variance from the NCGS through the North Carolina CRC. As a result, the project plan has been vetted through the CAMA permitting process by multiple state and federal agencies with no significant concern expressed. The agencies providing written comments, which are attached for reference, include DWR, DMF, DCM, NMFS, FWS, and WRC.

In regard to cumulative impacts, this navigation project should be considered as having independent utility and does not force any future construction activity. Nor will the project encourage future development within the project vicinity beyond what could already be reasonably expected. The authorization requested seeks a single use permit to allow navigation dredging in order to manage the shoaling patterns currently experienced in South Jinks Creek. Any future project expansion would require a new environmental review and approval and should be based on the conditions at that time.

**Cumulative Impacts:** *"Please provide additional data to support the claims that the project will not affect the tidal prism, nor cause significant environmental impacts to affected resources in proximity to the proposed dredging and beach placement areas (North Jinks Creek, Tubbs Inlet and the west end of Ocean Isle Beach)."*

**Response:** The attached modeling analysis addresses the potential change in tidal prism and velocities expected under three (3) different alternatives. The analysis shows no significant change should be expected under the alternative most resembling the current proposal. Please note, all three (3) alternatives evaluated in the modeling report assume a larger dredging footprint and depth than proposed under the current permit application. Therefore, the results from Alternative 3 (referenced as the Preferred Alternative in the analysis and described as 40-ft wide at -5 MLW (ft) in North Jinks Creek and 80-ft to 100-ft wide at -7 MLW in South Jinks Creek) are assumed to reflect the performance measures of the current proposal.

The analysis shows under Alternative 3 (Preferred Alternative) the tidal velocities will not incur a significant increase as a result of the dredging project. Table 2 shows the maximum velocities measured in the modeling analysis under an existing conditions (2016) compared with the results of Alternative 3 (Preferred Alignment). The results shown in Table 2 and collected from ten (10) stations distributed through the project area, indicate the tidal velocities should not incur a significant change as a result of the change in bathymetry created by the preferred alignment. As a note, the analysis was only designed to show the expected change in velocities resulting from a change in bathymetry. Therefore, since wind effects would be constant in the 'with project' and the 'without project' their influence on tidal velocities was ignored so the analysis could concentrate on the effects solely provided by the change in bathymetry. Due to the scale and nature of the project, including wind effects would be cost prohibitive and the effects would be similar for both the 'with' and 'without' project conditions.

**Table 2. Maximum Velocities for the Preferred Alignment**

Transect		Spring Tide Conditions			Extreme Storm Conditions		
		2016 Existing Conditions	Preferred Alignment	Percent Change (%)	2016 Existing Conditions	Preferred Alignment	Percent Change (%)
AIWW Confluence	T1	1.53 ft/sec	1.56 ft/sec	1.6%	-	-	-
	T2	1.05 ft/sec	1.06 ft/sec	0.8 %	-	-	-
	T3	2.75 ft/sec	2.82 ft/sec	2.6%	2.02	2.07	2.4%
'S' Curve Alignment	T4	3.45 ft/sec	3.46 ft/sec	0.3%	-	-	-
	T5	2.86 ft/sec	2.88 ft/sec	0.7%	3.07	3.11	1.3%
	T6	3.01 ft/sec	3.02 ft/sec	0.3%	-	-	-
Tubbs Inlet	T7	2.28 ft/sec	2.30 ft/sec	0.9%	3.41	3.45	1.2%
	T8	4.72 ft/sec	4.74 ft/sec	0.4%	-	-	-
	T9	3.69 ft/sec	3.68 ft/sec	-0.3%	-	-	-
	T10	2.45 ft/sec	2.44 ft/sec	-0.4%	-	-	-

1. Spring tide conditions simulated from Nov. 13, 2004 (13:15) to Nov. 20, 2004 (13:15).
2. Extreme storm conditions simulated from Sept. 20, 1989 (10:30) to Sept. 22, 1989 (18:29).
3. (-) indicates transect was not included in the analysis.
4. Values are depth averaged.

**Cumulative Impacts:** *“Please provide additional information to include relevant data addressing the concerns related to potential impacts associated with beach placement. Additionally, please provide the rationale (as described in an alternative analysis) that this proposal is the least environmentally damaging and practicable alternative.”*

**Response:** The Town of Sunset Beach has and continues to investigate several placement options for the beach compatible material. However, North Carolina General Statutes (NCGS) 113-229 (h1) and 113-229 (h2), states the *beach-quality sand* (must) *be placed on the affected downdrift ocean beaches or, if placed elsewhere, an equivalent quality and quantity of sand from another location shall be placed on the downdrift ocean beaches. Clean, beach quality material dredged from navigational channels within the active nearshore, beach or inlet shoal systems shall not be removed permanently from the active nearshore, beach or inlet shoal system. This dredged material shall be disposed of on the ocean beach or shallow active nearshore area where it is environmentally acceptable and compatible with other uses of the beach”.*

The Town of Sunset Beach held discussions with the Town of Ocean Isle Beach (OIB), the navigation branch of the USACE – Wilmington District, the Town of Oak Island, the Division of Coastal Management (DCM) and residents of Sunset Beach. Although OIB would be willing to accept the material, they were not willing to cost share on the project due to minimal benefit the proposed dredge volume (40,500 cubic yards) would provide for their eroding shoreline. The Town also held conversations with DCM on the potential to truck haul the compatible material to Oak Island. Through discussions, DCM determined this action would require a variance request from NCGS 113-229 (h2) to remove the material from the beach or inlet shoal system extending from Shallotte Inlet to Little River Inlet. The USACE-Wilmington District also prohibited stockpiling the beach

compatible material in a federal placement site (DA-311) in accordance with federal guidance issued in February 2017.

In consideration of these discussions, the Town proposed to place the beach compatible material along its own shoreline as the least cost alternative where it would be environmentally acceptable, practicable, and compliant with the NCGS. The Town identified the area of most need within proximity to the project that would provide the greatest benefit for the financial cost with minimal environmental impacts. Through the CAMA permitting process, the action was thoroughly vetted by the appropriate state agencies (NCWRC, DMF, DWR, and DCM) with no significant concern expressed for the potential of adverse environmental impacts.

The Town understands the beach front owners have expressed concerns about the project and these concerns will need to be addressed. However, from an environmental permitting perspective, the proposal provides the most practical, cost effective, and environmentally sensitive alternative. The Town hopes to address the individual concerns of the property owners through easement negotiations. However, the Town also understands the project cannot occur on private property without appropriate consent.

**Cumulative Impacts:** “...provide adequate information to substantiate the conclusion that potential impacts have been appropriately avoided and minimized to North Jinks Creek which will result from the proposed dredging...” and “... address the manner in which depth measurements were obtained for justification of need for further dredging and navigability to the depths proposed (as requested in the Purpose and Need and Avoidance and Minimization sections above)”.

**Response:** The Jinks Creek modeling analysis (attached) provides additional information to substantiate the potential impacts have been appropriately avoided and minimized to North Jinks Creek. The analysis estimates the tidal velocities and flow rates will not experience a significant change as a result of the dredging. Table 1 and Table 2 show a summary of the analysis and additional detailed results can be reviewed in the attached report.

In respect to the manner in which depth measurements were obtained, the attached survey report provides a detailed description of the hydrographic surveying process. From the report “*Survey data were collected using hydrographic survey methods. Singlebeam sonar soundings were collected from a 21 ft catamaran, the RV Echo, with a digital Odom CV100, 200 kHz ultra-shallow water sonar system. Real-time horizontal and vertical control for singlebeam data acquisition was provided by the NCGS RTK-VRS network. Topographical data was collected using a backpack and a Trimble R7 GNSS receiver. All singlebeam and topographic data was processed using HYPACK software and developed into a DEM using Surfer and ArcGIS. All data was cross-checked and verified using Hypack and ArcGIS 10.3 software*”. The data was originally collected in reference to the North American Vertical Datum established in 1988 (NAVD88) in accordance with the North Carolina Administrative Code (NCAC), specifically 15A NCAC 07H.0312 (2) c. However, in order to provide a more relative reference for local boaters, the data was converted to represent the elevations at Mean Low Water (MLW) using NOAA tidal station 8659182, Oak Island. For epoch 1983-2001, the conversion factor was determined as 2.94-ft between NAVD and MLW.

**Cumulative Impacts:** *“Please provide further information regarding the potential for the presence of waters of the U.S. at the proposed disposal site. Has a delineation of waters on the disposal site been conducted? How is the material to be handled in order to preclude impacts to on-site adjacent waters, including return water impacts from dewatering activities?”*

**Response:** A delineation of waters on the disposal site has not been conducted by the Town of Sunset Beach. However, in accordance with CAMA permit 79-19, no excavated materials shall be deposited, even temporarily, within 30-ft of the normal high water line. All excavated materials shall be confined above normal low water level and landward of regularly or irregularly flooded marsh, behind adequate dikes or other retaining structures to prevent spillover of solids into any marsh or surrounding waters.

The Town of Sunset Beach appreciates the opportunity to provide a response to these comments and understands the complexity of the review process. The Town also appreciates your time and effort towards coordinating and reviewing the application and related correspondence. In that regard, if there are any additional questions or concerns, please feel free to contact me at your convenience at 910-218-7082.

Sincerely,

**MOFFATT & NICHOL**

Robert Neal, PE

Senior Coastal Engineer

- Cc. Hiram Marziano, Town Administrator, Town of Sunset Beach  
Lisa Anglin, Town Clerk, Town of Sunset Beach (via email w/o attachments)  
Jeff Shelden, Lead Coastal Engineer, Moffatt & Nichol (via email w/o attachments)  
Doug Huggett, Environmental Permit Specialist, Moffatt & Nichol (via email w/o attachments)  
Dawn York, Environmental Permit Specialist, Moffatt & Nichol (via email w/o attachments)