

***ATTACHMENT A***  
*Waterway Data Requirements*

**ATTACHMENT A - WATERWAY DATA REQUIREMENTS**

**A. Means of Data Collection:** See BPAG for additional information

**B. Present governing bridge(s) or aerial structure(s) on the waterway:**

1. Identify all bridges upstream and downstream of the proposed bridge site and their existing horizontal and vertical clearances to determine the existing minimum horizontal and vertical clearances (including overhead transmission line clearances). Provide in table format.

The table below shows the clearances for the other crossings of Currituck Sound, along with the distance each crossing is away from the location of the Mid-Currituck Bridge project across Currituck Sound.

(If all bridges downstream have the same minimum clearance, state instead of the above requested information.)

<b>Crossing Name</b>	<b>Distance from Mid-Currituck Bridge Project</b>	<b>Horizontal Clearance</b>	<b>Vertical Clearance</b>
Overhead Transmission Lines	18.6 miles south	1,130 feet	~ 70 feet (estimated)
Overhead Transmission Lines	18.6 miles south	980 feet	~ 65 feet (estimated)
Wright Memorial Bridges	18.7 miles south	40 feet	35 feet

2. Does the proposed bridge(s) match (or is greater than) the navigational clearance of existing structures on the waterway? No (vertically) and yes (horizontally) – this was addressed in the Navigation Impact Report (NIR) and in the Preliminary Navigation Clearance Determination (PNCD) (see Attachments E and F of this permit application). The minimum vertical clearance for the proposed bridge is 20 feet, which is less than the Wright Memorial Bridges. The minimum horizontal clearance for the proposed bridge is 40 feet, which matches the Wright Memorial Bridges, but in reality, is 88 feet between piers as shown in the Bridge Sketches (see Attachment D), which is greater than the Wright Memorial Bridges.

3. What is the most restrictive horizontal clearance on the waterway? (This may be a fixed bridge downstream/upstream of the proposed structure, a low hanging power line downstream/upstream of the bridge(s), or it may be some other structure that limits horizontal clearance. Sometimes the existing to-be-replaced bridge(s) is the most restrictive structure.)  
Wright Memorial Bridges

a. Milepoint: Near the southern end of Currituck Sound at Albemarle Sound.

b. Horizontal clearance: 40 feet

4. What is the most restrictive vertical clearance on the waterway? (This may be a fixed bridge downstream/upstream of the proposed structure, a low hanging power line downstream/upstream of the bridge(s), or it may be some other structure which limits vertical clearance. Sometimes the existing to-be-replaced bridge(s) is the most restrictive structure.)

Wright Memorial Bridges

a. Milepoint: Near the southern end of Currituck Sound at Albemarle Sound (approximately 0.5 miles).

b. Vertical clearance: 35 feet

5. Will the proposed bridge(s) become the most restrictive/obstructive structure across the waterway? Yes (vertically) but no (horizontally).

**C. Waterway characteristics:** (All domestic bridge navigational clearances should be stated in linear feet in decimal form vs. feet and inches. All international bridge navigational clearances should be stated in linear unit of measure as well as the metric equivalent.)

1. Various waterway stages: (Datum that is used). The US Geological Survey has a gauging station in Currituck Sound relatively near the proposed bridge location. Data from this station has been used to determine mean high water and mean low water levels. The gauging station is located near Corolla, NC, at 36-22-28 N and 75-50-04 W, and is based on NAVD 1988. Information about the gauging station is available online at: [https://waterdata.usgs.gov/nwis/inventory?agency\\_code=USGS&site\\_no=02043433](https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=02043433).

2. Natural flow of the waterway including currents, waterway velocity, water direction, and velocity fluctuations (seasonal, daily, hourly, etc.), that might affect navigation. Currituck Sound is not tidally influenced. Water flow and elevation are driven mostly by wind direction and intensity in Currituck Sound. There is no natural flow in this shallow basin, and there are no direct connections from Currituck Sound to the Atlantic Ocean. There are connections to the Atlantic Ocean both to the south and the north from Currituck Sound. Oregon Inlet provides a connection to the Atlantic Ocean south of Currituck Sound and is located roughly 45 miles south of the proposed bridge location and about 26 miles south of Currituck Sound. Chesapeake Bay provides a connection to the Atlantic Ocean north of Currituck Sound and is roughly 75 miles north of the proposed bridge location.

3. Width of the waterway at bridge site: 24,490 feet

4. Depth of the waterway and elevation fluctuations at bridge site: [List the depth at each waterway bridge stage (ex. Range of tides, average high water elevation, etc.)]. The water depths in Currituck Sound are generally shallow, ranging from 0 to -9 feet. Data from a USGS gauging station near the project site shows a range in water surface elevations from a low of about -2.4 feet to a high of about 4.0 feet over 8 years of data. However, the daily mean water elevation has typically ranged between about -2.8 feet to 2.5 feet over the past 14 years of available data. Mean High Water is at 0.5 feet, and Mean Low Water is at 0.0 feet.

5. Waterway layout and geometry: (For example, is there a dam or lock; does the elevation of the approach impact the required bridge(s) clearance?) The proposed navigation span for the Currituck Sound Bridge is generally located in alignment with the Big Narrows area located about four miles south of the proposed bridge, which is a natural restriction in Currituck Sound for marine traffic (see Exhibit B of the NIR and the bridge sketches in Attachment D of this permit application).

6. Channel and waterway alignment: Location of the channel(s) There is no defined channel in Currituck Sound at the bridge site. The navigation channel has been established based on the location of generally deeper water and an alignment with the Big Narrows passageway to the south and the North Landing River (Intracoastal Waterway) to the north.

7. Other limiting factors: (For example, bends in the waterway within one-half mile of project site, hindrances to free navigation, fog, hydraulics, etc.) There are no limiting factors to navigation within one-half mile of the proposed bridge location.

**D. Do vessels that engage in emergency operations (i.e., law enforcement, fire, rescue, emergency dam repair, etc.), national defense activities (i.e. cruisers, fuel barges, munitions ships, etc.) or channel maintenance (i.e., dredges, dam and levee repair, etc.) operate on the waterway? If yes, describe the vessels and provide the following information:** Yes

1. Does levee maintenance, bridge work (other bridges), channel maintenance and emergency operations upstream of bridge require certain vessels to transit the waterway? No

2. Does the proposed bridge(s) impact USCG and/or other government vessels' ability to transit the bridge(s) to conduct mission essential functions (icebreakers, patrols, etc.)? No

3. Vessels using the waterway during the proposed bridge(s) lifespan (should include): See the NIR (Attachment E) for information on known emergency vessels using Currituck Sound. The USCG in Wanchese, NC, responded to the survey, and all of their boats can be accommodated under the proposed bridge. Similar-sized vessels are typically used by the North Carolina Wildlife Resources Commission for hunting and fishing patrols. The same would be true for local police, fire, and emergency rescue squads.

a. Vessel name; See NIR

b. Registration/documentation numbers; See NIR

c. Vessel type; See NIR

d. Vessel owner contact information (company/individual name, address, contact info.); See NIR

e. Primary vessel mooring location (include waterway milepoint, if known); See NIR

f. Vessel overall length; See NIR

- g. Vessel beam; [See NIR](#)
  - h. Vessel draft (depth of hull below waterline at full load); [See NIR](#)
  - i. Vessel air draft (height of the highest fixed point of the vessel above the waterline, when empty); [See NIR](#)
  - j. Specialized vessels that use the waterway (e.g. vessels which have limited maneuverability due to inherent design or mode of operation); [See NIR](#)
  - k. Safety margin required by vessel to navigate through the bridge(s); [See NIR](#)
  - l. Vessel transit frequencies under proposed bridge(s), transit speeds, and load configurations; and [See NIR](#)
  - m. Vessel traffic characteristics (to include if tug assist is required for transit through the bridge(s) due to limited horizontal clearance). [See NIR](#)
4. Will the proposed bridge(s) provide the horizontal and vertical clearances for the safe, efficient passage of the largest of these vessels? Why? [Yes, all the reported and known vessels for emergency operations on Currituck Sound should be accommodated with the proposed horizontal and vertical clearance of the Mid-Currituck Bridge.](#)
5. If no, estimate the number of vessels in each of the above categories unable to pass through the proposed bridge(s). Give the name, length overall (LOA), beam, draft and height of highest fixed point above the waterline for vessels affected by the bridge(s).
6. Can these vessels be modified (i.e., folding mast, relocation or equipment, etc.) without decreasing their respective response times? If so, name the vessels.
7. If modifications are feasible, state the name of the vessel(s), their trip frequency, the necessary modifications, the cost of the modification(s) and who will pay for them (i.e., vessel owner, applicant, other).
8. Provide any additional information concerning the potentially impacted or burdened users of the waterway as well as the future use of the waterway.

**E. Has the United States Corps of Engineers (USACE) completed or does it plan to complete a federal navigation project on the waterway? If yes, provide the following information:** [There is no known USACE navigation project for Currituck Sound at or near the bridge crossing location.](#)

- 1. Project name, downstream/upstream milepoints, depth, type of project, scope, status of project and other limiting factors.
- 2. Whether there is/was a “design vessel” used in planning the channel? What is/was the design vessel? Was the design vessel reviewed by the Coast Guard?

3. The following specifications of the vessel for which the navigation project is or will be designed: LOA, beam, draft and height of highest fixed point above the waterline.

4. Will the proposed bridge(s) provide the horizontal and vertical clearances necessary for the safe, efficient passage of the vessel for which the navigation project was designed?

5. If so, can the vessel be modified to clear the proposed bridge(s) without substantially increasing operating costs?

6. If modifications are feasible, state the necessary modifications, costs of any modification(s), and who will pay for the modifications.

7. Are there projected changes in waterway usage based upon anticipated waterway improvement projects?

8. Does the proposed bridge(s) impact USACE ability to transit the bridge(s) in a Federal project channel?

**F. Describe the present and prospective recreational navigation:** Will the proposed bridge(s) affect the safe, efficient movement of any segment of the present or prospective recreational fleet operation on the waterway? If yes, provide the following information: [Yes, the NIR \(see Attachment E\) contains the results of two surveys of vessels that use Currituck Sound and transit the area of the proposed bridge. The available information on these vessels is contained in the NIR and associated appendices of that report.](#)

1. Vessels utilizing the waterway during the proposed bridge(s) lifespan. (Information in this bullet should include:)

a. Vessel name; [See NIR](#)

b. Registration/documentation numbers; [Not Available](#)

c. Vessel type; [See NIR](#)

d. Vessel owner contact information (company/individual name, address, contact info.); [See NIR](#)

e. Primary vessel mooring location (include waterway milepoint, if known); [See NIR](#)

f. Vessel overall length; [See NIR](#)

g. Vessel beam; [See NIR](#)

h. Vessel draft (depth of hull below waterline at full load); [See NIR](#)

i. Vessel air draft (height of the highest fixed point of the vessel above the waterline, when empty); [See NIR](#)

- j. Specialized vessels that use the waterway (e.g., vessels which have limited maneuverability due to inherent design or mode of operation); [See NIR](#)
- k. Safety margin required by vessel to navigate through the bridge(s); [Not available](#)
- l. Vessel transit frequencies under proposed bridge(s), transit speeds, and load configurations; and [See NIR](#)
- m. Vessel traffic characteristics (to include if tug assist is required for transit through the bridge(s) due to limited horizontal clearance). [Not available](#)
- 2. What is the estimated percentage of the recreational fleet, which may be affected by the proposed bridge(s)? [10 percent \(see NIR for further details\).](#)
- 3. Will the proposed bridge(s) eliminate the access of these vessels to existing or planned commercial, water-oriented facilities (i.e., restaurants, shops, recreational areas, marinas, etc.) in the vicinity of the proposed bridge(s)? If yes, describe these facilities. [No](#)
- 4. Is it feasible to modify the affected segments of the fleet to clear the proposed bridge(s) without substantially increasing operating costs? If yes, name the vessel(s), state the necessary modifications, cost of modifying each vessel and person or entity responsible for financing the modifications. [Most of these vessels can lower their mast or electronic devices to transit the bridge.](#)
- 5. Provide any additional information concerning the potentially impacted or burdened users of the waterway as well as the future use of the waterway. [None are known.](#)

**NOTE: Check with local USACE District Office, Chamber of Commerce or other organizations for proposed marinas, recreational areas, shops, etc.**

**G. Describe the present and waterway and prospective commercial navigation and the cargoes moved on the waterway:** Will the proposed bridge(s) affect the safe, efficient movement of any segment of the present or prospective commercial fleet operating on the waterway? If yes, provide the following information: [Currituck Sound is not typically used for the movement of goods because of the relatively shallow water depths. The areas south of the proposed bridge crossing near the Big Narrows are very shallow water and not conducive to commercial navigation. The Intracoastal Waterway is located along the North River, which is located west of Currituck Sound. The proposed bridge crossing would not affect the movement of present or prospective commercial navigation.](#)

- 1. Vessel name; [N/A](#)
- 2. Registration/documentation numbers; [N/A](#)
- 3. Vessel type; [N/A](#)
- 4. Vessel owner contact information (company/individual name, address, contact info.); [N/A](#)

5. Primary vessel mooring location (include waterway milepoint, if known); vessel overall length; N/A
6. Vessel beam; N/A
7. Vessel draft (depth of hull below waterline at full load); N/A
8. Vessel air draft (height of the highest fixed point of the vessel above the waterline, when empty); N/A
9. Specialized vessels that use the waterway (e.g. vessels which have limited maneuverability due to inherent design or mode of operation); N/A
10. Safety margin required by vessel to navigate through the bridge(s); N/A
11. Vessel transit frequencies under proposed bridge(s), transit speeds, and load configurations; and N/A
12. Vessel traffic characteristics (to include if tug assist is required for transit through the bridge(s) due to limited horizontal clearance). N/A
13. Does the proposed bridge(s) impact existing and future cruise ship ports-of-call/terminals? N/A
14. Does the proposed bridge(s) impact ports supporting post-Panamax vessels? N/A
15. Does the proposed bridge(s) impact vessels that produce unique products for the region? N/A
16. Does the proposed bridge(s) impact vessels that require helper boats/tugs? (Note the combined clearance requirement of the vessel and the helper boat/tug.) N/A
17. Document annual cargo movements (cargo types and quantities); N/A
18. State the estimated percentage of the commercial fleet, which may be affected by the proposed bridge(s). N/A
19. Will the proposed bridge(s) clearance impact present and/or prospective upstream commercial activity, e.g., jobs and economic growth and development? N/A
20. If yes, address any existing or planned commercial/industrial developments negatively affected by the proposed clearances and discuss the economic impacts the proposed clearances will have on these businesses: N/A
21. Document the foreseeable needs to future navigation; N/A
22. Provide existing and historical navigational use and waterway conditions; N/A
23. Provide input from waterway dependant facilities concerning future use; N/A

24. Describe land use zoning along the waterway (particularly within the riparian zone);  
N/A
25. Describe future vessel size and traffic trends; N/A
26. Include input from states based on state development plans; N/A
27. Include input from facilities based on business plans; N/A
28. Document local commercial shipping and other businesses affected by this restriction.  
N/A

Note: the next opportunity to adjust clearances for navigation is usually between 50-100 years unless interim waterway improvement projects include the cost of bridge alterations.

29. Is it feasible to modify the restricted vessels to clear the proposed bridge(s) without substantially increasing operating costs? If yes, name the vessel(s), state the necessary modifications, cost of modifying each vessel and company or entity responsible. N/A
30. Provide any additional information concerning the potentially impacted or burdened users of the waterway as well as the future use of the waterway. N/A

**H. Identify the name and contact information for marine facilities located within a 3-mile radius of the proposed project (public boat ramps, marinas or major docking facilities, boat repair facilities, etc.):** There are limited marine facilities within a 3-mile radius of the proposed bridge crossing. The Whalehead Club Boat Ramp (252-453-9040) is located about 1.6 miles north of the bridge location along the east side of Currituck Sound at 1100 Club Road, Corolla, NC 27927. The Coinjock Public Boat Ramp (operated by the NC Wildlife Resources Commission) is located along the North River at 482 Waterlily Road, Coinjock, NC 27923, 2.8 miles from the bridge location by direct distance, but about 13 miles from the bridge by water. Similarly, the Coinjock Marina (252-453-3271) at 321 Waterlily Road, Coinjock, NC 27923, and the Midway Marina (252-453-3625) at 157 Coinjock Development Road, Coinjock, NC 27923 are also located along the North River, 2.6 miles from the bridge location by direct distance, but about 14 miles by water. The Poplar Branch Public Boat Access (also operated by the NC Wildlife Resources Commission) is located 3.5 miles south of the proposed bridge crossing along the west bank of Currituck Sound at 101 Poplar Branch Road, Poplar Branch, NC 27965. There are no major docking facilities or boat repair facilities within a 3-mile radius of the proposed bridge. There are several private docks along the banks of Currituck Sound in the area of the bridge. Marine Pro (252-457-0016) is a boat repair facility along US 158 north of the project near Coinjock at 4524 Caratoke Highway, Barco, NC 27917. This facility is 3.2 miles from the proposed bridge over Currituck Sound and 2.2 miles from the west end of the Mid-Currituck Bridge project at US 158.

**I. Will the proposed bridge(s) block access of any vessel presently using local service facilities (i.e., repair shops, parts distributors, fuel stations)? If yes, provide the following information:** No

1. Describe the facilities impacted and estimate the number of vessels currently using these facilities.
  - a. Vessel information should include the following for each blocked vessel:
    - 1) Vessel name;
    - 2) Registration/ documentation numbers;
    - 3) Vessel type;
    - 4) Vessel owner contact information (company/individual name, address, contact info);
    - 5) Primary vessel mooring location (include waterway milepoint, if known); vessel overall length;
    - 6) Vessel beam;
    - 7) Vessel draft (depth of hull below waterline at full load); and
    - 8) Vessel air draft (height of the highest fixed point of the vessel above the waterline, when empty);
2. Could any of these facilities be considered critical infrastructure, key resources, or important/unique U.S. industrial capability (i.e., are these facilities unique or one of only a few of the type in the area?) Address whether the proposed clearances negatively affect those facilities and their customers.
3. What economic impact will loss of access have on these facilities? Include estimated dollar amount to support Commandant and DHS goals.
4. What is the distance to alternate service facilities capable of servicing the affected vessels? Describe the facilities.
5. Will use of these alternate facilities substantially increase vessel operation affected vessels? Describe the facilities.
6. Is it feasible to modify the affected vessels to clear the proposed bridge(s)?
7. If yes, state the name, necessary modifications, cost of modifying each vessel and who will pay for the modifications.

**J. Are alternate routes bypassing the proposed bridge(s) available for use by vessels unable to pass the proposed bridge(s)? If yes, provide the following information:** Yes and No. Use of the Intracoastal Waterway instead of Currituck Sound is the best option for

marina traffic that cannot effectively navigate in the shallow waters of Currituck Sound. The water distance from Point Harbor west of the Wright Memorial Bridge to Bell Island in northern Currituck Sound is about 32 miles using the Intracoastal Waterway and 30 miles using Currituck Sound. Within Currituck Sound, in the immediate area of the proposed bridge, there are no realistic alternate routes to bypass the bridge. To go from one side of the bridge to the other using the alternate route via the Intracoastal Waterway would be a roughly 62-mile trip.

1. State the number of vessels that will be forced to use alternate routes. Based on surveys conducted for the NIR, 90 percent of the 125 vessels that responded to the survey would be able to transit the proposed bridge location. See the NIR for additional information (Attachment E).
2. For each vessel identified in section H1.a. above, include the following information: See the NIR (Attachment E) and the NIR Exhibits G and H for specific information on vessels that are larger than the proposed clearances for the Currituck Sound Bridge.
  - a. Vessel name;
  - b. Registration/documentation numbers;
  - c. Vessel type;
  - d. Vessel owner contact information (company/individual name, address, contact info.);
  - e. Primary vessel mooring location (include waterway milepoint, if known);
  - f. Vessel overall length;
  - g. Vessel beam;
  - h. Vessel draft (depth of hull below waterline at full load);
  - i. Vessel air draft (height of the highest fixed point of the vessel above the waterline, when empty); and
  - j. Specialized vessels that use the waterway (e.g., vessels which have limited maneuverability due to inherent design or mode of operation);
3. Identify any alternate routes and provide the respective distances between the proposed bridge(s) and these routes.
4. Will use of these routes substantially increase the transit time and/or operating costs of the affected vessels? This relates to the mobility goals of the Commandant and DHS.
5. If yes, describe the impacts of increased transit time and/or operating costs.
6. Is it feasible to modify these vessels to clear the proposed bridge(s)?

7. If yes, state the name, necessary modifications, cost of modifying each vessel and who will pay for these modifications.

**K. Will the bridge(s) prohibit the entry of any vessels to the local harbor of refuge? If yes, describe the harbor and provide the following information:** No

1. What percentage of vessels currently using the harbor refuge will not be able to pass the proposed bridge(s) to gain access to that refuge? Describe the vessels.

2. Provide vessel information for those vessels identified in J.1.:

a. Vessel name;

b. Registration/documentation numbers;

c. Vessel type;

d. Vessel owner contact information (company/individual name, address, contact info.);

e. Primary vessel mooring location (include waterway milepoint, if known);

f. Vessel overall length;

g. Vessel beam;

h. Vessel draft (depth of hull below waterline at full load);

i. Vessel air draft (height of the highest fixed point of the vessel above the waterline, when empty); and

j. Specialized vessels that use the waterway (e.g. vessels which have limited maneuverability due to inherent design or mode of operation);

3. Is it feasible to modify these vessels to clear the proposed bridge(s)?

4. If yes, state the name, necessary modification, cost of modifying each vessel and who will pay for the modifications.

5. If alternate refuges are available, describe them and state the distance of each from the present harbor of refuge.

**NOTE: A harbor of refuge is defined as a naturally or artificially protected water area that provides a place of relative safety or refuge for commercial and recreational vessels traveling along the coast or operating in a region.**

**L. Will the proposed bridge(s) be located within one-half mile of a bend in a waterway? If yes, describe the bend and provide the following information:** No

1. Is there sufficient distance between the bridge(s) and the bend to allow proper vessel alignment for the safe, efficient passage of vessels through the proposed bridge(s)?
2. If no, what factors make construction of the bridge(s) at an alternate location impractical?

**M. Are there other factors (i.e., dockages, lightering areas, existing bridges, etc.) located within one-half mile of the proposed bridge(s), which would create hazardous passage through the proposed structure? If yes, provide the following information:** No

1. Describe the factors. (For example, construction impacts to navigation and waterway users, etc.)
2. What mitigative measures are being recommended? (For example, navigation safety during construction, etc.) Why?

**N. Do local hydraulic conditions (i.e., wave chop, cross currents, tides, shoals, etc.) increase the hazard of passage through the proposed bridge(s)? If yes, provide the following information:** No

1. Describe the conditions: *Waves and currents in Currituck Sound are primarily wind driven. Currituck Sound is a generally shallow water body (see Exhibit B and C of the NIR). The proposed navigation location for the bridge over Currituck Sound is in deeper water and should not be subjected to hydraulic conditions that make passage hazardous.*
2. What mitigative measures are being recommended? Why?

**O. Do local atmospheric conditions (i.e., strong, prevailing winds, fog, rapidly developing storms, etc.) increase the hazard of passage through the proposed bridge(s)? If yes, provide the following information:** No

1. Describe the conditions: *Currituck Sound is an open water body with generally normal prevailing winds for the area and typical weather conditions.*
2. What mitigative measures are being recommended? Why?

**P. Have guide clearances been established for the waterway? If yes, provide the following information:** There are no established guide clearances for Currituck Sound by the USCG.

1. Horizontal guide clearance;
2. Vertical guide clearance;
3. Do the proposed bridge(s) clearances differ from these guide clearances?
4. If yes, what factors justify deviating from these guide clearances?

**Q. Are there other natural or man-made conditions that affect navigation (atmospherics, exclusion zones, etc.)?** No

1. Describe the conditions:
2. What mitigative measures are being recommended? Why?

**R. State any other factors considered necessary for the safe, efficient passage of vessels through the proposed bridge(s)? Are clearance gauges needed? Why?** Because of fluctuations in water depths in Currituck Sound caused by wind and wave action, the use of clearance gauges is recommended at the proposed bridge navigational crossing location.

**S. Include a description of the impacts to navigation caused or which could be reasonably caused by the proposed bridge(s) including but not limited to: proposed construction methodology, proposed or prospective changes to the existing bridge(s) operating schedule (for movable bridges), and any proposed mitigation to all unavoidable impacts to navigation.**

1. Conduct a navigational impact report, and include a review of all bridges upstream and downstream of the proposed site to determine the minimum vertical and horizontal clearances available on the waterway. An NIR has been prepared for this project and is available with this permit application (see Attachment E). Bridge construction is anticipated to be done by barges in waters that are generally greater than 6 feet deep. In shallower waters along the east and west sides of Currituck Sound, construction trestles are anticipated as the construction method for building the proposed bridge.
2. If the proposed bridge(s) is fixed, and is replacing an existing drawbridge with unlimited vertical clearance, the applicant must determine whether the proposed bridge(s) will accommodate existing and perspective navigation. There is no existing bridge that is being replaced at the proposed bridge crossing location.

**T. Is there any proposed or completed mitigation for impacted waterway users? Are there any impacts that cannot be mitigated?**

1. Can vessels and cargoes be partially disassembled/dismantled in order to transit the proposed bridge(s), and if so, is it economically reasonable? The Coast Guard must take into consideration a vessel's ability to adjust its operations without economic loss. Adjustment or mitigations techniques may include using other routes, lowering electronics (GPS, radar, communication antennae, etc.), lowering crane booms, etc. Most reported vessels that are taller than the proposed vertical clearance under the bridge can lower their masts or electronics to be able to transit the area of the bridge. See the NIR (Attachment E) for more specific details about these vessels.
2. Are alternative routes available for vessel passage? There is no alternate route within Currituck Sound to avoid the proposed bridge. The crossing is located near the middle of the length of Currituck Sound and crosses the entire width of the Sound. There is an alternate route using the Intracoastal Waterway that would avoid the proposed bridge. This alternate route

would be about 62 miles long from one side of the bridge to the other, using the Intracoastal Waterway.

3. Can vessels transit at typical lower water stages (mean low water, mean pool level, etc.)?  
Yes