VIMS Shoreline Permit Application Report # 07-1585

APPLICANT:  CITY OF VIRGINIA BEACH
Locality:  CITY OF VIRGINIA BEACH
Immediate Waterway: Lynnhaven River W/B
Watershed: SOUTHERN BAYSHORE
Purpose: Improve Navigation
Application Type: Wetlands, Subaqueous
Site Inspection: 9/18/07
Report Date: 2/6/08

Type of Activity
Bulkhead (ft) 170
New Dredging (yd³) 18520
Impact Beach/Dune (ft²) 2100
Impact Subaqueous Bottom (ft²) 70300
Maintenance dredging (yd³) 68000
Impact Subaqueous Bottom (ft²) 1619600

Total Impacts (ft²) 1692000
Total Impacts (Wetlands) 0
Total Impacts (Subaqueous) 1689900
Total Impacts (Beach/Dune) 2100
Total Fill (ft²) 0

Project Location

City of Virginia Beach

Center for Coastal Resources Management
P.O. Box 1346
Gloucester Point, VA 23062-1346
(804)684-7380, fax: (804)684-7179, http://ccrm.vims.edu/
NOTE
The Virginia Institute of Marine Science (VIMS) recognizes that the regulatory process considers all aspects of a particular project, including socioeconomic factors. This report, however, only addresses marine environmental concerns.

Findings & Recommendations:

Notice: An integrated coastal management perspective has been applied in the review of the proposed activity. Coastal systems tend to be dynamic with connections between wetlands, coastal waters and the surrounding landscape. They provide valuable ecosystem services such as improving water quality and providing upland and aquatic habitat. All shoreline activities should be designed to avoid adverse impacts to coastal resources. When impacts are unavoidable, every effort should be made to minimize and compensate for them. This promotes sustainability and balances the valuable services of coastal resources with their wise use.

General dredging considerations:
Dredging has the potential to impact many of the services provided by and for the natural marine/estuarine ecosystem. The marine and aquatic organisms that live in, on and near the subtidal bottom are most at risk from dredging operations. The normal assemblage of organisms varies with location and depth, but all can be considered an integral part of the marine ecosystem. Resources of special interest include submerged aquatic vegetation (SAV) and shellfish, which play an important role in maintaining water quality and providing habitat. The water column above these bottom-dwelling organisms provides habitat for both swimming and drifting life forms, including both resident and migratory fish and invertebrates, and the larval forms of fish and shellfish. Good water quality is necessary for these organisms and to maintain the functional health of the aquatic ecosystem.

Dredging causes a significant disruption of the marine environment, and must often be repeated in order to maintain desired water depths. Dredging re-suspends bottom sediments in the water column, which adversely impacts water quality. When material to be dredged includes fine-grained sediments such as silt and clay that remains in suspension for a long time, the adverse impact to water quality can be significant in both the area affected and in duration. In addition, dredging removes the existing bottom-dwelling organisms. Though the timeline for recovery of the benthic community depends on many factors including sediment type, depth and available food resources, the ecological services it provides are lost until the community has become re-established.

Dredging in sensitive habitat areas:
The Western Branch of the Lynnhaven River was named a resource of national significance in 1997 by the U.S. Environmental Protection Agency due to its ability to provide valuable shellfish spawning and finfish larvae and nursery habitat. The area in the vicinity of Crab Creek is an integral part of the Lynnhaven River ecosystem that supports numerous commercially important shellfish and finfish species, including oysters, clams and summer flounder. Declines in summer flounder stocks have been attributed to over-fishing, year class failure and habitat loss.
Beginning in the early spring and into summer (approximately March through June, but dependent on annual fluctuations in water temperature), juvenile summer flounder enter the Lynnhaven River system through Lynnhaven Inlet. Juvenile fish can be adversely affected by higher than normal levels of suspended sediments that often result from dredging operations. In addition, high levels of suspended solids caused by dredging can interfere with the development and survival of shellfish larvae. Resulting sedimentation can cover existing shellfish beds and make substrate unsuitable for spatfall. In areas of significant oyster and clam resources, such as those below Hebden Cove, dredging between Stations 33+00 through 37+00 and Stations 74+00 through 76+00 (as depicted in the application drawings) should be avoided during the months of July, August, and September when the majority of oyster spawning and spatfall occurs.

The existing time of year (TOY) restriction for dredging in Crab Creek extends between March 1 and September 30. This restriction is intended to help protect not only shellfish spawning as discussed above, but also summer flounder recruitment and other commercially important finfish. Based on our current scientific understanding of the habitat requirements of oyster larvae and juvenile summer flounder, it is our opinion that the current TOY restrictions on dredging in the Western Branch of the Lynnhaven River below Hebden Cove, including areas in the vicinity of Lynnhaven Inlet, are necessary to reduce potential adverse impacts to shellfish and juvenile life stages of summer flounder. Therefore, we recommend that if dredging is permitted in these areas, that it occur during the five-month period from October to February to minimize impacts to these resources.

Dredge material handling:
The disposal of dredged material is another potentially damaging aspect of dredging projects. The re-handling of dredged material should be minimized as it is transported to disposal sites in order to lessen the re-entry of material into the aquatic system. The transfer of dredge material from barges to trucks at the proposed transfer site, located at the City of Virginia Beach public boat ramp facility along Crab Creek, has the potential to significantly impact water quality in the immediate vicinity of Lynnhaven Inlet. Direct loss of the intertidal beach and impacts to subtidal bottom will also result from the construction of the transfer station. Given the constantly shifting sand in the vicinity of Lynnhaven Inlet and Crab Creek, it is unclear how the City will maintain the navigable depths at the transfer station without the need to constantly dredge access into the off-loading facility. If continual dredging to maintain access to the off-loading facility is permitted, impacts to water quality and aquatic resources are anticipated to be significant based on the anticipated frequency and duration of the activity. Therefore, as previously discussed, we recommend that if construction of the transfer site is permitted, that any dredging necessary to maintain the facility is limited to the five-month period extending from October to February to help reduce impacts to shellfish and juvenile life stages of summer flounder.
Hydrologic Units (HU) are smaller drainage areas within a watershed. A watershed is the area of land where the surface water drains to a common point.

Wetland Board decisions made by one locality can result in cumulative impacts within a watershed shared with other jurisdictions. Cumulative impact is the aggregate of many small individual impacts, where the total adverse impact may be greater than the sum of its parts.

Resource management decisions in this project's watershed are made by:

City of Norfolk
City of Virginia Beach

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<th>Permitted Impacts (square feet)</th>
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<th>2006</th>
<th>Year to Date</th>
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Permit Site Study Area

Lynnhaven River W/B
City of Virginia Beach

Project site
Locality boundaries

Shoreline
Tidal
Marsh Inventory - TMI
Arrow Arum-Pickerelweed
Big Cordgrass
Black Needlerush
Brackish Water Mixed
Cattail
Freshwater Mixed
Reed Grass
Saltbush
Saltmeadow
Saltmarsh Cordgrass
Yellow Pond Lily

Roads
Primary
Secondary
Tertiary

Intertidal flat

Open water

0 0.25 0.5 Miles
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To Wetlands Board / VMRC: Please indicate Wetlands Board / VMRC action on this sheet and return to VIMS, Wetlands Program, P.O. Box 1346, Gloucester Point, VA 23062

Application Number: 07-1585
Name: City of Virginia Beach
Locality: City of Virginia Beach
Waterway: Lynnhaven River W/B

Please check here if this application was approved as proposed _____
Complete the form below if the application was modified.

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<td>New Dredging (yd3)</td>
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Please specify required modifications: ____________________________________________________________

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