closure will not be final until 28 September 1995, there is no scheduled Congressional action that would reject the BRAC-95 Commission recommendations and such an action is extraordinarily remote. The Navy will retain the pier where the SEAWOLF submarine could be berthed. The necessary shore facilities including ordnance loading capability, public works, administration, security and personnel support, are not available on site nor will sufficient land be retained to construct them. None of the existing submarine maintenance facilities would be accessible unless the Thames River channel was dredged as proposed in the preferred alternative. Consequently, construction of new submarine maintenance facilities would also be required. Special legislation would be required to reopen the closed NUWC facility and to develop facilities and infrastructure to support homeporting. Locating the SEAWOLF home port at the NUWC facility would, therefore, require the Navy to maintain duplicate submarine support facilities within three miles of each other.

This duplication is not only inefficient but would result in increased environmental impacts. Duplicate facilities would increase air emissions, water discharges, and require another temporary storage facility for hazardous waste. The cost of providing these duplicate support facilities at NUWC and maintaining those facilities over the 30 year life of the SEAWOLF submarine would clearly be excessive. As described in the EIS, the use of NUWC as a home port is not a reasonable alternative.

The in-channel borrow pit alternative would require removing contaminated sediments from the Thames River channel and placement in a "borrow pit" dug in another section of the River. While this technique would eliminate the disposal of contaminated sediment at the NLDS, it would result in dredging of substantially more sediments and at a higher disposal cost. The dredging associated with the SEAWOLF project is designed to increase the depth of the Thames River channel and the areas adjacent to the piers. The channel would be dredged to a depth of 39 feet below MLW. A "borrow pit" of sufficient size and depth would have to be dug to accept the 350,000 CY of contaminated sediments plus the necessary cap and still allow a minimum depth of 39 feet below MLW. There are no existing borrow pits or depressions in the Thames River that could be used.

Based upon the Army Corps of Engineers Boston Harbor dredging, it is

estimated that use of a borrow pit would increase the amount of dredging by 1 million cubic yards. While the borrow pit is being dug, the sediments that are removed must be stockpiled on land or on barges in the Thames River. As an average barge can hold approximately 4,000 CY of sediment, there is not enough space to accommodate the large number of barges that would be needed to hold contaminated sediments and the sediments removed from the borrow pit; nor is there an adequate land site nearby to use for stockpiling. Once a borrow pit is placed in the Thames River, it would preclude any future deepening of the channel for any use-federal, state, or private. This additional dredging requirement, commitment of a sizeable in-channel area to initial (versus maintenance) dredging, and the logistical problems associated with completing the entire dredging requirement within the four month dredging season, makes this approach impracticable. Additional impacts to water quality in the river would result from more disturbance of sediment. Cumulative impacts to fish and benthos would be magnified because dredging would occur from October-January in the multiple years necessary for project completion. Cost of this approach would be excessive. Assuming similar conditions to the Boston Harbor Inchannel option, the increased volumes, handling, and open water disposal to create cells, import clean sand and place contaminated sediment, would escalate the total cost for the SEAWOLF dredging project from approximately \$4 million to approximately \$23 million. Finally, given that there is a permitted in-water disposal site available for this project, it is not likely that the required permits could be obtained from the CT Department of Environmental Protection to allow this project to proceed this year, if at all.

Soil washing utilizes a cleansing process to remove contaminants from dredge material. The comment letter asserts that the "cleaned" sediments could be placed in an upland facility or an open water site without the need for capping. While this technique eliminates the disposal of contaminated sediment at the NLDS, it involves the disposal of contaminants at upland sites. The contaminants would be concentrated as a result of the washing process, would be subject to regulation under RCRA, and may not be suitable for land disposal. Mechanical soil washing is a recognized process, but it has not been effective in removing petroleum-based contaminants such as polyaromatic hydrocarbons, especially

those in fine sediments. Mechanical washing, enhanced by use of chemical agents, is a relatively new process. This enhanced soil washing technique has never been attempted on a project the size of the SEAWOLF project. Consequently, technical and timing difficulties must be anticipated which could make completing the required dredging within the four month dredging season impracticable. Chemically enhanced soil washing has been used only on smaller projects at a cost of \$35-\$45 per cubic yard, excluding the cost for transportation of treated sediment and landfill fees. As discussed in the EIS, costs associated with a project could approach \$100 per cubic yard.

Sediment dewatering involves placing sediments in a barge or at an upland site and allowing water to run off, thereby reducing the overall volume of sediment. The EIS investigated this process and concluded that the volume of the sediments to be dredged precludes the use of barges for sediment dewatering. Time requirements to develop and permit a suitable near shore upland site to be used for sediment dewatering were estimated to take as long as three years. CT requires a minimum of 18 months of monitoring at a land site before any materials can be deposited there. The dredging process is also more time-consuming and could not be completed during the limited dredge window for the Thames River, making this alternative impracticable for the SEAWOLF project. Sediments are double or triple handled as the sediment is moved from dredge bucket, to barge, to truck, and finally to the land disposal site. All of these factors make the costs associated with dewatering significantly greater than disposal at the NLDS.

Mitigation

The Navy will employ the following mitigation measures to ensure minimization of environmental impacts associated with dredging and disposal operations: (1) Use of an enclosed clamshell dredge bucket to minimize spillage of dredge sediment from dredging operations, (2) adherence to the "no barge overflow" requirement, (3) capping of the contaminated dredged sediment with clean sediment in accordance with the Army Corps of Engineers permit requirements [The amount of capping material available in the project exceeds that necessary to ensure a 50 cm cap and should result in a thicker cap in most locations.], (4) observance of the seasonal restrictions on dredging in the Thames River, (5) implementing an intensive series of