Division Engineer
U. S. Army Engineer Division, New England
Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02154

Dear Sir:

This letter constitutes our preliminary report on the fish and wildlife aspects of Charlestown Pond and Green Hill Pond, Charlestown - Westerly, Rhode Island. It was prepared in response to Mr. Z. Malkasin's letter of March 17, 1964, requesting our advice on the effects on oysters and other fish and shellfish attributable to possible dredging of a channel between these two ponds. Our study was made under authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-666 inclusive), in cooperation with the Rhode Island Division of Fish and Game. The report has the concurrence of that agency as indicated in its letter of May 7, 1964. The report has been coordinated with and represents the views of the Bureau of Commercial Fisheries.

We understand that the proposal before the Rhode Island Legislature calls for redredging and riprapping an existing canal cut by the State in 1961. This original canal was designed to improve water circulation in Green Hill Pond and to provide boat access thereto. It is about a mile long, originates at Charlestown Inlet, leads northeasterly, and terminates in the natural Green Hill Pond outlet to Charlestown Pond a few hundred feet west of the road bridge crossing this outlet.

This original canal was dug to a depth of two feet below mean low water. At several points along the canal, natural depths up to eight feet were found. These deeper areas were left undisturbed. As a result, the bottom of the canal varied from two to eight feet deep below mean low water. Tidal range in the canal is about one to two feet (mean tidal range at Watch Hill Point is 2.5 feet). The bottom width of the canal was 20 feet and the sides were sloped outward. Two openings in the north bank of the canal divert water into Charlestown Pond. This canal has been filling in rapidly and today depths do not exceed one foot in some spots.
Green Hill Pond waters were somewhat fresher than Charlestown Pond before the canal was dug in 1961. The salt content of Green Hill Pond was 15 parts per thousand or less; in Charlestown Pond it varies from 20 to 30 parts per thousand depending upon the location of the sampling station.

Prior to construction of the canal, Green Hill Pond provided good habitat for waterfowl; for finfish such as herring, school striped bass, young bluefish, white perch, American smelt, and blackback flounder; and for shellfish such as soft-shell clam, oyster, and blue-claw crab. In addition, the pond was one of the few locations in the State where smelt runs were established. Oyster sets were very good but growth was slow because of low fertility and quality was poor because of the low salt content in the brackish water. Finfish and the blue-claw crab populations varied sharply with the season of the year.

After the canal was dug in 1961, the salinity of Green Hill Pond increased. Plants and algae suited to more saline waters invaded the pond and there was an increase of several inches in the small tidal range.

The redredging of the canal would include rock riprapping of the canal banks to stabilize them. At this time no specifications have been prepared but it is likely that a deeper and wider canal will be considered.

Predicting the effects of environmental alterations on fisheries is highly complex and most difficult. Marine environment is dependent on tidal forces. Any changes in these forces can affect water salinity, temperature, turbidity, stratification, dissolved oxygen, and other physical and chemical factors.

The effects of the 1961 canal work on fish and wildlife are, in part, known and form a basis for the projection of possible effects of the proposed work. The increased salinity and greater tidal range resulting from the 1961 canal have had little apparent effect on most finfish and shellfish species to date. The majority of these species are comparatively tolerant to salinity and other changes.

Oyster growth and quality, however, are reported to have improved. A large annual oyster harvest is being taken from Green Hill Pond. About eight commercial oystermen work the pond and many persons harvest oysters for personal use. The harvest is valued at $6 to $7 per bushel. It is estimated that $30,000 to $40,000 worth of oysters have been taken from the pond annually during past years. This excellent harvest is not attributed entirely to canal dredging. Green Hill Pond is one of the few remaining productive areas and fishermen are turning to this pond of necessity as oyster production declines in Charlestown Pond.

Construction of the 1961 canal destroyed small acreages of waterfowl marsh as a result of spoil deposit on the marshes bordering the canal; however, present conditions in Green Hill Pond are still favorable to waterfowl. On this basis, there is no indication that the redredging and stabilization
of the canal would be either detrimental or beneficial to these resources if this work is confined to 1961 specifications, if it would not result in any major changes in existing use patterns, and if precautions are taken to prevent any further damage to the salt marshes. Deposition of spoil on these marshes would destroy additional waterfowl feeding and resting areas. The least damaging method of spoil disposal would be by deposit upon the barrier beach for possible dune stabilization or beach nourishment.

We oppose any redredging that would deepen, widen, or lengthen the canal beyond the 1961 dimensions. This would almost certainly increase salinity above the optimum for oysters and possibly for other shellfish species. Increasing salinity also would promote the continued invasion of eelgrass, marine algae and phytoplankton, and oyster predators. The spread of rooted plants would deteriorate bottom conditions for oysters and formation of dense algae and organic detritus mats could severely limit setting of young oysters. Changes in other physical and chemical factors could also be expected. Furthermore, permanent damages to the shellfish and possibly to other fish resources could be expected.

In addition, the establishment of Green Hill Pond as a boating center would be detrimental. At best, boating facilities are not conducive to fish and wildlife. Some pollution is inevitable, and interference with waterfowl activities and with fishing and hunting would occur. Further deposition of spoil on the bordering marshes would result in additional losses of waterfowl habitat.

In conclusion, Green Hill Pond is currently a productive ecological unit providing excellent fish and wildlife values. It should be maintained in its present state. We recommend that any redredging be carefully planned to maintain the same tidal exchange ranges established since 1961.

Sincerely yours,

[Signature]

Eugene E. Crawford
Acting Regional Director