

March 23, 2007

The Superintendent,  
Navigable Waters Protection Program  
Transport Canada  
PO Box 1013  
Dartmouth, N.S. B2Y 4K2

RE: File # 8200-02-2005

Proposed Aquaculture Facility # 1251 in Port Mouton Bay at Port Mouton, Queens  
County, N.S. in front of the west side of Port Mouton Island

We are submitting the following analysis of Unacceptable Harmful Alteration,  
Disruption or Destruction (HADD's) of Fishery Habitat at Port Mouton Bay as a result of  
existing and proposed aquaculture activity.

Ronald Loucks is a physical oceanographer who was a Research Scientist for eleven  
years at Bedford Institute of Oceanography. He was a member of the Federal-Provincial  
Georges Bank Review Panel and the Federal Environmental Assessment Review Panel  
for the Northumberland Strait Crossing. He and Ruth Smith have operated a consulting  
practice, R. H. Loucks Oceanology Ltd. for more than 30 years, focussing on water  
quality issues, in more than 40 coastal and estuarine locations in Nova Scotia as well as  
fisheries oceanography including studies in L'Etang Inlet, New Brunswick.

Our association with the Friends of Port Mouton Bay is as citizens. Ruth Smith is a native  
of Port Mouton; we own property and spend considerable time there.

Respectfully submitted,

Ronald H. Loucks, PhD.

Ruth E. Smith

## UNACCEPTABLE HADD'S AT PORT MOUTON BAY

In Port Mouton Bay, the District 33, Port Cluster 9, lobster fleet consists of 40 Class A licensed boats. The annual value of the lobster fishery is \$4 million. Investment in lobster boats and gear totals \$15 million, with traps and gear valued at \$1 to \$1.5 million. Each lobster boat employs its captain and usually 2 crew members

There are 27 licensed Moss Harvesters operating in the Bay. The Irish moss harvest in District 12, established in the Bay for 5 years, has an annual value of \$250,000 to \$300,000.

An economic analysis of the impact of displacing harvest fishermen will be submitted later.

What follows are reasons the proposed Port Mouton Island aquaculture site should not be authorized; reasons organized around critical habitat, prior history, cumulative effects and the unsuitability of the proposed site.

### **Presence of critical (wild fisheries) habitat**

*The proposed aquaculture site at Port Mouton Island is critical to lobster habitat.*

Not only is this an area which is actively fished for lobster, particularly in the spring season, but it is critical as a nursery, moulting and migration area for lobster and critical as a 'safe haven' for lobster traps in poor weather conditions throughout the entire lobster season.

A DFO lobster trap survey in January missed the period in spring when the proposed site area is most actively fished. A photo(attached) taken in early May in the late 1990's shows lobstermen on the actual proposed aquaculture site (#1251) and also shows the very large number of lobster buoys in the background<sup>1</sup>.

Fishermen at Port Mouton come from generations of people who for over 200 years have made their living from the sea; some of them are directly descended from the first settlers (United Empire Loyalists) who settled here in 1783.

Traditional fishermen's knowledge of this sheltered area surrounded by shoals and islands attests to the fact that the proposed aquaculture site is in the middle of a nursery, moulting and migration area for lobster. A survey of the traditional knowledge of 5 elder (retired) fishermen and 3 current active lobster fishermen is attached. This survey clearly identifies the sheltered areas of Port Mouton Bay as a lobster breeding and molting habitat. As the water warms in the spring and summer, lobsters migrate into the sandy bottomed areas where they spawn and molt. Catch numbers and catch locations support this fact. After the lobster catch season has ended, numbers of berried females caught during other fishing activities underline the importance of the sheltered harbour areas to the species. The water is clear and fishermen observe lobsters migrating over the sand reef (at the entrance to the western Channel) toward the proposed aquaculture site #1251.

It appears that the lobsters seek a smooth bottom area, where the water is relatively quiet, and as water temperatures rise in the spring and summer, reproduction and molting takes place in an environment that supports the survival of the species.

The proposed aquaculture site is also critical as a 'safe haven' because lobster gear is brought to this area when a storm is approaching. Often, there is not enough time, or enough space at the wharf, to land traps before a storm<sup>2</sup>. Furthermore, this area is used for the bait fishery giving fishermen independence from purchased bait.

The proposed site and its projected ecological footprint occupy a very significant portion of this critical lobster habitat area, and therefore mitigation is not an option.

### **Prior (aquaculture) history**

*The aquaculture site at Spectacle Island has been a failure in terms of its ecological footprint which extends over the greater part of inner Port Mouton Bay.*

Sediment monitoring at this site showed anoxic conditions in June 2004, significantly higher than any other finfish aquaculture site in Nova Scotia, and in June 2006, levels were even higher than in 2004. In November 2005, mean levels were hypoxic – with standard errors indicating that the range still approached anoxic levels, The hypoxic levels are still far above oxic baseline levels at reference locations at a distance from the site.

Sediment data are an indicator of near-field effects. Even after a recovery of sediments to baseline levels in the near-field, a much longer time period is required for recovery from far-field effects within the ecological footprint.

The ecological footprint greatly exceeds the area implicated by the evidence provided from the monitoring of sediment in the vicinity of this site and, as a result, greatly exceeds the boundaries of the lease. Fishermen report that the biodiversity of species in inner Port Mouton Bay has progressively declined over the period of operation of Site #0835 at Spectacle Island to the point where lobster, bait-fish, scallops, clams and mussels are diminished or no longer present. Irish moss dieback and discoloration of rockweed over a large part of the shoreline of Port Mouton Bay also represent a loss of habitat for rockweed and moss harvesters. Green algae appear on shorelines and on the seabed in a 1 square mile area around the present site. Fishermen refer to this area as the "Dead Zone". (Attached Figure 1 on areas of Port Mouton Bay already impacted by existing aquaculture as well as projected to be impacted by the proposed aquaculture site).

The area adjacent to Spectacle Island was a prime area for lobsters, clams, scallops and bait-fish. It is also an area of preference due to its sheltered inshore location and its short distance from the wharf. Lobster fishermen avoid this area because the resources are no longer there or have significantly declined. Changes which have progressively worsened since 1994 have been noted in the fishermen's survey. The fishermen's evidence

establishes that lobster abundance has declined in the inner portions of Port Mouton Bay – the far-field of the Spectacle Island aquaculture site. The following December 2006 – January 2007 trap survey results provide further evidence.

#### Lobster

A preliminary trap survey by lobster fishermen during December 2006 and January 2007 indicates significantly fewer lobsters in inner Port Mouton Bay than from traps set at the location of the proposed site at Port Mouton Island and at a location further offshore. Data are recorded in Table 1 and locations of traps in Figure 2. Previously, all of these locations were prime lobster grounds that yielded similar lobster catches with the exception of the shoal area around Mink Island which had a reputation for even larger catches. Further trap surveys are planned for April – May 2007 when lobsters are known to migrate inshore.

#### Clams, Mussels and Periwinkles

A large portion of the clam beds of inner Port Mouton Bay have been historically subject to shellfish closure (Figure 3). Therefore continued loss of clam harvest areas around Spectacle Island and at Carter's Beach represents a significant loss to commercial and domestic clam harvesters.

Clam flats at Spectacle Island are found on the western shoreline and this clam habitat has been affected by algae and foul smells. Although effects were evident earlier, these effects have been more noticeable in the past four years. The clams do not appear healthy or safe to eat. In August 2006, some deformed (or mutated) clams were found in a cove known locally as Squid Cove on the western end of Western Spectacle Island – in an area of foul smell and algae. The deformed snouts on the clams were identified by Dr. Inka Milewski as a known effect of aquaculture on clams. Neither community elders or members of the Area 4 Clam Harvesters Association had never seen this deformation in clams before.<sup>3</sup>

Clams are no longer present at long established clam beds at Carter's Beach<sup>4</sup>

Mussels on Spectacle Island shorelines have died, and the few remaining are inedible (blackened and smelly when cooked)<sup>3</sup>.

Mounds of dead periwinkles were observed on the shoreline of Spectacle Island in 2002 by an elder who had grown up with his family at Spectacle Island light station more than 60 years ago. He had never seen this before.<sup>5</sup>

#### Irish moss and Rockweed

Brown algae is growing on rockweed on the shore of Spectacle Island<sup>3</sup>.

A very aggressive marine plant known as wire weed (*Ahnfeltia plicata Fries*) has killed Irish moss beds off Summerville, and in the past three years is appearing at Hunts Point wharf and the beaches of Southwest Port Mouton. Sludge has killed off some moss beds from Spectacle Island harbour to the cove where the Coast Guard landing for the

lighthouse was and no Irish moss grows along the shore of the western island from Spectacle harbour to Squid Cove<sup>3</sup>.

#### Fish Plant

The fish plant at Willow Cove has been implicated as a source of pollution which has caused the decline of resources in the inner harbour in the vicinity of Spectacle Island. The fish plant removes all solid fish waste from its site. This fish plant has been in operation for several decades and the productive capacity of Port Mouton Bay was not altered before the introduction of the Spectacle Island fish farm. The time line of the decline of resources in the inner harbour parallels the time line of the production of the fish farm

#### Community stewardship

Following of the present aquaculture site for one year is not an acceptable mitigation strategy since researchers do not know what time period is required for recovery to a healthy ecosystem. Mechanical measures have unproven results and merely export the problem materials to the far-field. The community must be involved in monitoring and documenting the restoration and rehabilitation of this area to its former healthy productive ecosystem..

#### **Cumulative effects (of aquaculture) on fish habitat**

Since a large area of fishery habitat (far exceeding the boundaries of the lease) has already been destroyed by the existing aquaculture site at Spectacle Island, further aquaculture at the proposed site of capacity three times greater than the first site, will significantly add to the loss of fishery habitat and further result in serious cumulative effects through the loss of a nursery and a moulting area, as well as a migratory route and vegetation essential to lobster habitat

*The principle of no net loss of productive capacity of fish habitat has been and will be further violated.*

The ecological footprint of the existing site has displaced the lobster fleet from the resources and territory of the inner harbour and resulted in increased costs and challenges. Further displacement of the fishers will multiply negative effects such as increased fuel costs, gear losses, personal safety risks, pressure to upgrade to larger boats for fishing on the outer grounds and competition from other communities as boats are forced to move further away from traditional fishing grounds.

Gill net fishermen *ceased* using this area as a 'safe haven' for their nets in hurricane season because so many large moulting and berried femake lobsters became entrapped, reflecting their stewardship of the fishery. This situation was a reinforcing cycle which can be regained – Port Mouton Bay, a place where habitat is preserved, biodiversity and

resilience are enhanced, and stewardship is both pursued and rewarded. The proposed aquaculture expansion is contrary to these values.

The Natural Step principles (<http://www.naturalstep.ca/>) arise from a consensus of scientists seeking to offer guidance on how the human species can live in harmony with nature. Their fourth and final principal states that people should not be subject to conditions that systematically undermine their capacity to meet their own needs.

### **Low suitability of the proposed site for aquaculture**

The proposed site, like the existing site, occurs in Port Mouton Bay, an embayment of low tidal current speeds and prolonged tidal flushing times, creating pronounced depositional conditions. The current meter data for a 48 hour period in January - February 2002, provided in the proponent's Environmental Impact statement, confirmed low current speeds of average 3- 4 cm/s. Our analysis of this (short) current meter record, corroborated by a drogue study, shows weak currents in periods of low or ineffective winds, resulting in recirculation of water and weak tidal flushing. On a day when winds are strong and effective, wastes in suspension in the water column from a fish farm on either of these sites can be expected to be transported to the far-field. (See attached oceanographic analysis).

Weak currents are consistent with the traditional knowledge of fishermen who state that this western side of Port Mouton Island is a collection area for debris. This evidence and the failure of the existing site at Spectacle Island support the conclusion that Port Mouton Bay has depositional areas. We conclude that the western side of Port Mouton Island will accumulate even greater amounts of organic waste from the addition of three times as much aquaculture activity, with resulting net losses to fishery habitat through a repetition and amplification of the cycle – deposition leading to far-field effects – already experienced from the existing site at Spectacle Island.

### **Notes**

1. Robin Fisher, Port Mouton, Lobster Fisherman
2. Clyde Fisher, Fisherman, South West Port Mouton (personal communication)
3. Eric Roy, South West Port Mouton, Clam Harvester, Irish Mosser (personal communication)
4. Brian Fisher, Carter's Beach Road, Lobster Fisherman (personal communication)
5. Lowell Inness, South West Port Mouton (personal communication)



Lobster fisherman, Robin Fisher on the proposed aquaculture sit near Back Beach, Port Mouton Island showing large numbers of lobster buoys in the background (May, late 1990's)

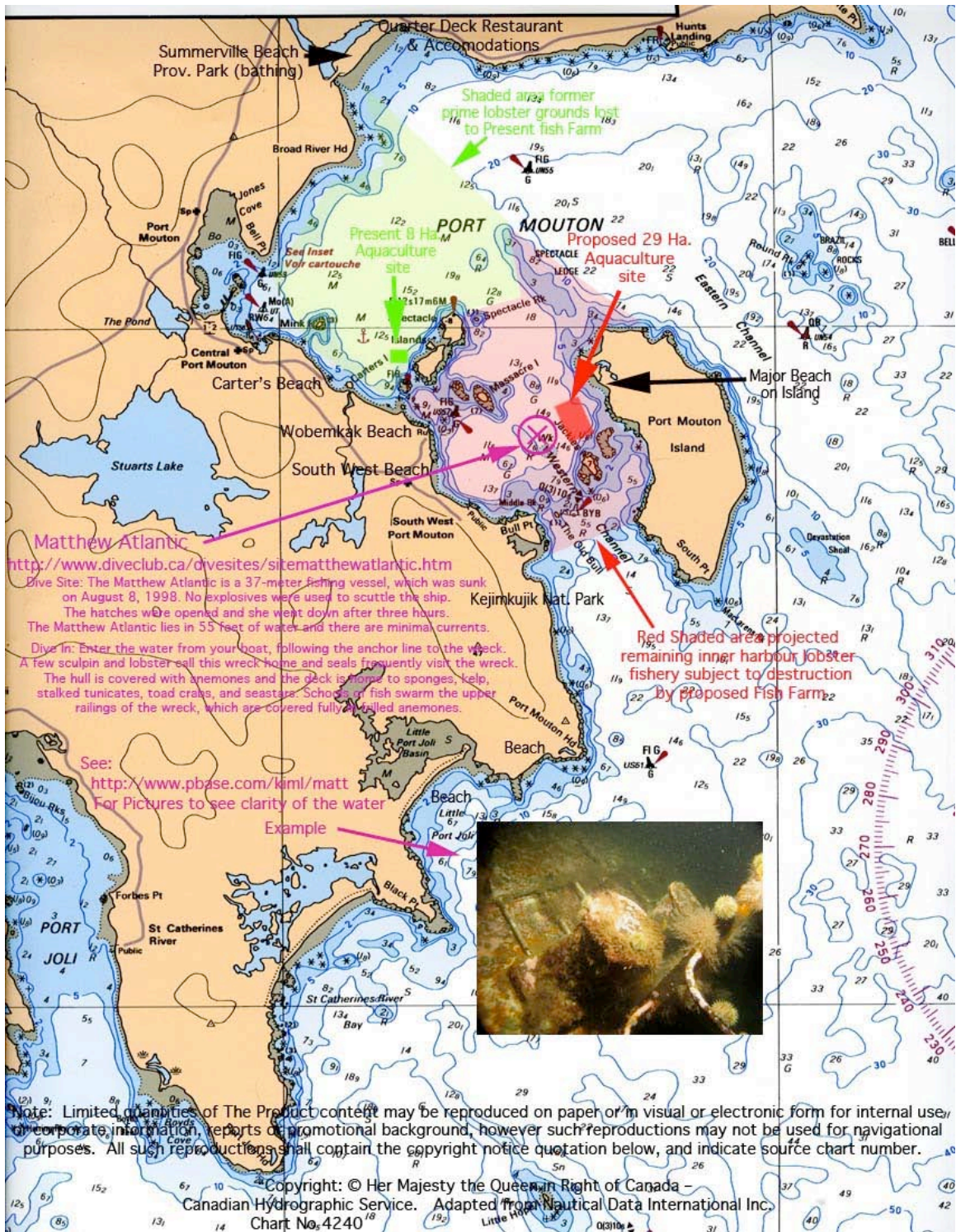


Figure 1  
 Chart of Port Mouton Bay showing former prime lobster grounds (green) and area projected (pink) to be degraded by proposed salmon aquaculture farm



Table 1.  
 Survey of Lobster catches in Port Mouton Bay - November 2006 to January 2007

Location		Date	Lobsters/ Trap	Lbs Lobster/Trap	Fishers
1	Broad River to Spectacle Light	Dec/06		3	Ricky Broome Aubrey Bush
2	Mink Island (near Carter's Beach)	Dec/06	5 lobsters in 25 traps		Ricky Lawson
2	Mink Island (near Carter's Beach)	mid- Jan/06	1 lobster in 30 traps		Brian Fisher Robin Fisher
3	Port Mouton Island (site # 1251)	Dec/06		9	Brian Fisher Robin Fisher
4	Beyond Port Mouton Island	Dec/06		9	Brian Fisher Robin Fisher

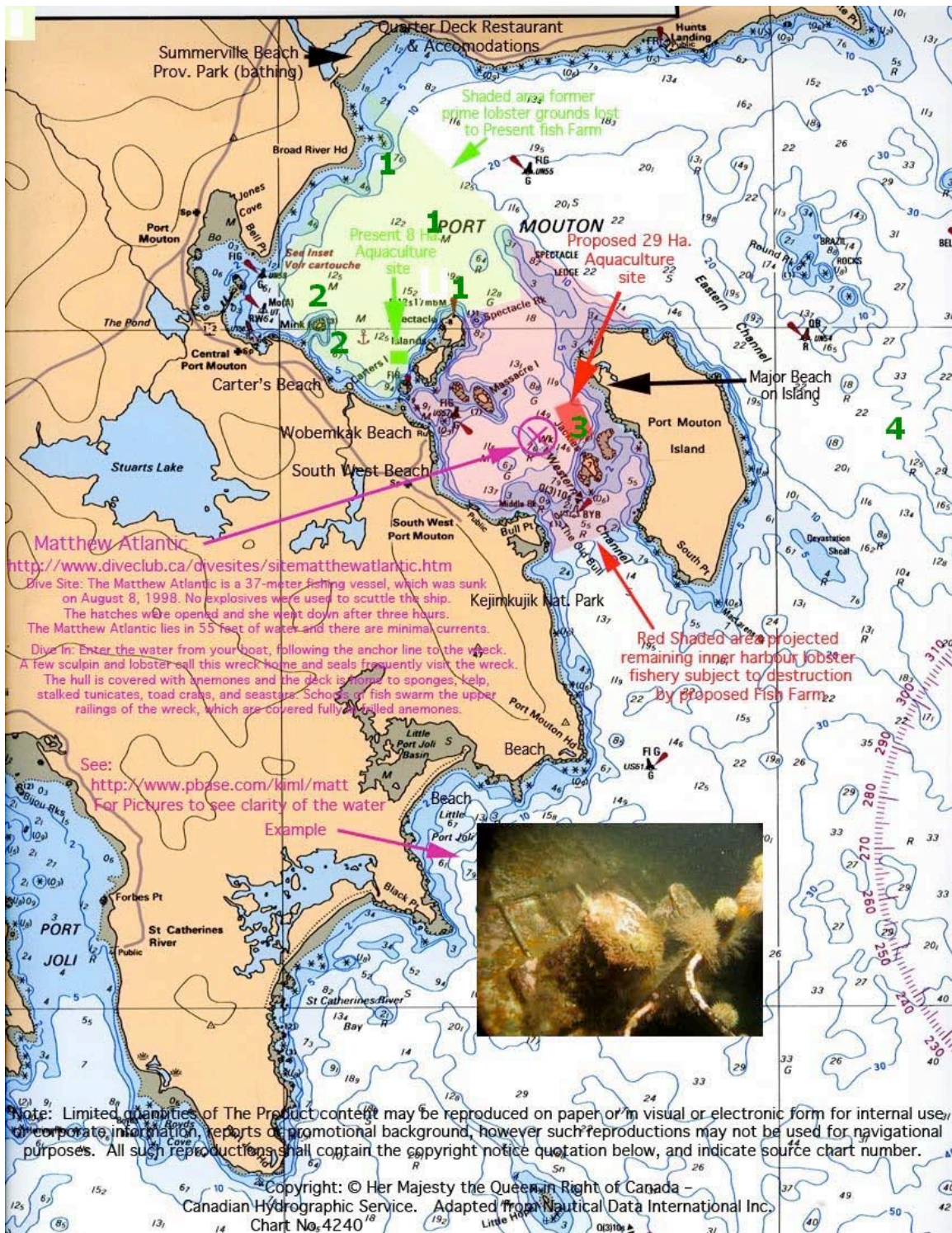


Figure 2. Chart of Port Mouton Bay showing Area numbers from Trap Survey in GREEN

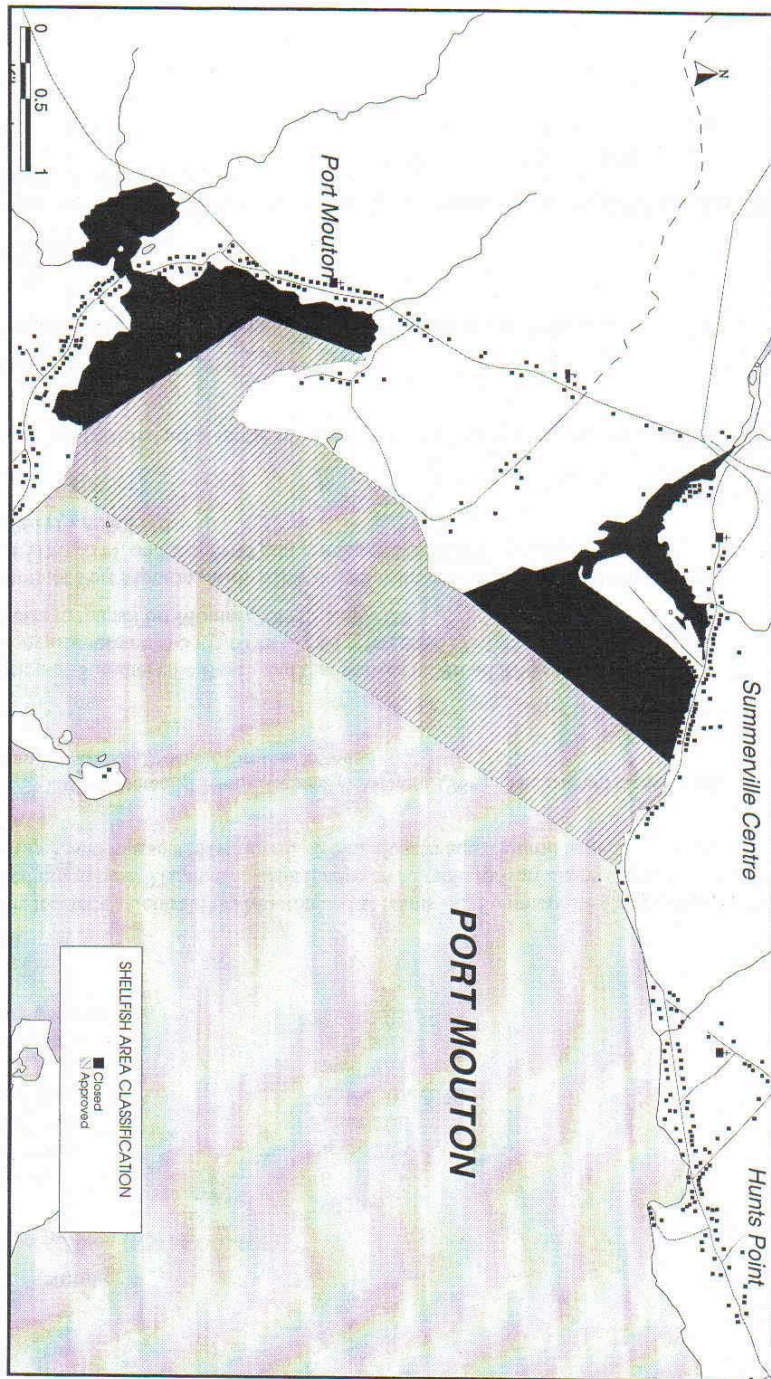


FIGURE 20A. PRESENT SHELLFISH CLASSIFICATION FOR SUMMERVILLE / PORT MOUTON

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Figure 3. Shellfish Area Classification for Port Mouton Bay  
Environment Canada (1998) Manuscript Report No. EP-AR-98-1

