Public Works and Government Services Canada

Travaux publics et Services gouvernementaux Canada

03-SMAR-MAB-000-000004

SMALL CRAFT HARBOURS BRANCH
MARITIMES REGION

ENVIRONMENTAL SCREENING FOR WHARF REPAIRS AT TIVERTON, DIGBY COUNTY, NOVA SCOTIA

Canada

Screening Type 2
CONSTRUCTION PROJECT
(without dredging
activities)

HRTS#

SMALL CRAFT HARBOURS BRANCH
MARITIMES REGION

ENVIRONMENTAL SCREENING FOR
WHARF REPAIRS
AT
TIVERTON, DIGBY COUNTY, NOVA SCOTIA

Project 307381

SMALL CRAFT HARBOURS BRANCH ENVIRONMENTAL SCREENING FOR CONSTRUCTION PROJECTS

PART A DESCRIPTION OF THE PROPOSED PROJECT

a) Project Identification

Date:	2003/01/27	**HRTS Number:**	03-SMAR-MA8-000-000004
			Project No. 307381

Harbour Code / Name:	Tiverton #1823	
	Latitude : 44° 23' 48" N	Longitude : 66° 12' 50"
Province :	Nova Scotia	
Region :	Maritimes	

Screening Title :	Wharf Repairs
Proposal Description :	The public wharf at Tiverton, N.S. requires the following repairs: • Filling of holes in the concrete deck and patching of the surface. • Filling of small holes in the steel sheet piling. • Placement of rock fill against the north face of the wharf as shown in Figure 3 and 4. No other work is planned. The wharf is located at Lat. 44° 23' 48" N, Long. 66° 12' 50" W (Figures 1, 2). The layout of the proposed work is shown in Figure 3. The work will be carried out between February 1, 2003 and March 31, 2003.
Primary Undertaking:	Y Physical Activity: Y

SMALL CRAFT HARBOURS BRANCH ENVIRONMENTAL SCREENING FOR CONSTRUCTION PROJECTS

Assessor :	**Public Works and Government Services Canada**
DFO Spokesperson :	Gary Hubbard, Chief, Small Craft Harbours Branch Southwest Nova Scotia, 215 Main Street, Yarmouth, N.S. B5A 1C6 (902) 742-6452
Assessment Contact :	Don Maynard, PWGSC, (902) 566-7533
Public Registry contact :	Claude Burry, Regional Engineer, SCH, Moncton (596) 851-6586

Lead RA :	Fisheries and Oceans Canada
Triggers:	• Small Craft Harbours, Maritimes Region, Project Proponent • Habitat Management Division under *Fisheries Act* S.35(2) • Canadian Coast Guard under *Navigable Waters Protection Act*
Other RAs :	none

Trigger (Enter Y/N) :	Project proponent .....Y	Financial assistance .....Y
	Interest in land.....N	Law List Authorization.....Y

Type of assessment :	Screening ..... Y	Class Screening ..... N

b) Project justification

Purpose of the project

Issue A1: Outline the motivating factors and purpose of this proposal. Why is the undertaking of this project being considered (i.e. what purpose will it serve)?

Response: Steel piling on the public wharf at Tiverton, N.S. is corroded and portions of the concrete surface of the wharf are broken. Armourstone will be added to stabilize the structure. The proposed work is necessary to prevent further deterioration and to maintain the wharf in a usable state.

Alternative sites and options

Issue A2: Were alternate activities or sites considered or evaluated? If so, briefly indicate scope of review and reasons why they were not chosen over the current proposal.

Response: The alternative to this project is to abandon the proposed remedial works. If this is done, the existing facilities will continue to deteriorate and the local fishing fleet eventually will have to relocate to private wharves or discontinue operations at Tiverton.

c) Description of the proposed project

Location

Issue A3: Where will the project be carried out? Attach appropriate maps, SCH site plans and/or aerial photos. Describe location(s), as precise as possible, for every component of the project (construction sites, location of the facilities, storage sites, etc.).

Response: The following are geographic co-ordinates of the site:

The wharf is located at Lat. 44° 23' 48" N, Long. 66° 12' 50" W (Figures 1, 2). The layout of the proposed work is shown in Figure 3.

Related projects

Issue A4: Is this work proposal part of a larger development? Is there future potential for expansion or modification? If yes, describe related projects.

Note that only the impacts of the presently proposed project are to be assessed at this time, unless the SCH proponent feels it is important to include in this screening, the factors related to the future proposed works.

Response: This work proposal is not part of a larger development. A proposal does exist, however, at present time for the development of a new harbour to be located 200 m north of the public wharf.

Components of the project

Issue A5: Describe the main components of the work proposal and related activities. Attach plans and drawings as may be required to fully describe the intended work. Some of the factors, which should be considered, include;

Construction / Demolition :
work areas
construction/demolition methods
materials
transportation and disposal (material, equipment, etc.)
access roads

Response: The proposed project at Tiverton, Nova Scotia involves the repair of the existing public wharf. The wharf repairs will involve maintenance and modification components including:

- Filling of holes in the concrete deck and patching of the surface as required.
- Filling of small holes in the steel sheet piling.
- Placement of rock fill against the north face of the wharf as shown in Figures 3 and 4.

There are currently no plans for decommissioning or abandoning the existing public wharf facility.

No other work is planned. No change in land use is proposed and no new buildings or other facilities will be built on land. Provincial and Municipal Zoning will not be affected.

Time frame

Issue A6: When will the project be carried out? Include the work schedule. Are there possible conflicts with other activities, such as fishing seasons, recreational activities, etc. which impact on the proposed timing? It is important to note that times stated are those for which the final decision is rendered. Any future change in project timing will necessitate a further review by all agencies involved in the original screening.

Response: The work will be carried out between February 1, 2003 and March 31, 2003. Specifications state that the contractor will be required to coordinate activities with the Harbour Authority to avoid interference with fishermen and other users.

d) Description of the surrounding environment

Description of the natural area

Issue A7: Describe the surrounding environment, outlining environmental sensitive areas, such as special fish and wildlife habitats, as well as conservation areas or areas of special interest, etc. (attach maps or aerial photos if needed). Area Habitat coordinators and federal and provincial environmental officials should be contacted on this issue. Some of the factors, which should be considered, include:

Physical environment :	soil characteristics groundwater water quality etc.
Biological environment :	terrestrial vegetation aquatic and riparian vegetation wildlife fish fauna marine mammals wildlife refuges, conservation areas etc.

Response: Tiverton, N.S. (population, approximately 260) is located on Petit Passage at the eastern tip of Long Island and opposite East Ferry. Petit Passage, 400 to 800 meters wide, separates Long Island from the mainland. Tiverton is directly opposite East Ferry, which is on the western tip of Digby Neck. A ferry runs between the two villages to give access to Long Island from the mainland.

The mean tidal range at Tiverton is 4.6 meters and the maximum tidal range is about 6.4 meters. The tides are semi-diurnal. Strong tidal currents of 7 knots or more flow through Petit Passage between the Bay of Fundy and Saint Mary's Bay. Petit Passage ranges in depth between about 20 and 59 meters in mid-channel. The depth at the outer end of the wharf is approximately 6.6 m. below low normal tide (Figure 4). The bottom consists of a thin layer of fine materials overlying basaltic bedrock.

Local marine fish species that support important commercial fisheries include lobsters, herring and scallop. The local lobster-fishing season will run from Nov. 25, 2002 to May 31, 2003. In the summer, mackerel schools may move inshore to feed. Other marine fish species likely to be found near the project site are Winter Flounder, Sculpin, Stickleback and Mummichog

Smelt migrate near shore in the late fall, and are present throughout the winter in near shore areas. They move away by March and migrate to rivers in April. Shad and gaspereau (alewife and blueback herring) are believed to migrate very near the coastline from mid May through June, staging and feeding in the nearshore areas before migrating into rivers to spawn. Adult and juvenile gaspereau have emigrated from the rivers by the autumn and move offshore as pelagic schooling fish. The nearest freshwater habitat to the public wharf is a small stream that flows into Petit Passage through a lagoon about 0.3 kilometers south of the wharf. The drainage area of this stream is 1.7 square kilometers. The proposed repairs will not obstruct any migrations of anadromous species between fresh and salt water at this stream.

The immediate area around Tiverton is closed to shellfish harvesting (See shaded area, Figure 1). Whales, including Minke Whales and the endangered Right Whale are common in the Bay of Fundy near Tiverton and a whale-watching operation is based there.

White Spruce and Balsam Fir are the most common species of tree with some maples, birches and aspens. Black Spruce and larch are common on the more poorly drained areas. The immediate vicinity of the wharf has been cleared of forest to about 300 meters from the coast but farther inland the land is forested (Figure 2).

Harlequin Ducks have been recorded in the Tiverton area. The Committee on the Status of Endangered Wildlife in Canada has listed the Harlequin Duck as a species of special concern. Nearby Brier Island is an important staging area for migrating birds and bats. A colony of Turkey Buzzards exists on Long Island.

Description of the human environment

Issue A8: Describe human activities and facilities in and around the area under review. Some of the factors which should be considered include:

Land uses and planning	Heritage sites
Noise	Aesthetics
Hunting / fishing grounds and activities	Drinkable water
Recreational activities	Economic activities
Provincial/Municipal zoning	

Response: Tiverton attracts numerous tourists and bird-watchers. A whale watching operation is based at Tiverton. The area is noted for picturesque vertical basalt columns on the shore including the famous 'balancing rock'. No heritage sites, or other sensitive elements have been identified that would be affected by the project.

A fish-processing plant is located at Tiverton about 1 km south of the public wharf and another plant is located across Petit Passage in East Ferry, about 500 km from the wharf. There are no water intakes in the vicinity of the wharf.

There are no heritage sites associated with the spatial scope of the project and no nearby hunting grounds.

PART B ENVIRONMENTAL ASSESSMENT OF THE PROJECT

(POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION / COMPENSATION MEASURES)

Note that the environmental assessment of the project has been scoped to include a consideration of the factors listed in *CEAA* S.16(1)(a) through to (d). No additional factors, as outlined in *CEAA* S.16(1)(e), were considered.

This environmental assessment considers the full range of project/environmental interactions and the environmental factors that could be affected by the project as defined above and the significance of related impacts with mitigation. Included in the considerations are land, air and water resources, the socio-economic environment, and the cumulative effects of the project in relation to existing or anticipated projects. Upset conditions are also included.

For the purpose of this screening the spatial bounds of the project have been limited to the project site and the immediate surrounding area. The temporal bounds include the full life cycle of the project including construction, operation, decommissioning and abandonment.

a) Construction / Demolition

Drainage modifications

Issue B1: Describe the source, nature, and duration of any drainage modifications (flooding, drying) which can be expected to occur. If applicable, describe the measures to be implemented to mitigate or compensate these modifications. Describe any long term changes to drainage patterns which might occur as a result of the completion of this project.

Response: Drainage and water supplies will not be affected.

Erosion and sedimentation

Issue B2: Determine the potential for an increase of soil erosion; describe the source, nature of material and expected quantity as well as duration of the disturbance. Describe changes in the sedimentation patterns and volumes to be expected during and after the completion of the project; state whether erosion and sedimentation control structures should be implemented.

Response: No increase in soil erosion is expected. The placement of armourstone against the wharf will not affect shoreline erosion significantly.

Disruption of terrestrial environment - vegetation

Issue B3: Describe any impacts on terrestrial vegetation resulting from the project. Describe location, type, value and status of affected vegetation. Indicate if endangered or rare species could be affected. State if mitigation or revegetation is planned and describe the proposed program. If there are any long term effects resulting from the project, they should be outlined here.

Response: No significant effects are expected. Work will be confined to the wharf and adjacent marine habitat.

Disruption of terrestrial environment - wildlife

Issue B4: Describe any impacts on wildlife resulting from the disturbance of terrestrial habitats. Describe potential impacts, taking into account the habitats and their utilization (physical and biological characteristics, function, etc.), as well as the animal populations (status, numbers, etc.). Discuss any special characteristics: habitat rarity, presence of rare or endangered species, periods or areas of intensive use, migration patterns, etc. Describe the proposed impacts on these resources in the long term after the completion of the project and any measures which will be taken to minimize or eliminate the impact. Environment Canada officials should be contacted on this issue.

Response: No significant effects on terrestrial wildlife are expected. The timing of the project will avoid migration period of Harlequin ducks. Food scraps and garbage left on beaches can enhance populations of bird and mammal predators on eggs and chicks of terns. The proponents and contractors should ensure that no litter is left at the site. No significant effects on terrestrial wildlife are expected if this precaution is followed. The project will not affect hunting.

Contaminated soils

Issue B5: Indicate previous uses of the site for industrial or storage purposes which could have generated contaminated soils; describe the soils, and identify potential environmental impacts that could result during construction or demolition activities (for example, excavation of contaminated material). If applicable, describe the measures to be implemented to mitigate these impacts. Will there be any contaminated soils generated by the project or resulting from long term effects of the project? How will these be handled?

Response: No contaminated soil is expected on site. No soils will be disturbed.

Hazard lands

Issue B6: If hazard lands (landslide for instance) are present, describe any relevant impact of the project or associated construction activity. Will any hazard lands be established as a result of the project?

Response: Not applicable; work will be confined to the wharf and adjacent marine environment.

On-shore excavation and landfill

Issue B7: Describe any excavation and landfill operations which would affect the on-shore area. If landfill is proposed, describe source, type and volume, area to be filled and confirm that fill source is free of toxic contaminants or floating debris. State whether the fill operations will encroach on wetland habitats or on fish habitats (spawning, nursery sites, etc.) and describe mitigation or compensation measures, if appropriate. What long term effects, if any, are anticipated which might impact the on-shore area? The Area Habitat Coordinator should be contacted on this issue.

Response: Not applicable; no excavation or landfill operations are planned. Clean rock fill will be obtained from existing approved quarries.

Wetlands alteration

Issue B8: If alteration of wetlands or drainage systems is expected, outline the area to be affected and describe how wetland will be altered. Describe the affected wetland environment (type, size and value), duration and location of the impact. Describe potential impacts on the wildlife in the affected area as well as mitigation or compensation measures to be implemented both during the project and in the long term after the completion of the work. The Area Habitat Coordinator should be contacted on this issue.

Response: Not applicable; no wetlands or drainage systems will be altered.

Alteration of bottom substrate

Issue B9: Indicate if pile driving or excavation activity may cause disruption of the ocean/harbour bottom substrate. Describe the area that will be disrupted. Describe expected turbidity and sedimentation and outline the extent of the affected area. Describe any sensitive areas (spawning site, nursery, staging, fishing areas, aquaculture, water intakes, etc.) which may be affected by these operations and describe potential impacts. The Area Habitat Coordinator should be contacted on this issue.

Response: The bottom currently consists of a thin layer of fine material overlying bedrock. None of the affected bottom areas are known to be environmentally sensitive. Clean armourstone will be placed against the northern face of the wharf as shown in Figure 3. The total area to be covered with armourstone will be 809 square meters. A portion of the armourstone will be permanently below low tide. Some will be in the intertidal zone and a small portion will project above the high tide level as follows:

Zone	Area
Below low tide	274 square meters
Intertidal zone	484 " "
Above high tide	51 " "
Total area	809 square meters

The 274 square meters of the armourstone that is below the low water mark will not be lost from the marine habitat as it will remain permanently submerged. The quality of habitat in this zone will be improved substantially as it will consist of large stable boulders with numerous crevices between. This will increase the cover available to fish and invertebrates as well as providing good substrate for macrophytes and sessile animals.

The intertidal zone at Tiverton is extensive owing to the high tidal range near the Bay of Fundy (6.4 meters). The addition of armourstone will convert 484 square meters from smooth subtidal habitat into rocky intertidal habitat. This intertidal habitat will be of high quality owing to the stability of the large armourstone. It will continue to contribute to marine productivity but subtidal organisms will be replaced by intertidal species. This part of the armourstone will be invaded daily by aquatic species that normally feed at high tide in the intertidal zone.

The remaining 51 square meters above high tide will be converted to dry land during the life of the wharf. Portions of this impact may constitute a Harmful Alteration, Disruption or Destruction (HADD) of Fish Habitat. Mitigation or compensation for any HADD will be negotiated with DFO, Habitat Management Branch.

Disruption of aquatic environment - effects on aquatic vegetation

Issue B10: Describe project impacts on aquatic vegetation (removal, burying, effects on sedimentation patterns, etc.). If appropriate, describe the mitigation or compensation measures to be implemented. Also describe any long term effects which might develop after the completion of the work. The Area Habitat Coordinator should be contacted on this issue.

Response: The placement of the armourstone will result in the loss of 809 square meters of habitat. The disturbance will be temporary as the vegetation will re-establish itself on the armourstone. Aquatic and intertidal plants that require firm rocky substrates will be favoured by the installation of armourstone.

Disruption of aquatic environment - effects on fauna

Issue B11: Describe potential impacts of the project on fish populations and habitat, and on any other animal group (sea mammals, benthic fauna, etc.). Identify the causes and the extent of the impacts in both the short and long term after the completion of the work. If appropriate, describe the mitigation or compensation measures. The Area Habitat Coordinator should be contacted on this issue.

Response: Adult and juvenile gaspereau have emigrated from the rivers by the Autumn and move offshore as pelagic schooling fish. Likewise mackerel move offshore in autumn (See A7 above). These species should not be present during the project and no significant impacts on these species are expected. Smelt may be present throughout the winter in near shore areas. However, no negative impacts on smelt are predicted from the project.

The contractor will be required to coordinate his activities with the Harbour Authority so as to avoid unnecessary interference with lobster fishermen and other users. No significant adverse impacts are expected on the resource or the fishery. The armourstone may provide additional lobster habitat.

The shoreline is likely populated by smaller fish, typical of shallow near shore areas, and includes flounder, mummichogs, sticklebacks, etc. Approximately 809 square meters of fine bottom with little cover will be replaced by 274 square meters of rock bottom with abundant cover and a further 484 meters of rocky intertidal habitat that will only be available to these species during a portion of the tidal cycle.

Noise and construction activities might disturb Harlequin Ducks during the construction period. The Committee on the Status of Endangered Wildlife in Canada has listed the Harlequin Duck as a species of special concern. If construction activities require contractors' employees to access the site by water, the following measures should be taken to avoid disturbing Harlequin Ducks:

- Only main channels should be used.
- Concentrations of seabirds or waterfowl should not be approached when anchoring equipment, accessing wharves or ferrying supplies.
- All vessels and machinery should be well muffled.

Food scraps and garbage left on beaches can enhance populations of bird and mammal predators on eggs and chicks of terns. The proponents and contractors should ensure that no litter is left at the site.

Construction traffic

Issue B12: Identify modes of transport for construction and waste material during construction (debris, excavation material, etc.). Indicate access roads and routes to be used. Describe potential impacts due to speed, spillage, traffic congestion. Will there be any long term changes to access routes developed as a result of the work, will there be an increase in traffic flow which could affect residential areas (noise, resident's safety, etc.). Describe the mitigation measures to be implemented.

Response: Materials and equipment will be brought to and from the site by truck using the existing Highway 217 from Digby, an existing local road and the ferry between East Ferry and Tiverton. Traffic on Highway 217 will increase during construction. There will be no long-term effect on traffic after construction. Access routes will not be modified. No mitigation is planned.

Noise

Issue B13: Describe sources of noise during construction. Indicate expected timing and duration of noise as well as details regarding the sources (such as excavator, truck, pile driver, blasting, drilling, etc.). Describe current noise environment, and whether it is likely to generate social concerns (residential areas) or impacts on wildlife (terrestrial or marine mammals, birds). Will there be any increased levels of noise to be expected after the completion of the project. If necessary, describe the mitigation measures to be implemented.

Response: Noise will come from a small number of tractors, backhoes and trucks and will be limited to the construction period. The existing noise environment is mainly natural (wind, waves, gulls) with some human sources (vehicles, boats and nearby residences). There will be no permanent effects on noise levels. No mitigation is required.

Use of explosives

Issue B14: Are there plans to use explosives for construction or demolition below the water level? Describe the extent and duration of any blasting activities and indicate if damage to aquatic organisms (fishes or sea mammals) is expected. Describe the mitigation measures to be implemented. The Area Habitat Coordinator must be contacted on this issue.

Response: Not applicable; no use of explosives planned.

Solid waste disposal

Issue B15: Indicate how the waste material (construction or demolition debris, material from temporary structures or roads, etc.) resulting from this work proposal will be disposed of. Will there be any long term changes to the present disposal of waste material after completion of the project? Describe impacts and proposed mitigation measures.

Response: No significant amount of debris will be produced.

Wastewater disposal

Issue B16: Identify any inflow of untreated wastewater to any natural body of water, resulting from construction or demolition activities. Will there be any long term effects after completion of the work? Describe impacts on water quality, aquatic habitats, fishery resources, human activities and facilities. Indicate if mitigation measures are planned. (Note that the assessment of the impact related to the discharge of wastewater into an existing sewage system is not required.

Response: Not applicable.

Toxic spill hazard

Issue B17: Describe any potential hazard for spills of toxic materials which will be used or stored at the construction site or demolition site as well as any changes in the quantity or type of toxic materials which will be stored as a result of this project being completed. Identify the substances, where and how they will be used, stored and disposed of, as well as duration on site. Also state the safety measures and emergency plan to be implemented in case of a spill.

Response: Accidental fuel leaks from land based equipment working along the waters edge has the potential to cause oil slicks in the water and within the harbour. Spilled fuel or hydraulic fluid would be extremely toxic to lobsters and sea birds. Hydraulic hose fractures can spill significant quantities of fluids in a short time.

The contractor is obliged to carry out his work in manner as to prevent unnecessary release of sediments or contaminants into the water. The contractor is obliged to ensure that no releases of contaminants occur from any equipment or supplies used in the project. Stipulations (petroleum product control, condition of equipment, environmental management and plans, emergency equipment and emergency response) in the contract specifications must be strictly adhered to at all times from inception to conclusion of the project.

Hoses and tanks are to be inspected on regular basis to prevent fractures and breaks near the water. Also, the contractor can reduce the potential for accidents by ensuring fuel cans and lubricants on land based equipment are secured, and if possible, stored within a containment area located on the equipment. Refueling and maintenance of equipment should take place in designated areas, on level ground at a distance from surface water.

Drums of petroleum products should be tightly sealed. Waste oil should not be disposed of at the site. Appropriate spill response equipment (absorbent material, boom, barrels) should be maintained in a location that is accessible to the site.

Any degree of fuel or pollution of marine waters must be reported immediately to the Canadian Coast Guard at 1-800-565-1633.

Disturbance of harbour operations and navigation

Issue B18: If the construction or demolition activities affect the navigable waters and/or navigation, describe the current use of these navigable waters (harbour activities, commercial navigation, fishery activities, aquaculture, lobster units, ships operations, etc.) and the expected impacts. Will there be any effects on the navigation of harbour users in the long term, resulting from this project? If applicable, describe the proposed mitigation measures. An application under NWPA will most likely be required.

Response: The project will affect an existing public wharf. Navigation will not be affected but the use of the wharf will be interfered with during the repairs. This is unavoidable, as the continuing deterioration of the wharf will eventually prevent its use. Interference with use of the wharf will be mitigated coordinating activities with the Harbour Authority.

Disturbance of recreational activities

Issue B19: If the construction or demolition activities interfere with recreational activities (boating, fishing from boat, wharf or shore, hunting, bird watching, whale watching, etc.), describe the expected impacts as well as the measures to be implemented to mitigate these impacts. Will there be any long term impacts on these activities as well? If so, what mitigation measures will be followed?

Response: The proposed wharf repair project is scheduled to take place from February 2003 to March 2003, when activity at the wharf is at a low. Disruption will be restricted to the construction period and activities will be coordinated with the Harbour Authority. There are minimal immediate or long-term effects predicted from the proposed project.

Heritage site or Native Lands disruption

Issue B20: Indicate whether the project proposal may impact on existing sites of historical significance such as heritage buildings, archeological sites, traditional hunting and fishing grounds or any important natural heritage areas in both the short and long term. Describe these sites and the contingency measures to be implemented whenever an archeological site is discovered. Contact with native groups which may be concerned with the proposal is strongly recommended.

Response: There are no known sites of historical significance such as heritage buildings, archaeological sites, traditional hunting and fishing grounds or any important natural heritage areas at the project site. The closest First Nation (Bear River First Nation) is located 100 km from the proposed project site. The proponent has conducted consultation with Curtis Falls (Acadia First Nation) and there are no potential effects from the proposed project.

Disturbance of commercial Activities

Issue B21: Indicate whether the project may directly or indirectly disrupt commercial activities such as fish buying on the wharf. Describe potential impacts in both the short and long term and mitigation measures, if appropriate.

Response: The contractor will be required to coordinate his activities with the Harbour Authority so as to avoid unnecessary interference with lobster fishermen and other users. No significant adverse impacts are expected on the resource or the fishery.

Effects On Economic Growth

Issue B22: Outline potential for increased business opportunities in the area which may result in tourist trade, servicing of boats, retail, etc. If there are any possible negative impacts on business opportunities, they should be mentioned here.

Response: Use of the wharf by whale-watching or other tourist operations may be enhanced in the long term. No long-term negative effects are expected. Temporary interference with use of the wharf will be mitigated coordinating activities with the Harbour Authority.

Local Aesthetics

Issue B23: Indicate whether the aesthetics of the area will be affected by the proposed project in either the short or long term and describe mitigation measures, if appropriate.

Response: The proposed repairs will likely improve the appearance of the site.

Other Factors

Issue B24: Describe any other impact that may result from the proposed construction / demolition activities and the long term effects of the work after completion. Describe the proposed mitigation measures.

Response: Prevention of the Introduction/Transportation of Invasive Species.

Non-native and invasive species may be unintentionally introduced into a marine environment via various marine construction and improvement projects. The non-native and invasive species have the potential to alter the native ecosystems and have negative impacts on the commercial fishing and aquaculture industries. Some of the potential pathways for spreading these species are, but not limited to the following:

- Species or their water borne larva travel in bilge and ballast water of various marine construction equipment (i.e. barges, scows, etc.);
- Marine sediments remaining in excavation equipment, barges or truck; and,
- Species could be attached or be carried in the bottom/hull of various boats or barges.

To mitigate against non-native and invasive species all marine construction equipment associated with the project will be washed and disinfected prior to the commencement of the project. The cleaning and disinfection work must be completed prior to coming to the project site and preferably performed at the site the equipment was used last.

PART C **PUBLIC CONCERNS**

Public opinion

Issue C1: Indicate any public concerns or local/regional opposition which have been expressed on the environmental or human activity issues related to this project. Include measures which will be implemented to mitigate these concerns.

Response: No known concerns.

Public Information

Issue C2: Describe the public meetings, media announcements and coverage, and any other public communication which may have been held in regards to the project.

Response: The Honourable Robert Thibault, then Minister to ACOA and currently Minister of Fisheries and Oceans, announced this project in a News Release on July 23, 2002. The contents of the news release were reported in the Yarmouth Vanguard on July 30, 2002. The local Harbour Authority, representing the local users of the facility is aware of the project.

Local Planning

Issue C3: Describe how the project fits with local, municipal, district and provincial development plans.

Response: The project fits with local, municipal, district and provincial development plans because it is a commercial facility and needs to be repaired and maintained, to operate as a viable commercial resource.

Mitigation and Compensation Measures

Issue C4: Describe the measures which will be implemented to mitigate anticipated environmental impacts with respect to public concerns.

Response: These items are addressed in Part D "Impacts of the project and mitigating measures".

Native Concerns

Issue C5: Describe how the project may affect any Native fisheries or concerns.

Response: It is not expected that the proposed project will affect any Native fisheries or concerns. There are no known sites of traditional hunting and fishing grounds or any important natural heritage areas at the project site. The closest First Nation (Bear River First Nation) is located 100 km from the proposed project site. The proponent has conducted consultation with Curtis Falls (Acadia First Nation) and there are no potential effects from the proposed project.

PART D SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES - FOLLOW-UP PROGRAM

Impacts of the project and mitigation measures

Issue D1: Summarize the impacts of the project and the main public concerns previously expressed. Indicate the measures to be implemented to mitigate or compensate for the environmental impacts of the project.

Response: The project is not predicted to have a negative environmental effect with the following mitigation measures:

- Timing of construction will occur during non-nesting periods and when birds have already migrated.
- If construction activities require contractor's employees to access the site by water, only main channels should be used. Concentrations of seabirds or waterfowl should not be approached when anchoring equipment, accessing wharves or ferrying supplies. All vessels and machinery should be well-muffled.
- Proponents and contractors should ensure that food scraps and garbage area not left at the site.
- Infilling of the area beside the wharf should occur during periods of low water and minimal current to reduce resuspension of the existing sediment.
- Infill material should be clean, non ore-bearing, obtained from a non-watercourse source.
- Any equipment that has been in the marine environment (i.e., boat hulls, anchors, excavators, piping, etc.) will be cleaned of any sediments, plants or animals and washed with freshwater and/or sprayed with undiluted vinegar prior to being mobilized to the project site.
- Newly placed rockfill will be identified by the proper navigational aids as stated in the Navigable Waters Protection Act approval.
- Disruption will be restricted to the construction period and activities will be coordinated with the Harbour Authority.
- All fuel and lubricants will be stored properly and secured.
- Refueling and maintenance of equipment should take place in designated areas, on level ground at a distance from surface water.
- Hoses and tanks are to be inspected on regular bases to prevent fractures and breaks near the water. Fuel cans and lubricants on land-based equipment should be secured, and if possible, stored with a containment area.
- The contractor is obliged to ensure that no release of contaminants into the environment occurs.
- Equipment must be in good condition.
- Employees will be trained in health and safety protocols (e.g. safe work practices, emergency response)

Residual Impacts

Issue D2: Summarize any residual environmental impacts of the project, i.e. impacts remaining after the implementation of the mitigation measures

Response: There are no projected residual environmental effects. This assessment considered the potential negative environmental effects resulting from the proposed project. The potential effects were considered in context of spatial and temporal boundaries (i.e., an area surrounding the harbour) and for significance criteria (i.e., population and natural variation based) that are appropriate for this project. With the mitigation measure as described in Section D-5, there are no predicted negative environmental effects related to this project.

Cumulative Impacts

Issue D3: Indicate whether there are other activities in the surrounding area that could generate similar impacts to those described above (e.g. activities that may affect water quality, fish habitats, fishing activities, etc.). Describe potential cumulative impacts from all these sources.

Response: A proposal exists at the present time for the development of a new harbour to be located 200 m north of the public wharf. Cumulative effects predicted include increased vessel traffic, incremental loss of habitat, and increased berthing areas available to local users. These effects are addressed in Table 5.

Follow-up program

Issue D4: Describe briefly any proposed follow-up monitoring program, if appropriate. If such a program is not required, explain why.

Response: No follow-up is planned. The expected long-term environmental effects of the project will be insignificant or beneficial.

PART E SIGNATURES, CONTACTS AND RECOMMENDATIONS

Issue E1: References - persons contacted and reports referred to during the screening process

NOTE FOR PROJECTS UNDERTAKEN IN NOVA SCOTIA: To meet federal coordination regulations, a signed agreement is in place within the province of Nova Scotia, between SCH and Habitat Management, whereby all projects which could impact on water quality or the marine environment will be reviewed by Habitat Management and an authorization may be required.

Response: Persons consulted:

Thomas Wheaton, Area Habitat Coordinator, Department of Fisheries and Oceans.

Andrew Stewart, Department of Fisheries Oceans, Habitat Management Division, (902) 426-3576

Oz Smith, Navigable Waters Protection Officer, Canadian Coast Guard, (902) 426-3798

Jacqueline Ginnish, Environmental Protection Branch, Environment Canada, (902) 426-4287.

Nova Scotia Department of Natural Resources, Digby, N.S.

Publications consulted:

Davis, Derek S. and Sue Browne (1997), Natural History of Nova Scotia Vol 2, Theme Regions, Nova Scotia Museum, pp. 207-208.

Canadian Hydrographic Service (2001), Sailing Directions, Gulf of Maine and Bay of Fundy, Booklet 106, 110 pp.

Issue E2: Permits / Authorizations / Approvals (see above comments)

Response: The project has been reviewed by Habitat Management Branch of the Department of Fisheries and Oceans. The Branch is a statutory authority and authorization is required from the Branch.

Approval by the Canadian Coast Guard may be required under the Navigable Waters Protection Act.

A Permit under the Beaches and Crown Lands Act. will be required from the Nova Scotia Department of Natural Resources.

Recommendations

This screening form:

Was completed by: Don Maynard — Recommended rating : 1
Position/role : PWGSC Senior Environmental Specialist
Comments :

Was reviewed by : Bernard Jacobs P.Eng. — Recommended rating : 1
(Lead RA representative)
Position/role : PWGSC Project Manager
Comments :

Was reviewed by : _____ — Recommended rating :
(RA representative)
Position/role :
Comments :

Was reviewed by : _____ — Recommended rating :
(RA representative)
Position/role :
Comments :

RATING DESCRIPTIONS :

- Significant adverse environmental effects unlikely, taking into account mitigation measures; project may proceed, ensure implementation of measures 1
- Significant adverse environmental effects likely and not justified in the circumstances; project as presented cannot proceed 2
- Uncertain adverse environmental effects, taking into account mitigation measures; refer the project to the Minister of the Environment for a referral to a mediator or review panel 3
- Significant adverse environmental effects, but that can be justified in the circumstances; refer the project to the Minister of the Environment for a referral to a mediator or a panel review 4
- Public concerns warrant a reference to the Minister of the Environment for a referral to a mediator or a panel review 5

PART F FINAL DECISION FOR WHARF REPAIRS AT TIVERTON, NOVA SCOTIA

Final Recommendation

This section must be completed by the SMALL CRAFT HARBOURS REGIONAL DIRECTOR, the REGIONAL ENGINEER, or the SMALL CRAFT HARBOURS REPRESENTATIVE WITH SIGNING AUTHORITY for the specific project under assessment.

Decision rating : 1 (see previous page for rating descriptions)

SCH REPRESENTATIVE, PLEASE CHECK (√) ONLY ONE :

✓ Project as presented can proceed :

- adverse environmental effects are unlikely or mitigable.

____ Project as presented must be abandoned :

- adverse environmental effects are likely and cannot be justified in the circumstances

____ Project must be referred to the Minister of the Environment for referral to a mediator or a panel review:

- adverse environmental effects are uncertain
- adverse environmental effects are likely but justified in the circumstances
- public concems warrant a reference to a mediator or a panel review

Approved by : Harry B. Hubbard Date Jan 27/03.

Title : Chief - SWNS.

APPENDIX A
Figures

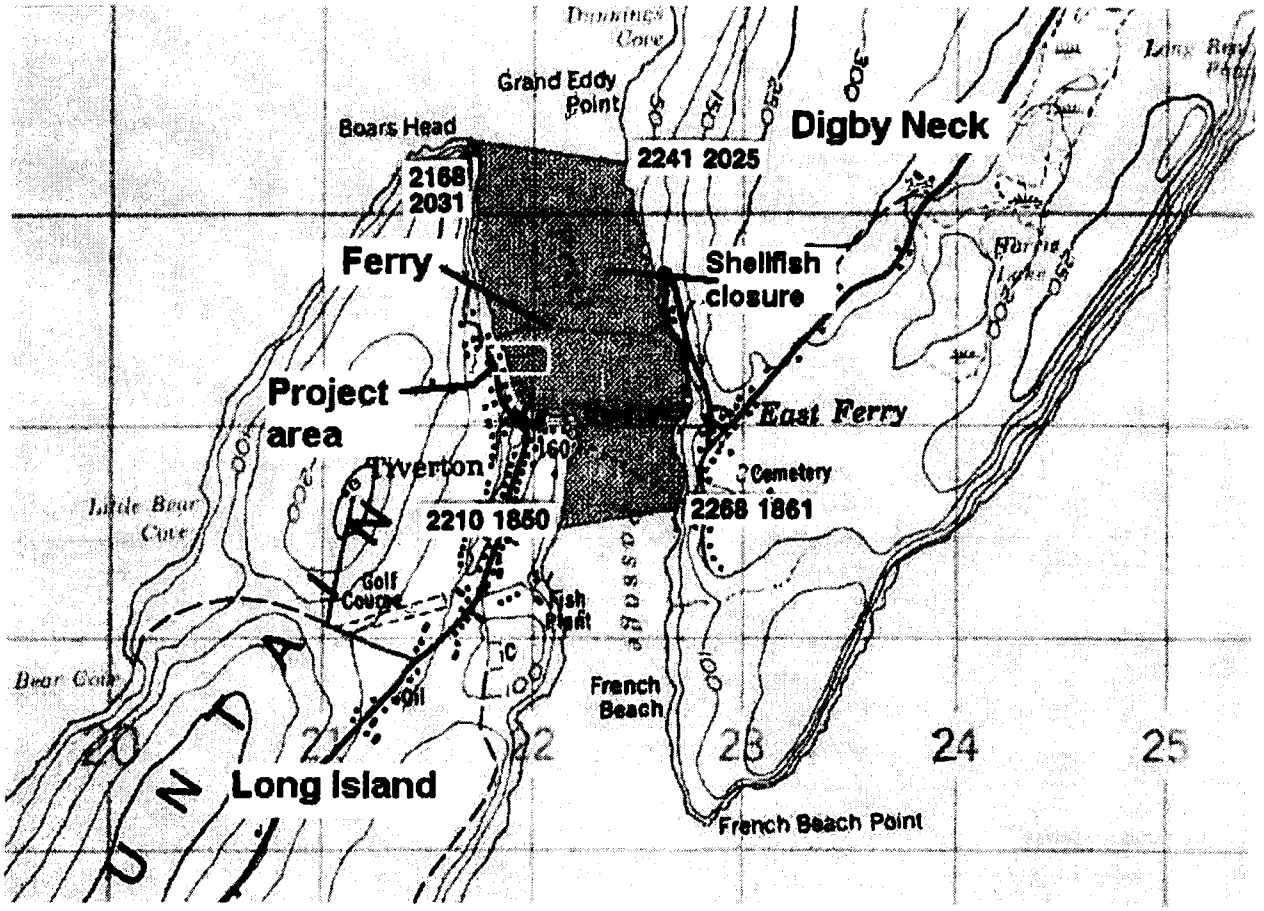


Figure 1. Location Map Showing Project Area, Tiverton, N.S.

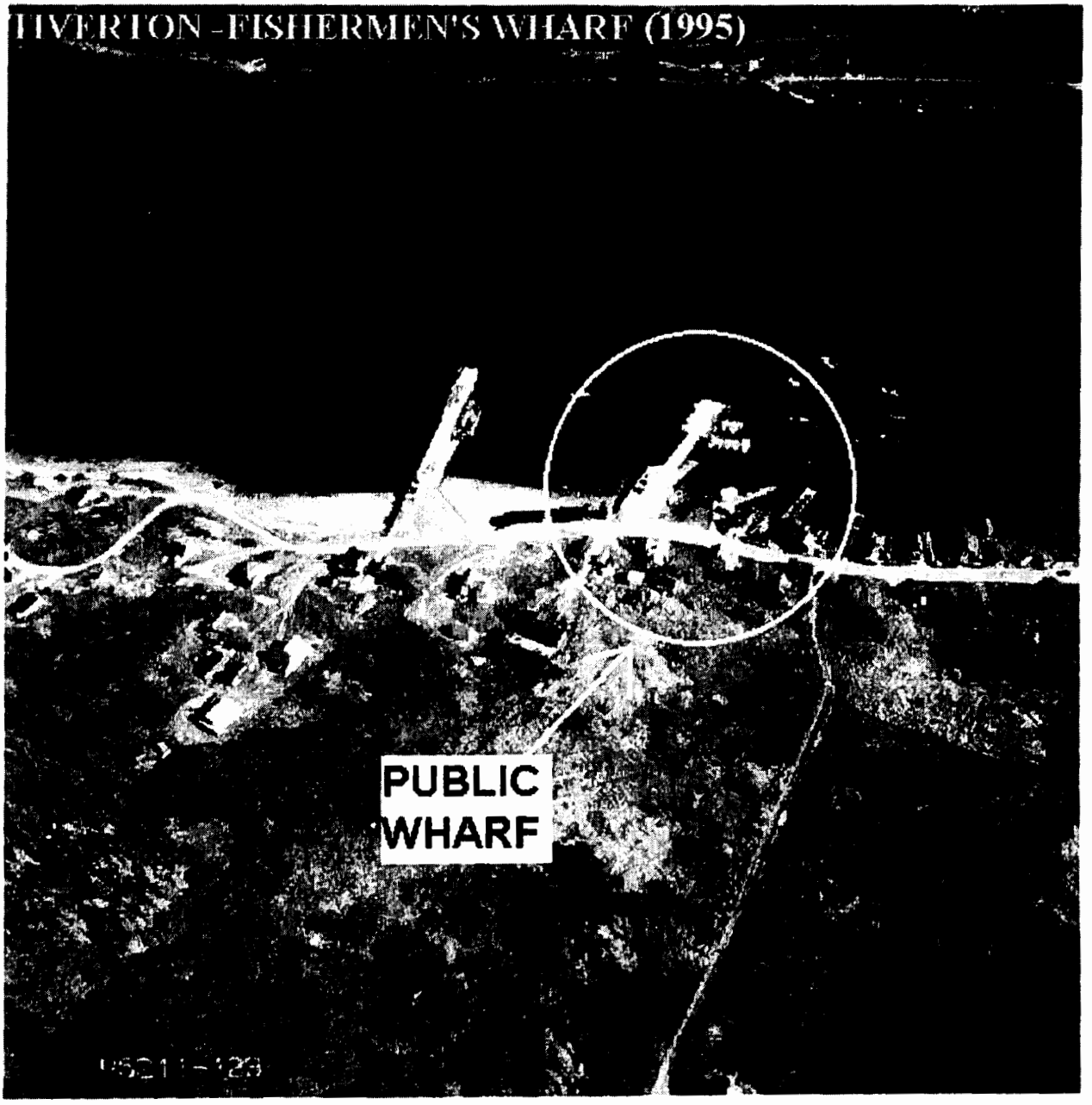


Figure 2. Public Wharf, Tiverton, N.S.

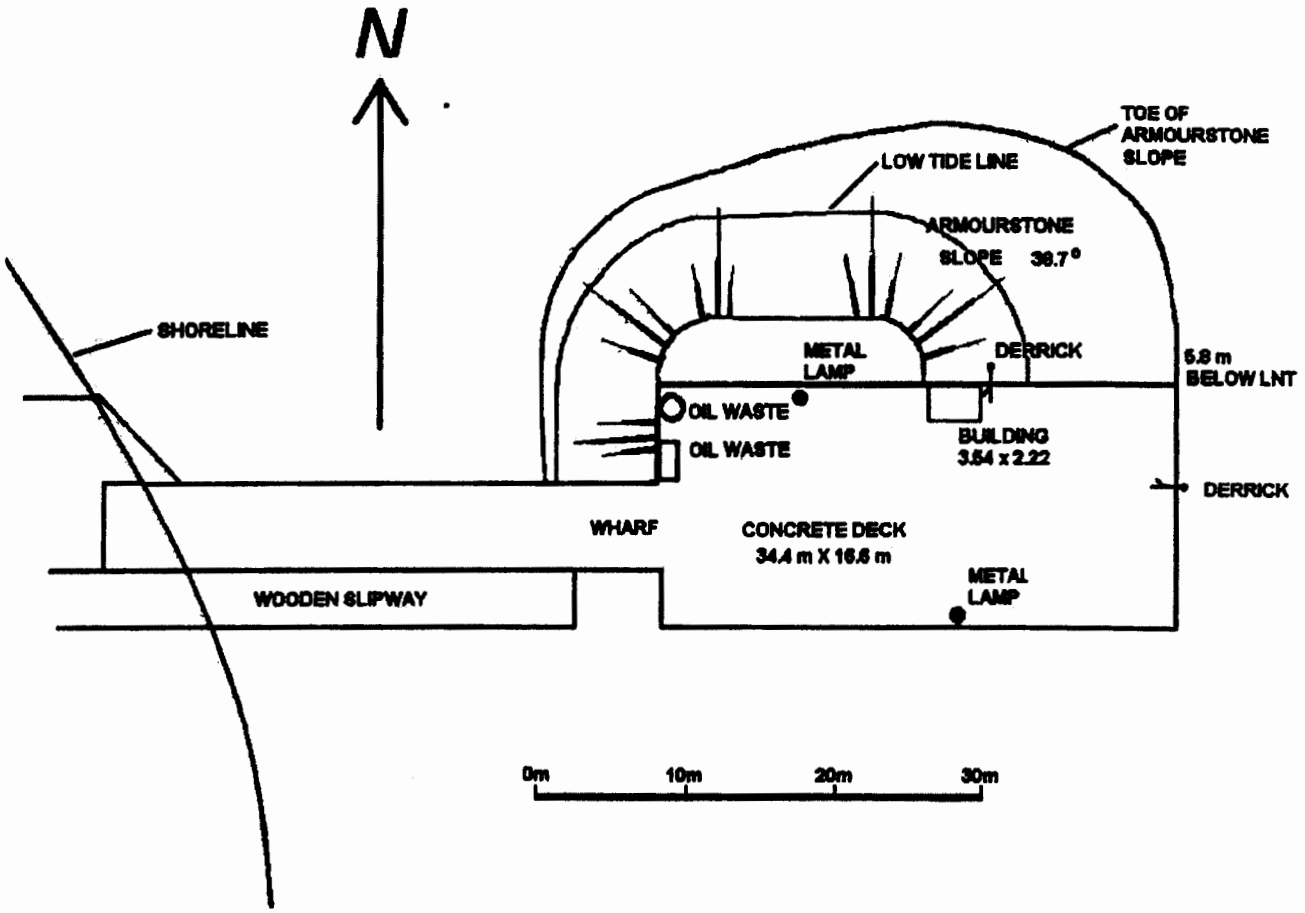
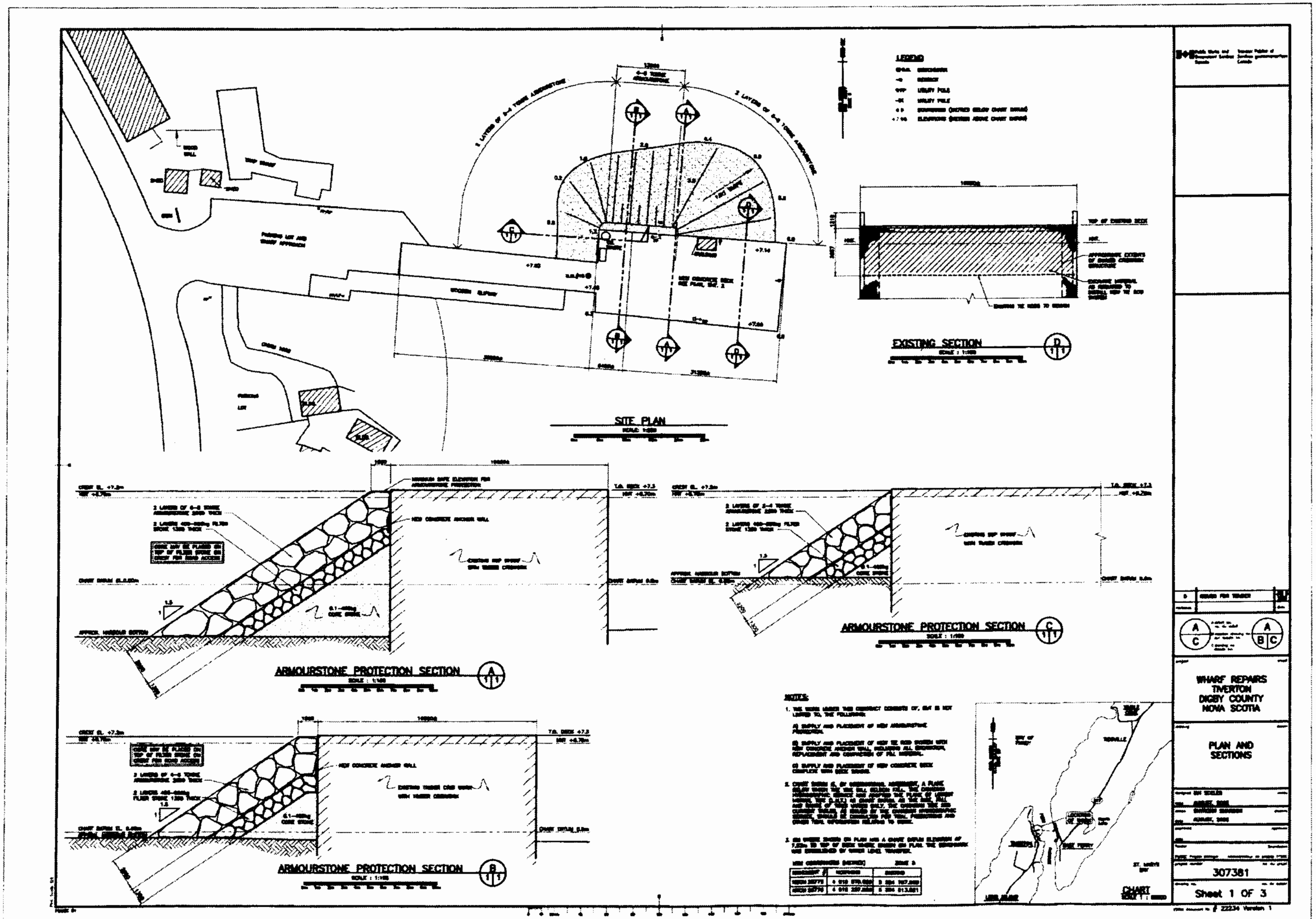


Figure 3. Location Plan of Proposed Work, Tiverton, N.S.


LEGEND
SITE PLAN
EXISTING SECTION
ARMOURSTONE PROTECTION SECTION
ARMOURSTONE PROTECTION SECTION
ARMOURSTONE PROTECTION SECTION
NOTES:
WHARF REPAIRS
TIVERTON
DIGBY COUNTY
NOVA SCOTIA
PLAN AND
SECTIONS
307381
Sheet 1 OF 3
CHART

APPENDIX B
Tables

TABLE 1. POTENTIAL CHANGES IN THE BIO-PHYSICAL ENVIRONMENT CAUSED BY THE PROJECT
(Significance: 0-None, 1-Insignificant, 2-Significant, 3-Unknown, (+) Positive, (-) Negative)

Valued Ecosystem Component (VEC)	Project Activity	Potential Effects	Significance Before Mitigation	Mitigation Measures	Significance of Residual Effects	Follow-up Monitoring
Fish/Fish Habitat	Placement of armourstone	• Loss of fish habitat. • Fish may avoid the area during construction.	-2	• The work will result in the harmful alteration, disruption or destruction of fish habitat and the impact will be authorized pursuant to section 35(2) of the *Fisheries Act*. To offset the reduction in production capacity of the watercourse lost as a consequence of the construction, compensation for the permanently lost habitat at a maximum 3:1 ratio will be required. A compensation plan is to be developed as stated in the Letter of Intent between DFO-Small Craft Harbours and DFO-Habitat Management Division.	1	DFO-HMD must approve the compensation plan and any monitoring requirements developed as part of the compensation.
Birds/Bird Habitat	Placement of armourstone	• Noise from machinery could frighten birds and disrupt nesting or migration. • Food scraps could enhance populations of predators	-2	• Timing of construction will occur during non-nesting periods and when birds have already migrated. • If construction activities require contractor's employees to access the site by water, only main channels should be used. Concentrations of seabirds or waterfowl should not be approached when anchoring equipment, accessing wharves or ferrying supplies. All vessels and machinery should be well muffled. • Proponents and contractors should ensure that food scraps and garbage are not left at the site.	1	Not required.

TABLE 1 (CONTINUED). POTENTIAL CHANGES IN THE BIO-PHYSICAL ENVIRONMENT CAUSED BY THE PROJECT
(Significance: 0-None, 1-Insignificant, 2-Significant, 3-Unknown, (+) Positive, (-) Negative)

Valued Ecosystem Component (VEC)	Project Activity	Potential Effects	Significance Before Mitigation	Mitigation Measures	Significance of Residual Effects	Follow-up Monitoring
Water Quality	Placement of armourstone	• Introduction of new material • Invasive species could be introduced into the marine environment	-2	• Infilling of the area beside the wharf should occur during periods of low water and minimal current to reduce resuspension of the existing sediment. • Infill material should be clean, non ore-bearing, obtained from a non-watercourse source. • Any equipment that has been in the marine environment (i.e., boat hulls, anchors, excavators, piping, etc.) will be cleaned of any sediments, plants or animals and washed with freshwater and/or sprayed with undiluted vinegar prior to being mobilized to the project site.	1	Not required.

TABLE 2. Potential changes in the socio-economic environment caused by the project (Significance: 0-None, 1-Insignificant, 2-Significant, 3-Unknown, (+) Positive, (-) Negative)

Valued Ecosystem Component (VEC)	Project Activity	Potential Effects	Significance Before Mitigation	Mitigation Measures	Significance of Residual Effects	Follow-up Monitoring
Navigation	Placement of armourstone	• Collisions between vessels and newly placed rockfill • Interference with berthing and boat movement during proposed work.	-2	• Newly placed rockfill will be identified by the proper navigational aids as stated in the *Navigable Waters Protection Act* approval. • Disruption will be restricted to the construction period and activities will be coordinated with the Harbour Authority.	1	Not required.
Socio-economic Conditions	Repair of wharf	• Increased use of harbour	2	None required – positive effect.	N/a	Not required.
Current use of lands and resources by Aboriginal persons for traditional purposes	N/a	No traditional use of lands or resources have been identified for the project area.	N/a	N/a	N/a	Not required.

TABLE 2 (CONTINUED). POTENTIAL CHANGES IN THE SOCIO-ECONOMIC ENVIRONMENT CAUSED BY THE PROJECT (Significance: 0-None, 1-Insignificant, 2-Significant, 3-Unknown, (+) Positive, (-) Negative)

Valued Ecosystem Component (VEC)	Project Activity	Potential Effects	Significance Before Mitigation	Mitigation Measures	Significance of Residual Effects	Follow-up Monitoring
Commercial Fisheries	• Placement of armourstone • Repair of wharf	• Interference with berthing and boat movement. • Disruption of the lobster fishery.	-2	• Construction activities are planned between February and March 2003, when activity at the wharf is at a low. • Disruption will be restricted to the construction period and activities will be coordinated with the Harbour Authority.	1	Not required.
Recreational use of Harbours	• Placement of armourstone • Repair of wharf	• Interference with berthing and boat movement.	-2	• Construction activities are planned between February and March 2003, when activity at the wharf is at a low. • Disruption will be restricted to the construction period and activities will be coordinated with the Harbour Authority.	1	Not required.
Human Health (workers)	See Table 3, Malfunctions and Accidents	N/a	N/a	N/a	N/a	N/a

TABLE 3. POTENTIAL EFFECTS RESULTING FROM MALFUNCTIONS AND ACCIDENTS
(Significance: 0-None, 1-Insignificant, 2-Significant, 3-Unknown, (+) Positive, (-) Negative)

Accident or Malfunction	Potential Effects	Significance Before Mitigation	Mitigation Measures	Significance of Residual Effects	Follow-up Monitoring
Release of Potentially Hazardous Chemicals	• Degradation of marine habitat. • Adverse effects on flora and fauna.	-2	• All fuel and lubricants will be stored properly and secured. • Refueling and maintenance of equipment should take place in designated areas, on level ground at a distance from surface water. • Hoses and tanks are to be inspected on regular bases to prevent fractures and breaks near the water. Fuel cans and lubricants on land-based equipment should be secured, and if possible, stored with a containment area. • The contractor is obliged to ensure that no release of contaminants into the environment occurs. • Equipment must be in good condition. • Environmental protection plan has been specified in the contract.	1	All spills will be reported to the Coast Guard at 1-800-565-1633.
Human Health (workers)	• Workers could be injured or killed if accidents occur during the project.	-2	• Employees will be trained in health and safety protocols (e.g. safe work practices, emergency response)	1	Not required.

TABLE 4. CHANGES TO THE PROJECT CAUSED BY THE ENVIRONMENT
(Significance: 0-None, 1-Insignificant, 2-Significant, 3-Unknown, (+) Positive, (-) Negative)

Environmental Factor	Potential Effects on the Project	Significance Before Mitigation	Mitigation Measures	Significance of Residual Effects	Follow-up Monitoring
Weather and Flow Conditions (e.g. Wind ice, tides, floods)	Destruction of wharf	-2	• The rock infill will provide additional protection from waves and storm surges.	1	Not required.

TABLE 5. POTENTIAL CUMULATIVE EFFCTS ASSOCIATED WITH THE PROJECT
(Significance: 0-None, 1-Insignificant, 2-Significant, 3-Unknown, (+) Positive, (-) Negative

Valued Ecosystem Component (VEC)	Project Activity	Cumulative Effects	Significance Before Mitigation	Mitigation Measures	Significance of Residual Effects	Follow-up Monitoring
Fish Habitat	Construction of a new wharf and breakwater, infilling of habitat	Incremental loss of habitat	-2	Compensation plan will provide habitat replacement to ensure no net loss of productive capacity.	1	Not required.
Navigation	Construction of new wharf and breakwater	Potential increase in vessel traffic and installation of a potential hazard to navigation	-2	Navigable Waters Protection Program will ensure that proper navigational aids and signs are used.	1	Not required.
Socio-economic Conditions	Construction of new harbour	Increased berthing areas available to local users	+2	None are required – positive effect.	N/a	Not required.

APPENDIX C
Environmental Protection Plan

This EPP is to be used in conjunction with the Canadian Environmental Assessment Act Screening performed for this project and distributed to DFO-SCH.

1.0 PURPOSE

This Environmental Protection Plan (EPP) provides the protection measures required for the routine activities associated with the repair of the Public Wharf at Tiverton, Digby County, N.S.

The purpose of the EPP is to:

- Document environmental concerns arising from this project.
- Recommend procedures for protecting the environment and minimizing environmental effects.
- Provide a reference document for environmental protection activities.

2.0 PROCEDURES

2.1 JOB START UP MEETING

A job start up meeting is required prior to any work commencing on this project. The contractor will attend at the job start-up meeting with PWGSC. The meeting will involve a review of all mitigative measures and job sequencing for this project.

2.2 WHARF REPAIRS

The repairs will consist of:

- Filling of holes in the concrete deck and patching of the surface of the Public Wharf at Tiverton, N.S.
- Filling of small holes in the steel sheet piling.
- Placement of rock fill against the north face of the wharf. The rock fill will be placed partly in the tidal zone and will cover a footprint of sea bottom of approximately 760 square metres.

Environmental Concerns

Construction activities may interfere unnecessarily with operations of wharf users.

Environmental Protection Procedures

The contractor will be required to coordinate his activities with the Harbour Authority so as to avoid unnecessary interference with lobster fishermen and other users.

2.3 PREVENTION OF THE INTRODUCTION/TRANSPORTATION OF INVASIVE SPECIES

Environmental Concerns

Non-native and invasive species may be unintentionally introduced into a marine environment via various marine construction and improvement projects. The non-native and invasive species have the potential to alter the native ecosystems and have negative impacts on the commercial fishing and aquaculture industries. Some of the potential pathways for spreading these species are, but not limited to the following:

- Species or their water borne larva travel in bilge and ballast water of various marine construction equipment (i.e. barges, scows, etc.).
- Species may be carried in marine sediments remaining in excavation equipment, barges or truck; and,
- Species could be attached or be carried in the bottom/hull of various boats or barges.

Environmental Protection Procedures

To mitigate against non-native and invasive species, all marine construction equipment associated with the project will be washed and disinfected prior to the commencement of the project. The cleaning and disinfecting work must be completed prior to coming to the project site and preferably performed at the site the equipment was used last.

2.4 PROTECTION OF WILDLIFE

Environmental Concerns

Harlequin Ducks have been recorded in the Tiverton area. The Committee on the Status of Endangered Wildlife in Canada has listed the Harlequin Duck as a species of special concern. Construction activities might stress this species if they are present at the site.

Food scraps and garbage left on beaches can enhance populations of bird and mammal predators on eggs and chicks of terns.

Environmental Protection Procedures

If construction activities require contractors' employees to access the site by water, the following measures should be taken to avoid disturbing Harlequin Ducks:

- Only main channels should be used.
- Concentrations of seabirds or waterfowl should not be approached when anchoring equipment, accessing wharves or ferrying supplies.
- All vessels and machinery should be well muffled.

The proponents and contractors should ensure that no food scraps are scattered at the site.

2.5 PETROLEUM, OILS AND LUBRICANTS

A variety of fuels, greases, motor oils and hydraulic fluids will be used in the work area. The work area, itself, is close to the shore. Practices and Procedures for handling and storage of those products will minimize chronic loss and spills.

Environmental Concerns

Accidental fuel leaks from land based equipment working along the waters edge has the potential to cause oil slicks in the water and within the Harbour. Spilled fuel or hydraulic fluid would be extremely toxic to lobsters and sea birds. Hydraulic hose fractures can spill significant quantities of fluids in a short time.

Environmental Protection Procedures

General

The environmental protection procedures considered appropriate to eliminate or minimize potential environmental effects due to the dredging and disposal are:

The contractor will carry out his work in manner as to prevent unnecessary release of sediments or contaminants into the water. The contractor is obliged to ensure that no releases of contaminants occur from any equipment or supplies used in the project. The following Stipulations (petroleum product control, condition of equipment, environmental management and plans, emergency equipment and emergency response) in the contract specifications must be strictly adhered to at all times from inception to conclusion of the project.

Hoses and tanks are to be inspected regularly to prevent fractures and breaks near the water. Fuel cans and lubricants on land based equipment will be secured, and stored within a containment area located on the site. Transfer, fueling and lubrication of equipment on the site will occur in such a manner as to minimize the possibility of contamination to soil or water. Fueling or servicing of mobile equipment on land should take place in designated areas, on level ground at least 30 meters from surface water within a specifically designated refueling area where conditions will allow for containment of accidentally spilled fuel and lubricates.

Transport, Storage and Transfer of Fuel

Drums of petroleum products will be tightly sealed. Waste oil should not be disposed of at the site. Appropriate spill response equipment (absorbent material, boom, barrels should be maintained in an location that is accessible to the site.

The transportation of fuel will be conducted in compliance with the *Transportation of Dangerous Goods Act*. Reputable, qualified companies will conduct the delivery of petroleum products to the site.

Fuel storage on the work site will be undertaken in compliance with applicable provincial and federal regulations, codes and guidelines. Where fuel storage is undertaken on federal lands, federal guidelines for aboveground storage tanks will be observed.

All bulk storage of fuel products on site will be at least 30 m from the watercourse and in aboveground, dyked or self-dyked tanks.

Spills

Preventative measures are the best means of avoiding accidental releases of petroleum products. However, in the event of an accidental release, the following will occur as outlined in the **CONTINGENCY PLANS** of this EPP:

The contractor will have appropriate emergency spill response equipment for containment and cleanup of spills. This equipment will consist of at least one 190L (55-gal. overpak) Spill kit, containing equipment to prevent a spill from spreading and will quickly contain and clean up the spill,

All spills and suspected spills of petroleum products, regardless of size, will be reported immediately to the site Supervisor. The site Supervisor will report the spill immediately to the Canadian Coast Guard at 1-800-565-1633.

2.6 PERMITS AND APPROVALS

The following permits, approvals and authorizations are required. They will be obtained by PWGSC

- Approval from Fisheries and Oceans under Section 35.2 of the *Fisheries Act.*
- A permit from the Nova Scotia Department of Natural Resources under the *Beaches Act.*

3.0 CONTINGENCY PLAN

3.1 FUEL AND PETROLEUM PRODUCT SPILLS

Terrestrial and marine fuel spills may occur in association with construction activities. A spill could occur as a result of a leak in fuel storage units, in the event that a fuel storage container is punctured or the equipment is overturned. These spills and leaks may harm the habitat and organisms.

In the event of a spill the site Supervisor will start spill containment and clean up with the 205 L spill kit on hand and then call the Canadian Coast Guard at 1-800-565-1633 and provide the following information:

- Location of the spill source and location of the area and shoreline impact.
- Length of shoreline impact.
- Shoreline characteristics, wildlife in the area and wind and current direction.

Once the spill is cleaned up, the contractor will ensure the proper disposal of contaminated debris, cleaning materials and absorbents is carried out.

-The construction Supervisor on site will **IMMEDIATELY** stop work in the area and notify DFO-SCH Area Chief (Gary Hubbard 902-742-6452) and the PWGSC Environmental Specialist (Stephen Barbour 902-496-5146)

The Contractor will prepare a written report which will be sent to Nova Scotia Department of Environment and Labour and as appropriate to Environmental Protection, Environment Canada, as soon as possible and no later that 30 days after the spill.

MARINE HABITAT COMPENSATION PLAN
WHARF REPAIRS
TIVERTON, DIGBY COUNTY
NOVA SCOTIA

PROJECT NO. 307381

TABLE OF CONTENTS

LIST OF APPENDICES

1.0 INTRODUCTION

Tiverton, N.S. is located on Petit Passage at the eastern tip of Long Island and opposite East Ferry (Fig. 1). Petit Passage, 400 to 800 meters wide, separates Long Island from the mainland. Tiverton is directly opposite East Ferry, which is on the western tip of Digby Neck. A ferry runs between the two villages to give access to Long Island from the mainland.

The mean tidal range at Tiverton is 4.6 meters and the maximum tidal range is about 6.4 meters. The tides are semi-diurnal. Strong tidal currents of 7 knots or more flow through Petit Passage between the Bay of Fundy and Saint Mary's Bay. Petit Passage ranges in depth between about 20 and 59 meters in mid-channel. The depth at the outer end of the wharf is approximately 6.6 m. below low normal tide. The bottom consists of a thin layer of fine materials overlying basaltic bedrock.

The public wharf at Tiverton needs a number of minor repairs. Holes in the concrete deck will be filled and the concrete surface will be patched as required. Holes in the existing sheet piling will be filled. In addition to these repairs, the structure will be protected against waves and storms by placing rock fill against the north face of the wharf as shown in Figures 2 and 3.

The work will disturb existing marine habitat in the footprint of the rock fill. The Habitat Management Branch of DFO has determined that this project could cause a harmful alteration, disruption or destruction of fish habitat (HADD) requiring an Authorization under Section 35 (2) of the *Fisheries Act*.

To obtain this Authorization, the proponent must prepare a Marine Habitat Compensation Plan (MHCP). This document outlines the proposed Tiverton Wharf Repairs as discussed with the Habitat Management Branch of DFO.

In addition to the MHCP, the proposed Tiverton Wharf Repairs are also subject to an Environmental Assessment (EA) screening report under the *Canadian Environmental Assessment Act (CEAA)*. The screening report is being prepared separately by PWGSC.

2.0 MARINE HABITAT CONSERVATION AND COMPENSATION

Department of Fisheries and Oceans (DFO) hierarchy of preferred options for habitat conservation and protection are:

- Relocation;
- Redesign;
- Mitigation; and
- Habitat Compensation

This hierarchical approach attempts to minimize the effects of the wharf repairs on the marine environment. Project components that have the potential to cause HADD are reviewed below with respect to the DFO hierarchy of conservation and protection measures.

3.0 PROJECT INFORMATION

Project Name:	Wharf Repairs
Location:	Tiverton, Digby County, N.S.
Authorization No.:	To be filled in by Habitat Mgmt. Branch (DFO)
Effective Period:	To be filled in by Habitat Mgmt. Branch (DFO)
Proponent:	Small Craft Harbours, Fisheries and Oceans Canada
Contact:	William Hall, Small Craft Harbours Branch Southwest Nova Scotia,
Address:	Cornwallis Park, Digby County, N.S. B0S 1H0
Telephone/Fax:	(902) 638-3050 / (902) 638-3051

3.1 Project Location

The wharf is located in the community of Tiverton, N.S. Tiverton is at Lat. 44° 23' 48" N, Long. 66° 12' 50" W. It is sited on Petit Passage at the eastern tip of Long Island and opposite East Ferry. Petit Passage, 400 to 800 meters wide, separates Long Island from the mainland. A ferry runs between the two villages to give access to Long Island from the mainland.

3.2 Project Description

The proposed Tiverton Wharf Repairs will include the following components (Appendix A):

- **Filling and patching the concrete deck of the existing structure.**

This work will not increase the footprint of the wharf and should have no effects on fish habitat

- **Filling holes in the existing sheet piling.**

This work will not increase the footprint of the wharf and should have no effects on fish habitat.

- **Placement of rock fill against the North Face of the existing wharf.**

Portions of this impact may constitute a Harmful Alteration, Disruption or Destruction (HADD) of Fish Habitat. Mitigation or compensation for any HADD will be negotiated with DFO, Habitat Management Branch.

This work will increase the footprint of the wharf by 809 square meters. A portion of the armourstone will be permanently below low tide. Some will be in the intertidal zone and a small portion will project above the high tide level as follows:

Zone	Area
Below low tide	274 square meters
Intertidal zone	484 " "
Above high tide	51 " "
Total area affected	809 square meters

The area of each zone was calculated using the site plan and cross-section (Figure 3) and an areagraph (Chart No. 4850, Bruning, Degree of precision at least 97%). The perimeter of each zone was marked to scale on the site plan using the cross-sections as reference. For calibration, the areagraph was used to determine the dot count for a 625 square meter area (maximum range of site plan scale). This ratio was recorded (625 square meters correlated to 195 dots). The areagraph was used to determine the dot count within the perimeter of each of the three zones. The area of the below low tide zone was determined to be 274 square meters, the area of the intertidal zone was determined to be 484 square meters, and the area of the above high tide zone was determined to be 51 square meters.

The 274 square meters of the armourstone that is below the low water mark will not be lost from the marine habitat as it will remain permanently submerged. The quality of habitat in this zone will be substantially enhanced for many marine species, as it will consist of large stable boulders with numerous crevices between. This will increase the cover available to fish and invertebrates as well as providing good substrate for macrophytes and sessile animals.

The intertidal zone at Tiverton is extensive owing to the high tidal range near the Bay of Fundy (6.4 meters). The addition of armourstone will convert 484 square meters from smooth subtidal habitat into rocky intertidal habitat. This intertidal habitat will be of high quality owing to the stability of the large armourstone. It will continue to contribute to marine productivity but subtidal organisms will be replaced by intertidal species. This part of the armourstone will be invaded daily by aquatic species that normally feed at high tide in the intertidal zone.

The remaining 51 square meters above high tide will be converted to dry land during the life of the wharf.

3.3 Description of Habitat in Proposed Infill Area

The affected bottom consists of a shallow layer of fine material overlying bedrock. The bedrock consists of vertical basalt columns. A video survey of the proposed works at Tiverton, was undertaken on August 9, 2002. The survey was performed, primarily to document the state of the wharf but also covered the site of the armourstone. The survey was confined to the north side of the Public Wharf. The foot of the wharf was covered in one transect, focusing on the concrete apron at the foot of the wharf. A shorter transect followed a zigzag pattern over the area to be covered by the proposed rock fill.

The north face of the wharf is a timber structure with a concrete apron. It is covered almost to high tide with an abundant growth of seaweed. The seabed at the foot of the wharf varies from pebbles and shells at the outer end of the wharf to coarse sand near the shoreline. Scallop shells, presumably discarded from scallop draggers are numerous near the outer end of the wharf. A luxuriant growth of kelp and other algae covers the bottom near the wharf.

The site of the armourstone has a sandy bottom. Some kelp and other macrophytes grow in this area, separated by broad sandy areas with ripple marks. Plants in this area are relatively sparser than near the wharf. There are no rocky outcrops or other firm substrates in this area. However, seaweeds provide some cover and substrate for other organisms in this area.

There was a tidal current flowing southward at the time of the survey. The current was very powerful at the outer end of the wharf and diminished towards shore. The wharf causes an eddy so that at some point along the length of the wharf, the current ceased. The current flowed towards the shore from that point inland.

Animals seen included the following:

SPECIES	Foot of Wharf	Site of Armourstone
Crab (unidentified)	8	2
Lobster *Homarus americanus*	2	0
Fish (unidentified)	15 (estimate)	20 (estimate)
Starfish (unidentified)	3	0
Sea Urchin (unidentified)	2	0

Animals were more abundant and diverse near the wharf. Starfish and Sea Urchins were attached to it. Lobsters and some crabs were in direct contact with the wharf or in crevices created by the structure. Fish seen near the wharf were in crevices under the concrete apron or swimming in loose schools near the vertical face. One school of small fish was seen over the sandy bottom where the armourstone will be installed. The only invertebrates seen in this area were crabs.

The following factors diminish the importance of this habitat:

- The habitat is not accessible to the shellfish fishery as it is in a prohibited fishing area around a harbour.
- The area that this habitat is in has a relatively large amount of similar habitat that is readily available to marine species.

However, although Petit Passage, in the vicinity of Tiverton, is closed to shellfish harvesting, any stocks that may be present provide recruits to the larger area through larval distribution, but do not contribute directly to the fishery.

3.4 Description of Investigation of Relocation Alternatives

- *Relocation* of the activities is not an option, as the wharf is immovable.

3.5 Description of Redesign Measures

Significant redesign is not feasible. The shape and size of the rock fill was determined by need to protect the wharf to ensure stability of the fill.

3.6 Description of Proposed Mitigation Measures

The project is scheduled to avoid unnecessary interference with the local lobster fishery. This also ensures that the work not take place at a high period in the biological cycles of local flora and fauna. Specifically, the wharf repairs is to be carried out in late fall/early winter when larva cycles are absent and before the main migration period of local fish. The construction will also be phased so that the land-based work is conducted first so as to temporally limit the amount of time spent on in-water operations.

Interference with use of the wharf will be mitigated coordinating activities with the Harbour Authority.

Accidental fuel leaks from land based equipment working along the waters edge has the potential to cause oil slicks in the water and within the harbour. Spilled fuel or hydraulic fluid would be extremely toxic to lobsters and other marine life. Hydraulic hose fractures can spill significant quantities of fluids in a short time.

The contractor is obliged to carry out his work in manner as to prevent unnecessary release of sediments or contaminants into the water. The contractor is obliged to ensure that no releases of contaminants occur from any equipment or supplies used in the project. Stipulations (petroleum product control, condition of equipment, environmental management and plans, emergency equipment and emergency response) in the contract specifications must be strictly adhered to at all times from inception to conclusion of the project.

Hoses and tanks are to be inspected on regular bases to prevent fractures and breaks near the water. Also, the contractor can reduce the potential for accidents by ensuring fuel cans and lubricants on land based equipment are secured, and if possible, stored within a containment area located on the equipment. Refueling and maintenance of equipment should take place in designated areas, on level ground at a distance from surface water.

Drums of petroleum products should be tightly sealed. Waste oil should not be disposed of at the site. Appropriate spill response equipment (absorbent material, boom, barrels should be maintained in an location that is accessible to the site.

Any degree of fuel or pollution of marine waters must be reported immediately to the Canadian Coast Guard at 1-800-565-1633.

Non-native and invasive species may be unintentionally introduced into a marine environment via various marine construction and improvement projects. The non-native and invasive species have the potential to alter the native ecosystems and have negative impacts on the commercial fishing and aquaculture industries.

To mitigate against non-native and invasive species all marine construction equipment associated with the project will be washed and disinfected prior to the commencement of the project. The cleaning and disinfection work must be completed prior to coming to the project site and preferably performed at the site the equipment was used last.

To address matters related to construction and related works, an Environmental Protection Plan (EPP) has been prepared for the civil works of the project, with special emphasis on the protection of marine

habitat. The EPP also includes emergency response procedures for accidents, malfunctions, and unplanned events.

4.0 HARMFUL ALTERATION, DISRUPTION OR DESTRUCTION OF MARINE HABITAT (HADD)

4.1 Environmental Effects to Marine Habitat from Placement of Rock Fill

Despite the project mitigation measures describes above, there is a residual habitat infill area of 809 square meters of which up to 484 m^2 will be converted to intertidal habitat and 51 m^2 of aquatic habitat will be lost.

The subtidal armour stone slope will support marine plants and shellfish populations. It is projected that in three to five years, marine plants and shellfish will colonize the area. Therefore it is predicted that there will be a temporary disruption of the fish habitat on the slope but that this will be for a limited period and that a new biological community will form. The new community will likely contain some different species from the current one. It is proposed that the 274 square meters of permanently submerged rock fill be considered equal in value to the habitat that it will replace. It will not require compensation.

The intertidal portion of the armour stone slope will also support marine plants and shellfish populations that are adapted to the rocky intertidal habitat. It is projected that in three to five years, a community of intertidal marine plants and shellfish will colonize the area. There will be a temporary disruption of the fish habitat on the slope but that this will be for a limited period and that a new biological community will form. The new community will contain different species from the current one. It is proposed that this intertidal area (484 square meters of lost habitat) be considered as having been removed from marine environment and requiring 100% compensation.

The remaining 51 square meters of rock fill will be above the high water mark. It is proposed that this area be considered as having been removed from marine environment and requiring 100 % compensation.

Over all, it is proposed that compensation will be made for approximately **535 square meters** of lost habitat.

5.0 PROPOSED MARINE HABITAT COMPENSATION PLAN

The proposed Tiverton Wharf Repairs will consist of the enhancement of existing fish habitat to compensate for the infilling of the rock fill area. It is proposed that DFO-SCH will enter into an agreement with a local fishers group to conduct habitat enhancement, as the replacement of identical bottom habitat is not practical in this situation.

As described in the above section, the habitat that will be occupied by the rock fill is considered 'Important Habitat'. The habitat enhancement ratio is proposed to be 3 to 1 for the 535 square meters' equivalent that will be lost. Therefore, habitat enhancement is planned for a total of **1605 square**

meters. The specific type and location of habitat enhancement is to be determined by DFO-SCH and once a plan is in place it will be submitted to HMD for review and approval prior to any enhancement being conducted.

5.1 Location of Proposed Compensation Works

The proposed compensation is comprised of enhancing existing fish habitat in or near Petit Passage. Should the opportunity exist to amalgamate compensation works in other areas of the Digby Neck Area, that opportunity may be taken. The specific location of the habitat enhancement is to be determined by DFO-SCH and once a plan is in place it will be submitted to HMD for review and approval prior to any enhancement being conducted.

5.2 Description of Proposed Compensation Works

Due to the nature of the proposed Wharf Repairs at Tiverton, the traditional hierarchy of compensation options is difficult to apply to this project. The habitat enhancement program consists of a project(s) that will enhance existing habitat. It is projected that DFO-SCH will enter into an agreement with a local fishers group to conduct this work. The target date is to have this enhancement completed by November 2003.

The specific type and location of shellfish habitat enhancement is to be determined by DFO-SCH and once a plan is in place it will be submitted to HMD for review and approval prior to any enhancement being conducted.

5.3 Environmental Inspection and Monitoring Commitments

A year-end report of the habitat compensation measures will be conducted one year after the final completion of the project. The evaluation will check for general implementation of the habitat compensation measures. The results from the report will identify if there are any outstanding issues that need to be addressed, and identify areas for continual improvement.

It is anticipated that the Habitat Management Branch of DFO will conduct a compliance inspection to determine if the requirements of the Habitat Compensation Plan have been met. This compliance inspection should occur one year after the implementation of the habitat compensation measures, and after the EMP the Harbour Authority has conducted evaluation.

Upon completion of the compliance inspection, if all identifiable action items from this report have been met, then the requirements of the Habitat Compensation Plan have been fulfilled. If there are action items that have not been effectively implemented, SCH will have 1 year to rectify these issues.

6.0 HABITAT SUMMARY TABLE

Benthic Habitat Summary Table

Project Component	Area	Compensation Ratio	
Repairs to concrete deck	0 m^2		0 m^2
Repairs to steel sheet piling	0 m^2		0 m^2
Placement of rock fill	535 m^2	3 to 1	1605 m^2
TOTAL	**535 m^2**		**1605 m^2**

7.0 APPROVALS

Harbour Authority of Tiverton – Fisherman's Wharf, agrees to:

1. Implement all measures contained in the approved Tiverton Wharf Repair Habitat Compensation Plan including follow up monitoring,
2. Request written approval from DFO for all revisions to the compensation plan.
3. Submit all monitoring results and an 'as built' report.

Proponent

Jan 29, 2003
Date

Habitat Assessment Biologist (DFO)

Date

APPENDIX A

Figures

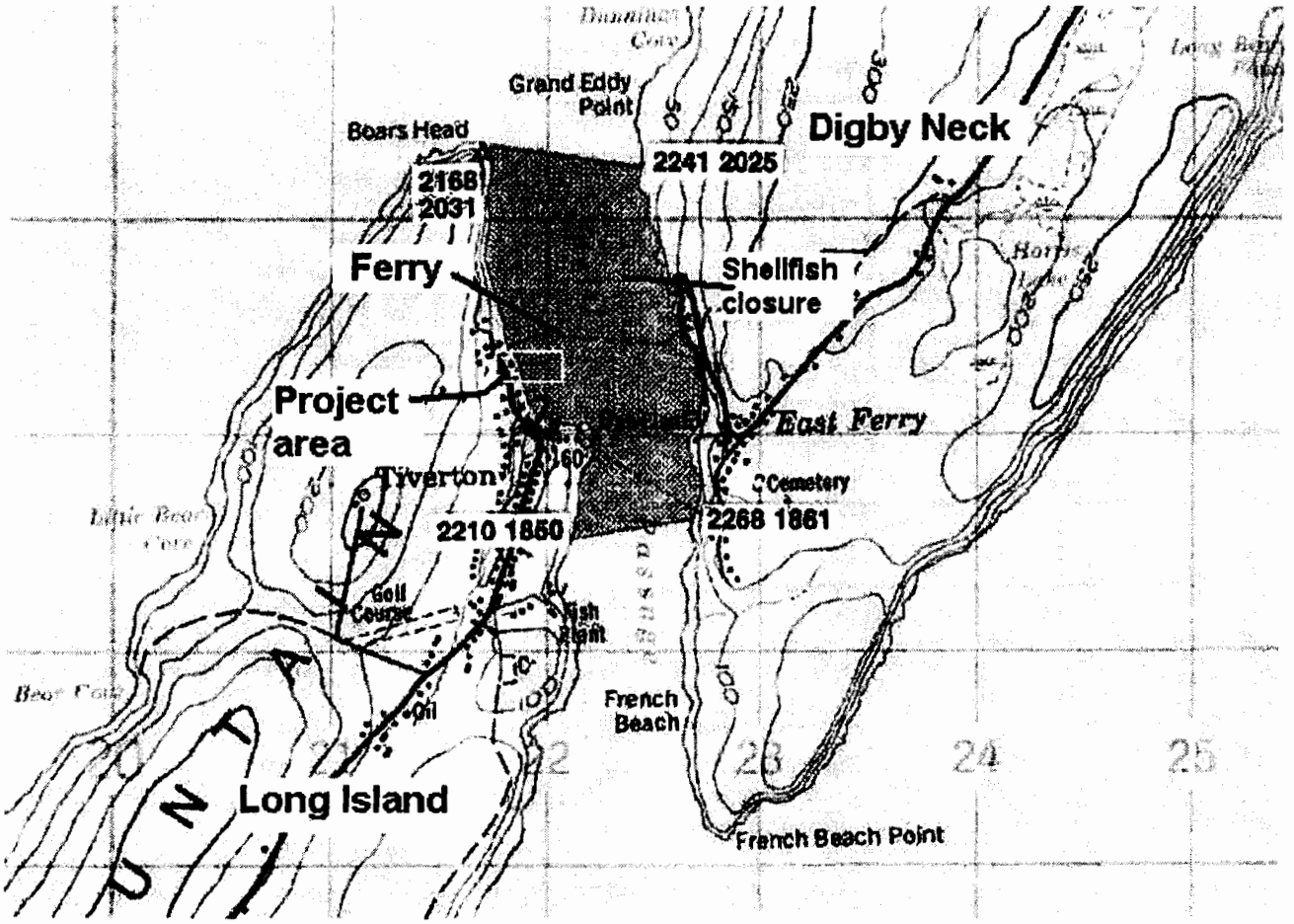


Figure 1. Topographic Map of Tiverton and Petit Passage, Digby County, N.S.

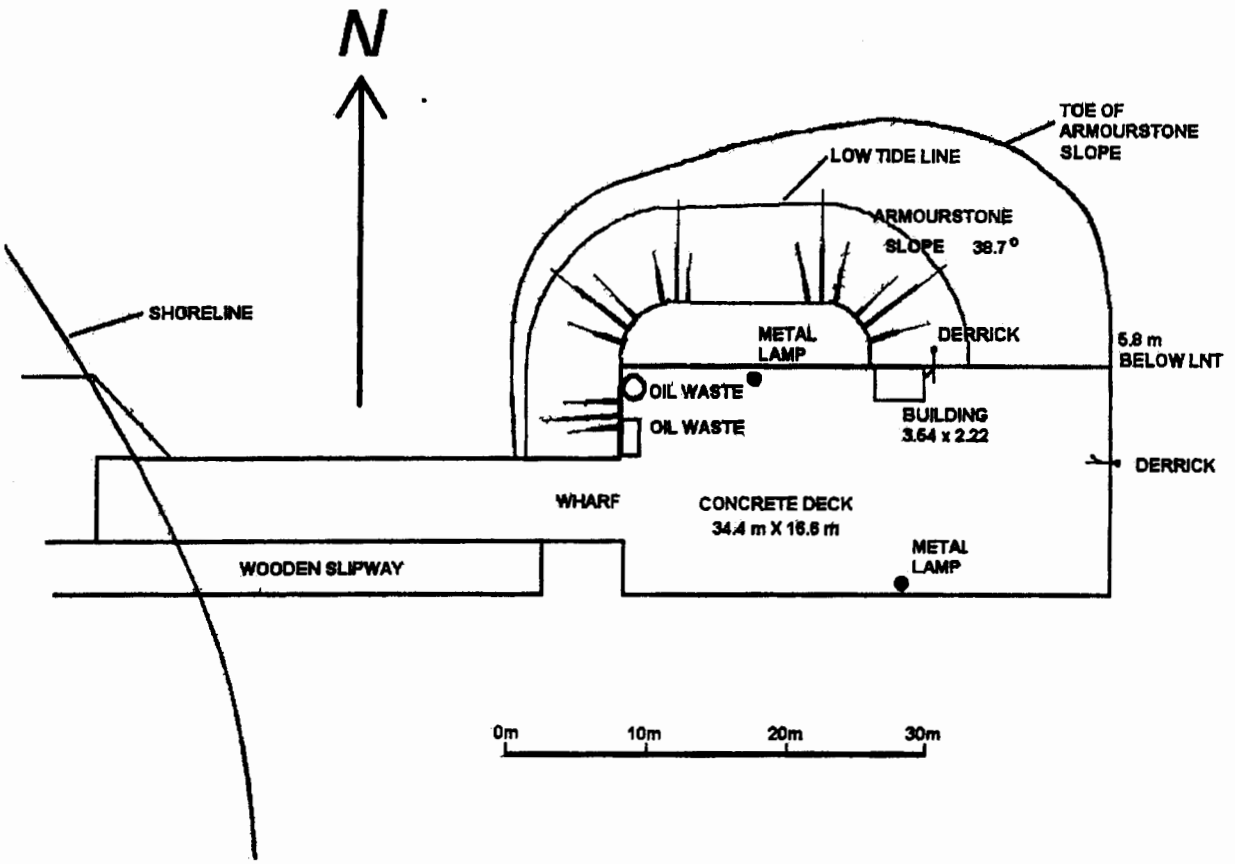


Figure 2. Public Wharf, Tiverton, N.S. showing Rock Fill (Armourstone).

between will replace an unstable sandy bottom. This will increase the cover available to fish and invertebrates as well as providing improved substrate for macrophytes and sessile animals. It is proposed that the 274 square meters of permanently submerged rock fill be considered equal in value to the habitat that it will replace. It will not require compensation.

The intertidal zone at Tiverton is extensive owing to the high tidal range near the Bay of Fundy (6.4 meters). The addition of armourstone will convert 484 square meters from sandy subtidal habitat into rocky intertidal habitat. This intertidal habitat will be of high quality owing to the stability of the large armourstone. It will continue to contribute to marine productivity but subtidal organisms will be replaced by intertidal species. This part of the armourstone will be invaded daily by aquatic species that normally feed at high tide in the intertidal zone. It is proposed that this intertidal area (484 square meters of lost habitat) be considered as having been removed from marine environment and requiring 100% compensation.

The remaining 51 square meters above high tide will be converted to dry land during the life of the wharf. It is proposed that this area be considered as having been removed from marine environment and requiring 100 % compensation.

The proposed habitat enhancement ratio is proposed to be **3:1 for the 535 square meters** of marine habitat that will be partly or completely lost. And makes allowance for the enhancement of habitat quality created by the replacement of sandy bottom by irregular boulders. The specific type and location of habitat enhancement is to be determined by DFO-SCH and once a plan is in place it will be submitted to HMD for review and approval prior to any enhancement being conducted.

SCH acknowledges that HMD policy is for replacement of permanently lost habitat at a maximum of 3:1 ratio and is to be in keeping with the Compensation hierarchy as outlined in the "No net loss" policy.

Terms and Conditions

1. SCH agrees to develop, to Habitat Management's satisfaction, the Compensation agreement for the replacement of 535 square metres of fish habitat with habitat enhancement to **1605 square meters (3:1 for 535 square meters)** of fish habitat no later than March 31, 2003.

2. SCH agrees to carry out the Compensation during the summer period 2003 and be completed, to Habitat Management's satisfaction, no later than November 1, 2003.

3. HMD will assist SCH in the development of the Compensation plan through input of technical expertise and plan review.

4. Any monitoring requirements developed, as part of the Compensation plan will form part of this agreement.

Gary B. Hubbard

Mr. Gary Hubbard
Area Chief, Corporate Services
Fisheries and Oceans Canada
Small Craft Harbours Division

Jan. 29, 2003

Date Signed