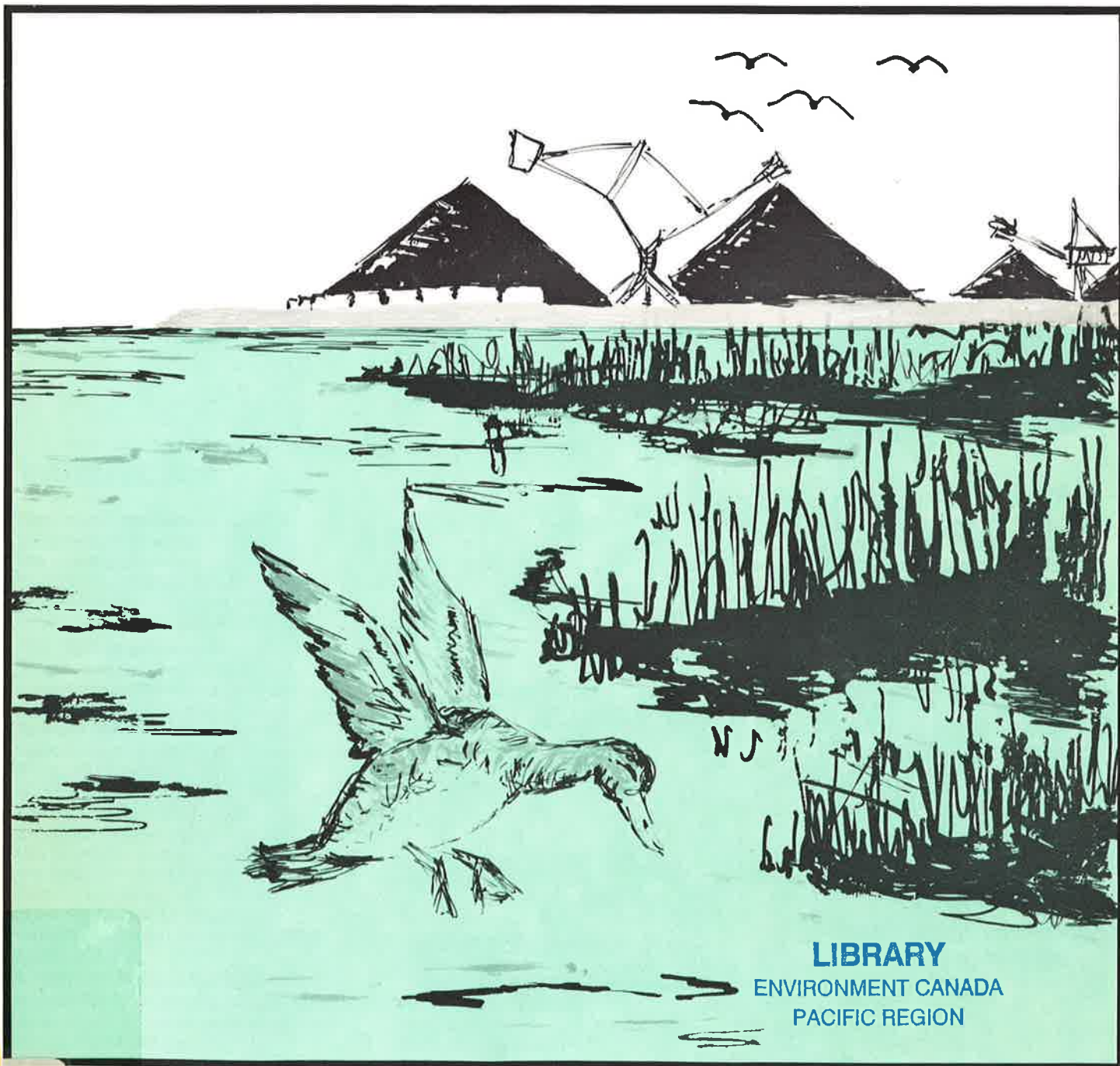


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# Roberts Bank Environmental Review Committee

## Progress Report December, 1985



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## Introduction

This report provides an update of environmental undertakings related to the expansion of port facilities at Roberts Bank since the December 1983 progress report of the Roberts Bank Environmental Review Committee.

The 1983 report describes at some length how the federal environmental assessment and review process (EARP) was applied to the port expansion at Roberts Bank. Briefly, the proposed expansion was referred to FEARO (Federal Environmental Assessment and Review Office) in 1975. An Environmental Assessment Panel subsequently reviewed and evaluated the potential environmental impacts of the project. After the release of the Panel's report in 1979, further studies were conducted to determine the least detrimental layout of the proposed terminal areas.

In 1980 the Roberts Bank Environmental Review Committee was formed to ensure that the recommendations contained in the report of the Environmental Assessment Panel were

responsibly addressed. The Committee oversaw the construction of the port expansion between 1981 and 1983 and continues to work towards fulfilling its mandate by making recommendations on the implementation of the Panel report to the Vancouver Port Corporation.

The following individuals presently serve on the committee.

Dr. J.D. Wiebe (Chairman)  
 -Environment Canada  
 Mr. T.R. Glasheen  
 -Vancouver Port Corporation  
 Mr. J.P. Sector  
 -B.C. Ministry of Environment  
 Mr. R. Bell-Irving  
 -Fisheries and Oceans Canada  
 Mr. E.C.W. Adams  
 -Corporation of Delta  
 Mr. F. Culbert  
 -B.C. Development Corporation  
 Mr. J.W. Maksylewicz  
 -B.C. Railway  
 Mr. R. Moody (Staff)  
 -Environmental Co-ordinator

The purpose of this report is to present a summary of the activities of the Committee since December 1983. Each Panel recommendation is accompanied by a description of recent Committee actions and the results of those actions to date.

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## Recommendations of the Environmental Assessment Panel

The Panel identified two types of recommendations in its report; those to be implemented if a reduced expansion was to be undertaken and those to be implemented whether or not any further

development was to take place at the site. For the purposes of this report, these two categories are referred to as expansion recommendations and general recommendations.

## Expansion Recommendations

### Recommendation 1

Any proposed expansion be tested on a hydraulic model, where currents and wave action can be measured in order to determine a suitable design to avoid excessive erosion of eelgrass beds and other benthic habitat.

### Action

A scale model of the Roberts Bank area was used to predict changes to the existing current and wave regimes which might result from port expansion. The accompanying report concluded that the proposed configuration of the expansion would not result in erosion of eelgrass beds or other benthic habitats. On this basis the final design for the expansion was approved.

### Results

Aerial photographs of the Roberts Bank area taken since the expansion show no evidence of erosion occurring around the new terminals or in nearby eelgrass beds. In the summer of 1984 steel survey pins were placed in the intertidal sediments of an exposed area to the northeast of the terminals. Measurements taken over the past year have revealed that the sediments in this area are very stable and not subject to erosion. At the present time the results of the monitoring program confirm the predictions of the hydraulic model, that is to say, no erosion problems have materialized as a result of the port expansion.

### Recommendation 2

A schedule of construction operations involving any work in, or disruption to, the intertidal and subtidal area of Roberts Bank be developed to minimize impacts on fish and crabs.

### Action

Biological monitoring programs were developed and implemented prior to construction of the port expansion, at the request of the Environmental Review Committee. Crabs and juvenile salmon and herring were the organisms of particular interest. The aquatic vegetation was also a major concern with regard to potential disruption. The monitoring program implemented during construction focussed on these key ecosystem components.

### Results

The 1983 progress report described the results of the monitoring programs implemented to avoid disruption to the environment during construction. The studies helped delineate critical areas and sensitive periods so that construction impacts were minimized. The results of the monitoring studies will likely be of considerable use to other projects on the Fraser River foreshore. The Roberts Bank Environmental Review Committee is presently preparing this information for publication.

### Recommendation 3

Coal dust suppression from both loaded and empty rail cars be further investigated and additional application of binders or other dust control techniques along the rail route be considered.

### Action

The problem of coal dust emissions from rail cars continues to be addressed on many fronts. Environment Canada has prepared a report summarizing five years of data from the Agassiz, B.C. field monitoring station. This report is presently undergoing final review before publication. A separate document summarizing recommended control practices for loading, unloading and spraying unit coal trains has also been prepared by Environment Canada. This document is also undergoing final review prior to release. The Elk Valley Coal Producers (EVCOP), an informal organization of coal shippers, has contributed to the above reports and has also carried on with its own program to improve control of fugitive coal dust emissions during transport.

### Results

The information from the Agassiz monitoring station indicates that efforts by coal producers to reduce dust emissions resulted in a general improvement, from 1980 to 1983. In 1984 an increase in the number of dusting trains was recorded. As of 1985, occurrences of severely dusting trains remained a public concern. It is expected that the "code of good practice" which has been developed will result in more consistent dust control and fewer occurrences of heavily dusting trains.

The Elk Valley Coal Producers recently reported that considerable improvement in dust control has been achieved by compacting the coal after it has been loaded onto rail cars. They are continuing to monitor this technique to assess its overall contribution to emission control.

The above studies have concluded that there are practical solutions to the problem of coal dust escaping from loaded trains. Dusting from empty trains is more problematic. While the new car dumper at Roberts Bank employs a spray system to wash the outside of the rail cars it appears that the only practical way to limit dust emissions from coal on the inside of empty cars is to reduce train speed. The Environment Canada reports recommend that train speeds be reduced when heavy dusting occurs.

### Recommendation 4

For any new coal terminal, an automated coal dust suppression system be installed, similar to that presently in use at the existing terminal, with improved measures to deal with the effects of periodic occurrences of high winds.

### Action

The new coal dust suppression system at Roberts Bank has been operational since 1983. The Environmental Review Committee provided input to the new spray system during the design, implementation, operation and monitoring phases. A major requirement of the Waste Management Permit issued by the Greater Vancouver Regional District was that regular monitoring of dustfall at the terminal be performed by Westshore Terminals Ltd.

### Results

From April 1984 to March 1985 dustfall monitoring canisters were located on the navigation light towers near the ship channel. Total dustfall at these sites was found to be well within provincial air quality objectives. In March 1985 the dustfall canisters were moved closer to the coal terminal. Second quarter 1985 results at the new sites showed that total dustfall is no greater nearer the terminal but the coal

content of dustfall is higher. Third quarter results were significantly higher than for the second quarter. The GVRD is presently investigating the reason for this increase.

### Recommendation 5

Effective noise mitigation for locomotives idling at the terminal be identified and implemented. This could involve shutting down engines during unloading operations.

### Action

The 1985 progress report noted that CP Rail had implemented a policy of shutting down idling locomotives on the Roberts Bank causeway when possible.

### Results

Since the policy was adopted in 1983 there has been a marked reduction in the number of noise complaints by area residents. The Environmental Review Committee does not feel that further mitigation measures are necessary at present. However, the Committee is prepared to recommend additional measures should these prove necessary.

### Recommendation 6

Site illumination be designed to minimize impacts on birds.

### Action

In response to this recommendation, the Environmental Review Committee commissioned a study to quantitatively assess the potential impacts of site illumination on birds.

### Results

Field studies between April and November 1983 revealed that lights at the existing port facility do not contribute significantly to bird mortalities. No dead or injured birds were found beneath lights at the port during the eight month study. On the basis of these findings, no further action was taken on this Panel recommendation.

### Recommendation 7

Tangible costs of mitigation measures and special services occasioned by the project be included in the project cost-benefit analysis.

### Action

The Vancouver Port Corporation operates on a cost recovery basis for capital projects. The expansion of the port facilities at Roberts Bank was approved after an internal cost-benefit analysis, which included the operating budget for the Environmental Review Committee.

### Results

The Environmental Review Committee has operated since 1980 through a budget provided by the Vancouver Port Corporation. This arrangement has been a key factor in enabling the Committee to implement the recommendations of the Environmental Assessment Panel.

### Recommendations 8 and 9

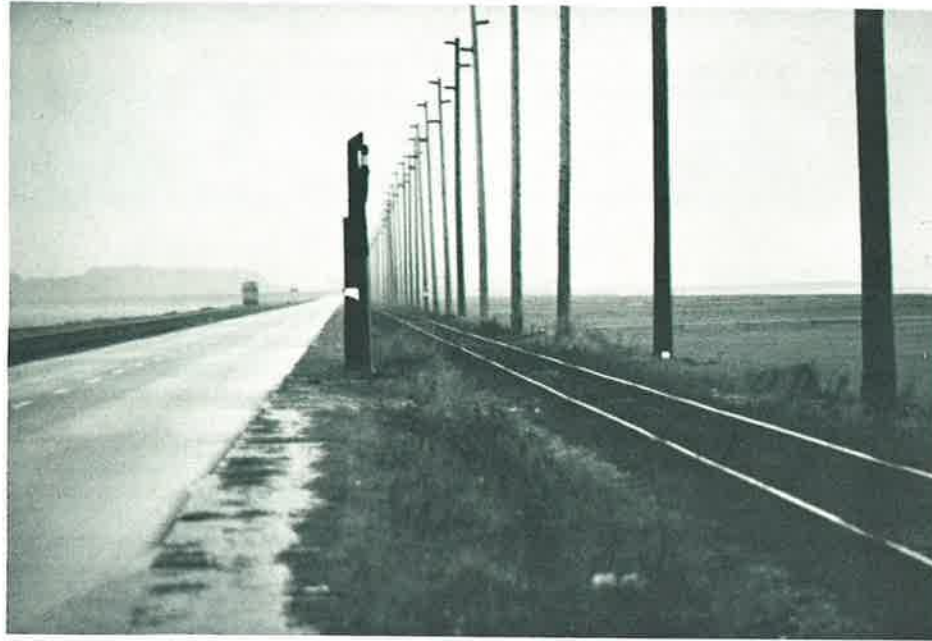
A single agent be identified by the proponent to serve as a point of contact for the public and technical agencies with regard to environmental matters, during the design and construction phases of the project. The Federal Department of the Environment take the initiative to organize the monitoring of the implementation of the recommendations of this Panel, and the requirements of the various levels of government.

### Action

These two recommendations were fulfilled through the formation of the Environmental Review Committee. Since its inception, the Committee has been chaired by a representative of Environment Canada.

### Results

The Environmental Review Committee has proved to be a very effective vehicle for dealing with the myriad of concerns and issues associated with the Roberts Bank port expansion. The



Committee has served as the principal contact for individuals, companies and government agencies with regard to environmental matters. The Committee has also provided an appropriate arena where representatives from all levels of governments can raise, discuss, and resolve environmental and related concerns associated with the port expansion.

impacts and deficiencies in social impact information.

- (c) A description of who would be responsible for implementing all required mitigation measures and how they would be implemented. This is to include those measures outside the proponent's direct jurisdiction.
- (d) A description of how the Panel's recommendations will be incorporated into the design and implementation of the project.

These reports should be submitted to both the federal and British Columbia Ministers of the Environment for concurrence prior to commencement of project construction.

### Action and Results

- (a) The final design of the new terminals and expanded causeway was developed after additional environmental studies were performed subsequent to the release of the Panel report. The ship channel and turning basin were designed on the basis of safety requirements of the Canadian Coast Guard. This information was presented at a series of public meetings held in December 1980.
- (b) The socio-economic impacts of the port expansion on the municipality of delta were identified in a study commissioned by the Environ-

mental Review Committee. The report noted that the social impacts due to an increase in the population of Delta would likely be minimal or insignificant. Similarly traffic impacts were not expected to be significant either during or after port construction. The report did identify an important concern regarding public safety on the causeway. Coal trains on the causeway are unmanned and move without notice. Members of the public seeking access to the causeway beaches often climb over, under, or through coal trains. Over the past two years, the Environmental Review Committee has been instrumental in encouraging the resolution of this hazardous situation.

Present plans call for closure of public vehicular access to the causeway road and provision of an alternate parking area near the foreshore dyke in 1986.

In 1981 Swan Wooster Engineering Co. Ltd. produced a report for the Roberts Bank Expansion Railway Committee which described the major social and environmental impacts of increased rail traffic to Roberts Bank. One important aspect of the report dealt with the need for grade separations for rail and road traffic. The Environmental Review Committee has pursued the need for grade separations on the Roberts Bank rail line with federal and provincial transportation authorities. The B.C. Minister of Transportation and Highways recently wrote to his federal counterpart stating "The most immediate need for grade separations in British Columbia is on the rail line to the coal terminal at Roberts Bank".

- (c) and (d) Commitments on how the Panel's recommendations would be incorporated into the project and who would be responsible for implementing those recommendations formed part of the federal/provincial agreement of 1980. It was agreed that the reduced expansion would be developed substantially in accordance with the recommendations of the Panel. The Environmental Review Committee was identified as the appropriate body to oversee compliance with the Panel's recommendations.

## General Recommendations

### Recommendation 1

Prevent further shoreward erosion of the existing berthing channel.

### Action

To meet this recommendation, the Port of Vancouver constructed an erosion control structure around the shoreward perimeter of the new ship channel and turning basin. The University of British Columbia and the Geological Survey of Canada both conducted studies, at the request of the Environmental Review Committee, to determine the effectiveness of the protection works.

### Results

Both studies revealed that the largest of the dendritic channels, which formerly drained into the original channel and borrow pit, filled in and revegetated with eelgrass within two years of construction of the erosion control structure. Erosion in the other large dendritic channel has slowed noticeably. Annual monitoring will be undertaken by the Port of Vancouver to evaluate the longterm success of the protection works.

### Recommendation 2

Do not ship bulk liquids from Roberts Bank port.

### Action

The Port of Vancouver has engaged in some very general discussions with potential clients regarding the use of Roberts Bank for bulk liquids transshipment. No specific proposals have been presented to the Environmental Review Committee for review.

### Recommendation 3

Do not permit bunkering of ships at Roberts Bank port.

### Action

No proposals for bunkering at Roberts Bank port have been put forward by either the Port of Vancouver or potential port users.

### Recommendation 4

Prohibit discharge of dirty ballast water from ships at Roberts Bank except to a holding or treatment facility.

### Action

The Port of Vancouver prohibits the discharge of dirty ballast water within its boundaries. To ensure compliance, ships are inspected on entering the port and external valves are sealed to prevent accidental discharge. Since Roberts Bank is within the boundaries

of the Port, this policy applies to all ships arriving at Roberts Bank port.

### Recommendation 5

Develop an environmental emergency contingency plan specific to Roberts Bank.

### Action

Since the 1983 progress report, a second draft of the environmental emergency contingency plan was circulated for final review. Review comments have been received and the final revision will be ready in 1986. This document will serve as an interim plan until the two vacant terminals at Roberts Bank are occupied.





### Recommendation 8

To allay misgivings that agricultural lands adjacent to Roberts Bank are being held to support future port-related development, consideration should be given by the appropriate provincial authorities to turning over control of these lands, now administered by the British Columbia Harbours Board, to an agency with a clear agricultural mandate.

#### Action

The agricultural lands near Roberts Bank port are administered by the B.C. Development Corporation, a provincial crown corporation. The province has not indicated any intention to transfer control of these lands to another agency.

### Recommendation 9

Appropriate government agencies undertake additional studies on the following:

- (a) Utilization by salmonids, herring and crabs of the intercauseway and other adjacent zones of Roberts Bank, including food chains and habitats on which these species depend.
- (b) Possible interruptive effects of the existing Roberts Bank and ferry terminal causeways on the orientation of juvenile salmonids in their utilization of Roberts Bank and the intercauseway area.
- (c) Migratory bird populations and habitat utilization by area, both between the causeways and on Roberts Bank in general.

#### Action

For reasons described in the earlier progress report, only a limited number of the recommended studies were undertaken by government agencies following the release of the Panel report. As a result, the Environmental Review Committee found it necessary to commission further biological studies for the port expansion. These are reviewed in the next section of this report.

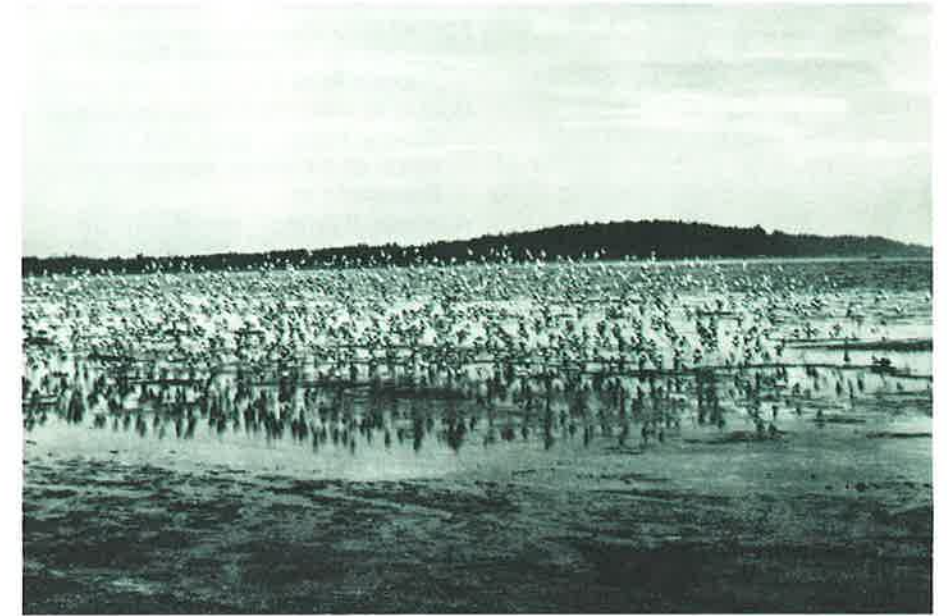
## Habitat Compensation Program

The Environmental Assessment Panel for the Roberts Bank Port Expansion duly noted the lack of quantitative ecological information available to evaluate the potential impacts of the proposed project. To address this shortcoming, the Environmental Review Committee commissioned several studies to delineate the major project impacts on marine and estuarine habitats at Roberts Bank.

During planning for the port expansion, it was acknowledged that some disruption to the nearby eelgrass beds would be unavoidable. The losses during construction were documented in two annual reports by B.C. Research. Widening of the causeway resulted in the burial of a small brackish marsh adjacent to the original causeway. In 1985, AIM Ecological Consultants Ltd. was engaged to measure the actual losses in eelgrass and marsh due to expansion activities. Recent large scale aerial photographs were analysed in order to measure these losses.

One of the greatest impacts of the port expansion stemmed from the disposal of dredgate deemed unsuitable for use as fill material onto the surrounding tidal flats.

The 1984 air photos revealed that spillover of dredged material from filling the new terminals and expanded causeway resulted in major changes to the adjacent sandflats. An eelgrass bed located northwest of the causeway was buried by fine silt. It was originally predicted that any fine material discharged onto the tidal flats would be carried offshore by tidal currents and wave action. Studies conducted since 1984 show that these deposits from dredging and filling operations are very stable and unlikely to disappear over time.



## Summary

The 1983 progress report noted that a Habitat Compensation Program was being developed to ensure that no net loss of biological productivity would result from the port expansion. Information from studies sponsored by the Environmental Review Committee has allowed the development of such a program. The Habitat Compensation Program for the port expansion is based on a balance sheet approach whereby both losses and gains were tallied to arrive at a net loss figure. The Committee is reviewing a compensation package which will see complete replacement of the losses due to the development. There are three components to the proposed compensation program; marsh establishment, reef development and a dredging program to recreate an area suitable for eelgrass growth.

The two prototype reefs constructed at Roberts Bank in 1983 were subsequently found to support a vast diversity of fish and other aquatic organisms. For this reason, reef creation will be an important part of any compensation program for the port expansion.

It is anticipated that implementation of the program will begin in the summer of 1986.

The final report of the Environmental Assessment Panel for the Roberts Bank Port Expansion contained a number of recommendations to minimize the impacts of the expansion. The report also made recommendations aimed at reducing the impacts of the original port development. After the Panel's report was released, the Roberts Bank Environmental Review Committee was formed to oversee implementation of the above mentioned recommendations. This progress report describes recent undertakings by the Committee towards the successful execution of its mandate.

### Recommendation 6

Further investigate and quantify impacts of air and water pollution due to coal dust.

#### Action

The previous progress report described the results of various studies into the effects of coal dust pollution. Most of these studies concluded that the impacts of coal dust on water quality and biota were negligible. As a consequence, no further studies have been undertaken at Roberts Bank with regard to the impacts of fugitive coal dust. Measurement of fugitive coal dust levels at the port has continued since April 1984, as mentioned earlier in this report.

### Recommendation 7

Take measures to reduce the potential for bird mortality from overhead wires and stanchions.

#### Action

In 1983 the Environmental Review Committee commissioned a study to assess the magnitude of the bird mortality problem along the causeway and to review and recommend potential mitigatory measures.

#### Results

The field studies indicated that one species of shorebird, the Western Sandpiper, accounts for most bird mortalities along the causeway. During the sixty calendar days of study between April 14 and November 11, 1983, a total of 88 dead or injured birds was found in the study area. Sixty-one of these showed evidence of having collided with the powerlines. In view of the estimated North American population of Western Sandpipers, and the apparently small mortality associated with the Roberts Bank causeway, the Environmental Review Committee decided not to pursue mitigation at present. The consultant's report notes that any mitigative undertakings would be highly experimental at this stage.

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- \*Connote studies commissioned by the Roberts Bank Environmental Review Committee*

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