

S B

186

COMMITTEE REPORT

SENATE

FURTHER: FINANCE

2/22/85

Date 02/28/85

Mr. President

The Committee on STATE AFFAIRS considered SB 186 authorizing the governor to loan up to \$3,400,000 from the disaster relief fund for a breakwater failure on St. Paul Island; efd.

and (a majority of the committee) (the committee) reports it back with the following recommendations:

- do pass
- do pass with attached amendment(s)
- replace with/or adopt CS for _____
- new title
- same title and recommends _____
- and attached a "LETTER OF INTENT" NEW FISCAL NOTE
- reports it back without recommendation
- recommends referral to _____ Committee

**MEMBERS SIGNING
DO PASS**

Tim Kelly
V. Fischer
Edgar R. Davis

**MEMBERS HAVING
OTHER RECOMMENDATIONS**

[Signature]
Chairman
[Signature]
Chairman recommendation

Introduced: 2/22/85
Referred: State Affairs and
Finance

1 IN THE SENATE

BY ZHAROFF AND COGHILL

2

SENATE BILL NO. 186

3

IN THE LEGISLATURE OF THE STATE OF ALASKA

4

FOURTEENTH LEGISLATURE - FIRST SESSION

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A BILL

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For an Act entitled: "An Act authorizing the governor to loan up to

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\$3,400,000 from the disaster relief fund for a break-

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water failure on St. Paul Island; and providing for

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an effective date."

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BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA

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* Section 1. The governor is authorized to ^{loan} ~~loan~~ up to \$3,400,000 to the

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Department of Administration, division of risk management, from the assets

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of the disaster relief fund (AS 44.19.048) to alleviate the effects of a

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breakwater failure on St. Paul Island.

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* Sec. 2. A loan made under the authority of sec. 1 of this Act shall

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be made on the condition that the Department of Administration, division of

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risk management, repay to the disaster relief fund the proceeds of insur-

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ance payments received as a result of the breakwater failure on St. Paul

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Island.

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* Sec. 3. The authority given by sec. 1 of this Act terminates June 30,

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1985.

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* Sec. 4. This Act takes effect immediately in accordance with AS 01.-

23

10.070(c).



CITY OF ST. PAUL

BOX 29
ST. PAUL ISLAND, ALASKA
99660
(907) 546-2331

December 3, 1984

SB #103
180

MEMORANDUM

FROM: CITY MANAGER

TO: DISTRIBUTION LIST

SUBJ: BREAKWATER SITUATION REPORT NO. 1

1. Due to the large number of inquiries the City is receiving for information on progress made to assess the damage to the Phase I Breakwater under construction at the Port of Saint Paul, the City will present periodic situation reports which will circulate general information about the assessment now underway. The information does not represent the official actual situation but rather attempts only to characterize the activity as a means of sharing information. The only official information will be released following the completion of the assessment now underway.
2. A storm in the Bering Sea on Tuesday and Wednesday, November 13 and 14, 1984 may have contributed to the damage of the Phase I Breakwater structure. The breakwater had been constructed to the 868-foot mark when terminated for the season by the City through agreement with the Contractor.
3. It is obvious that the damage is rather extensive and the City has received information which indicates that parts of the breakwater may not have been constructed to specification.
4. On Thursday, November 15, 1985, Members of the City Council who were in Anchorage on business, including Mayor Mike Zacharof and Deputy Mayor John R. Mercurief, together with Designer Eric Norgaard and Project Engineer Frank Carson flew to Saint Paul to personally inspect the damage.
5. Upon return from Saint Paul Thursday night, the inspection party met for several hours to review what had been seen and to develop plans for moving forward with the repairs.
6. On Friday morning, November 16, 1984 the inspecting party met with representatives of the State of Alaska with included Deputy Commissioner of the Department of Transportation and Public Facilities David Haugen and Grants Administrator Margaret E. Holland. City Attorney Tony Smith joined the group for this meeting. The following points were taken-up:

- o A review was thought to be necessary. It probably should include examination of weather conditions, technical assessments of the design, model testing, and other technical data, and examination of construction management and construction execution.
- o The Saint Paul Breakwater design is a State-of-the-Art design and meticulous testing, and even the most advanced design might not be able to forecast the real forces of the environment.
- o Construction management and construction execution which followed the design and specifications also could probably not be faulted.
- o It was obvious that a study to determine causes of the damage was needed. The State asked to be kept informed and offered technical assistance in keeping within its ability to offer assistance.

7. On Saturday, November 17, 1984 the City hosted a luncheon meeting for Citizens of Saint Paul who were in Anchorage attending the Annual Meeting of the Aleut Regional Corporation; 15 people were present. At the meeting an announcement to the press was presented which was later distributed to the Anchorage media. DOT Chief of Design and Construction Division John Olson was in attendance and during a question and answer period stated that it was his opinion that if the breakwater were going to fail it was best to have it over with now rather than a year or two later when it would be excessively costly to repair. Mr. Olson reaffirmed the interest of the State of Alaska to stand by Saint Paul with technical assistance and to do what ever it could to see us through the problems now facing the City and its breakwater project.

8. In the meantime, Mr. Eric Norgaard had flown to Copenhagen, Denmark with photographs and data for consultations with the Danish Hydrology Institute, the model test consultant.

9. On Monday, November 19, 1984 DOT representatives including Margaret E. Holland and Ocean Engineer Harvey Smith met with the City and presented a plan to provide "lead agency" action to bring about an independent study of the entire matter and situation. The City accepted. The State would contract with an independent engineering consulting-testing firm and get back to the City with the details.

10. During the week the State's search narrowed the field to the firm of Tetra Tech of Los Angeles and Anchorage and broad details of the scope of work were under discussion. A contract for services with Tetra Tech was finalized.

11. During the week of November 26-30 a scope of work was drafted and a contract signed on December 3, 1984.

SB ~~1702~~
184



CITY OF ST. PAUL

BOX 29
ST. PAUL ISLAND, ALASKA
99660
(907) 546-2331

December 10, 1984

MEMORANDUM

FROM: CITY MANAGER

TO: DISTRIBUTION LIST

SUBJ: BREAKWATER SITUATION REPORT NO. 2

1. Due to the large number of inquiries the City is receiving for information on progress made to assess the damage to the Phase I Breakwater under construction at the Port of Saint Paul, the City will present periodic situation reports which will circulate general information about the assessments now underway. The information does not represent an official position but, rather, attempts to characterize the nature of the activity presently undertaken. An official report will be released following completion of the engineering study now going on.

2. Also during the week of November 26-30, Mr. Torben Sorensen, chief executive of the Danish Hydrology Institute, Copenhagen, Denmark, flew to Anchorage for continuing consultations with Norgaard Consultants, and the State of Alaska Dept. of Transportation. Together, the State and Norgaard et al, discussed the details of the scope of work to be undertaken by Tetra Tech with Norgaard having input upon the scope which would be written and supervised by DOT.

4. On Thursday, December 6 the first of Tetra Tech's engineering team arrived on Saint Paul. Likewise a representative of the Danish Hydrology Institute. Upon landing, an immediate inspection of the Breakwater was undertaken and several rolls of still photographs were taken.

5. On the evening of December 6 a heavy storm began forming in the Bering Sea. By Friday it was a full running major storm event and one which severely damaged the already heavily battered Breakwater.

6. Representatives of DHI and T-Tech were on hand to witness the storm event. Additional photography and video-tapes were taken, recording the storm in its fullness. Winds were out of the southwest at 38-47 mph with gusts to 51 mph. High tide at 4:32 P. M. was at 3.5 feet and full. Wave heights were 3-5 meters and wave length of 15 seconds. Local viewpoints of the storm were mixed: some felt that the storm was an average "bad winter storm" but others said it was the worst they had seen in 15 years--1970 being about as far back as could be clearly recalled by local residents of long standing on Saint Paul. The storm blew itself out late in the afternoon of Saturday, December 8, but not until the Breakwater had been reduced to about 300 feet of its original 868 feet.

DISTRIBUTION LIST:

John Shively
AK Dept. of Transportation/PF
Deputy Commissioner Haugen
John Olson
Margaret Holland
Harvey Smith
Pete Spivey
Hon. Fred Zharoff
Hon. Adelheid Herrmann
Hon. Michael Zacharof, Mayor
and City Council, Saint Paul
Hon. Max Malavansky
Hon. Jay S. Gage
Lt. Fulton Gregg, USCG
Leland Dishman
Fr. M. Lestenkof

J. Anthony Smith, Esq.,
Clark Gruening, Esq.,
Norgaard Consultants
Eric Norgaard
Frank Carson
Rich Wilson
Nancy Gross
Larry Glosten
Bob Morgan
W. H. Nichols
Chester A. Richmond
Larry Mercurieff
Maxim Lestenkof, Sr.
Kenneth Fay
Rick Luthi
Magistrate G. Rukovishnikoff

SB 180



CITY OF ST. PAUL

BOX 29
ST. PAUL ISLAND, ALASKA
99660
(907) 546-2331

December 17, 1984

MEMORANDUM

FROM: CITY MANAGER
TO: DISTRIBUTION LIST
SUBJ: BREAKWATER SITUATION REPORT NO. 3

1. Due to the large number of inquiries the City is receiving for information on progress made to assess the damage to the Phase I Breakwater under construction at the Port of Saint Paul, the City will issue periodic Situation Reports which will characterize the general nature of activity to that time. This information is not an official report. That information will be presented when the engineering study now going on is complete, about December 31, 1984

2. Tetra Tech, the engineer firm selected by the Alaska Department of Transportation and Public Facilities to assess the damage to the Phase I Breakwater arrived on the scene on December 6 when the senior engineer came to the site. He was followed by an engineering technician and a geotechnical expert two days later. On December 10 the project manager arrived. A representative of the Danish Hydraulic Institute was also on site during this week.

3. Another storm, with advance billing of "a 10 year storm" was forecast for the Bering Sea on December 13-15 but passed west of the Pribilof Islands resulting in a disturbance similar to the storm of December 7-9, 1984. The breakwater was affected only a little by that one but all the experts were on hand to witness it and gained insights into the damage/failure mechanisms

4. Tasks completed between storm and lull included:

- o Visual Inspections
- o Photographic Documentations
- o Topographic SubAerial Documentations
- o Estimation of In Situ Gradation with Surface Sampling
- o Visual Observation of Three Storm Events on the Rubble Mound Breakwater

Tasks attempted included:

- o Excavation Test Pit, Gradation Work
- o Bathymetric Survey, delayed do to weather
- o Spot Bathymetric Reconnaissance Near Structure

5. The Engineering team departed the Island today and will consult in Anchorage prior to writing a report which is expected by Dec. 31.

7. Review of Local Climatological Data (NOAA) reveals that the mean wind speed for December is 22.3 mph and the extreme speed is 62 mph, which was recorded in 1970, the year of the last storm which local people can remember. Last year the peak gust speed in December was 56 mph on the 20th from the south southeast. The strongest wind last year overall was on November 23 at 58 mph out of the southeast.

8. At first light on Saturday, December 8, 1984 DHI and T-Tech began field reconnaissance during the final gusts of the storm. More photographs were taken. The overall length remaining of the main Breakwater is about 100 meters.

9. Bethemetric equipment did not arrive on Saint Paul as planned on Friday due to the weather. It will arrive on Monday, December 10 and depending upon the calmness of the water in Village Cove will begin in a day or two.

10. Bids for Phase II Breakwater were opened on November 13 and award of a contract was expected 45 days later on Friday, December 28, 1984. The City will ask for a 45-day extension from all bidder for the purpose of completeing the present assessment of damage before commencement of pre-award negotiations and contract award then expected to take place in mid-February.

11. The time frame noted above is not expected to prevent the City from remaining on schedule which is to complete the Breakwater Phas I and II and the Dock Phase I in time for the 1986 season. The final design of the dock is now awaiting the programming of essenti repair to Phase I Breakwater.

12. It is becomming increasingly obvious that very major problems which span a wide range of interests and incidents accompany the present situation. The assessment and study should lay before us some of the answers to the overriding question: "What happened?"

#

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Hon. Adelheid Herrmann
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and City Council, Saint Paul
Hon. Max Malavansky
Hon. Jay S. Gage
Lt. Fulton Gregg, USCG
Leland Dishman
Fr. M. Lestenkof

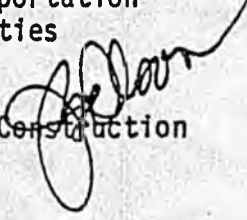
J. Anthony Smith, Esq.,
Clark Gruening, Esq.,
Norgaard Consultants
Eric Norgaard
Frank Carson
Rich Wilson
Nancy Gross
Larry Glostén
Bob Morgan
W. H. Nichols
Chester A. Richmond
Larry Mercurieff
Maxim Lestenkof, Sr.
Kenneth Fay
Rick Luthi
Magistrate G. Rukovishnikoff

MEMORANDUM

SB ~~184~~ 184
State of Alaska

TO: Anselm Staack
Deputy Commissioner
Administrative Management
Department of Administration

THRU: William R. Snell 
Acting Deputy Commissioner
Central Region
Department of Transportation
and Public Facilities

FROM: John B. Olson, P.E. 
Director, Design & Construction
Central Region

DATE: February 6, 1985

FILE NO: 220C

TELEPHONE NO: 266-1500

SUBJECT: Involvement of Risk
Management with St.
Paul Breakwater

The events leading up to the Department of Transportation and Public Facilities' (DOT&PF) contact with Risk Management focused primarily on the assessment of damage. Technical analyses to determine why the Breakwater failed were critical, in view of the fact that the City of St. Paul had opened bids for Phase II construction and was scheduled to award the contract in mid-December. Tetra Tech, Inc., was hired to perform the technical analysis.

Following the decision to have the City of St. Paul cancel the contract award for Phase II, the Department and the City began to explore ways to fund the restoration of Phase I of the Breakwater.

During the week of January 14, 1985, Risk Management was asked to assist the Department in exploring its options with regard to Phase I. Several conversations followed and an exchange of information took place. On January 29, 1985, Brad Thompson of Risk Management met with representatives of the City of St. Paul and DOT&PF to determine the best way to proceed to restore the Breakwater to its pre-storm condition.

It was decided that the Division of Risk Management through DOT&PF would solicit an estimate to reconstruct the facility to its pre-storm condition. The Department has identified a list of potential consultants to prepare this estimate.

The initial estimate given to DOT&PF to restore the Breakwater is \$4.0 million. A more specific estimate will be developed as a result of comprehensive field investigation.

MEH/bgc

cc: Clark Gruening, Smith, Robinsons & Gruening, Juneau
Brad Thompson, Claims Manager, Risk Management, DOA
Warren Sparks, Deputy Commissioner, Headquarters

APPENDIX A

ST. PAUL HISTORY

The significant events surrounding the construction of the St. Paul Breakwater the storm damage and the time frame of reconstruction.

<u>DATE</u>	<u>EVENT</u>
	Construction contract awarded to Callista Corp.
	Problems arose in production of large armor stone, construction temporarily halted.
	Construction proceeded with modified (berm) breakwater design.
	Completion of Phase 1 construction was accepted for payment.
10/15/84	Breakwater began to show signs of readjusting to a moderate wave climate.
11/13/84-11/14/84	Breakwater was subjected to a major storm which significantly damaged the outer 350'.
11/19/84	City of St. Paul contacted DOT&PF for assistance on confronting the problem.
11/30/84	DOT&PF signed an agreement with Tetra Tech Inc., using an existing Term Contract, to conduct an assessment of the damage and determine the probable cause(s) of failure.
12/07/84-12/08/84	The breakwater was subjected to a second major storm which destroyed an additional 150'-200'. At this time the head portion of the breakwater had receded from an original station 9+00 to station 4+25.
12/31/84	First draft of final Tetra Tech Inc report was received for review.
01/14/85	DOT&PF contacted Risk Management to ascertain the States Insurance alternatives for reconstruction of the breakwater.

01/21/85 Final Tetra Tech Inc. report was delivered to DOT&PF.
City of St. Paul contracted with DePue & Associates to develop alternative dock designs.
City of St. Paul contracted with Tetra Tech Inc. to develop alternative designs and estimates for reconstructing the breakwater and continuation of phase 2 construction.

01/29/85 DOT&PF, City of St. Paul, and Risk Management met to discuss the current status of the breakwater and determine what involvements between the agencies is necessary to meet the critical time frame for construction and preservation of the EDA grant.

TENTATIVE SCHEDULE TO MEET 1985 CONSTRUCTION WINDOW AND FULFILL GRANT REQUIREMENTS.

02/15/85	Select from alternative designs of breakwaters and docks.
02/28/85	Contract for A/E services to develop final design, drawings, and specifications for breakwater and dock.
03/01/85-03/15/85	Field Investigations (detailed bathymetry, geotech, etc.)
03/15/85-04/30/85	Hydraulic Model Studies
03/01/85-04/15/85	Develop final design, construction, and bid documents
04/16/85-06/01/85	Advertise and award
06/15/85	Begin construction
11/15/85	Complete construction



TETRA TECH, INC.
3315 ARCTIC BOULEVARD
ANCHORAGE, AK 99503-2775
TELEPHONE (907) 561-8144

SB ~~HE~~
186
RECEIVED FEB 4 1985

4 February 1985

Mr. Vern McCorkle
City Manager
City of St. Paul
St. Paul, Alaska

Dear Mr. McCorkle:

The following is a summarization of our analysis of the Saint Paul Harbor Project:

1. Estimated Costs to Re-build Phase I

	<u>w/o contingencies E&D and S&A</u>	<u>w/contingencies E&D and S&A</u>
a) to Norgaard's Original Design	\$4.02 million	\$4.74 million
b) Norgaard's A-B Design	3.40 million	4.01 million
c) to Tetra Tech's Preliminary Design	4.95 million	5.84 million

Basis of costs are shown on the attached sheets for (a) and (b). Unit prices are from Phase 2 bid summaries and quantity estimates assume that existing material from damaged section can be incorporated into the core. We have added the costs for mob/demobs, camps and have road maintenance which were not included in our original \$3 million estimate.

2. Extent of \$9.0 Million Breakwater Project

Using Tetra Tech's preliminary x-section, breakwater repairs and extension to about STA 14+00 can be accomplished for \$9 million. A head section incorporating 30-ton concrete dolos armor units and a trunk section using 14-ton stone on a 1:4 slope were used in this estimate. A project of this magnitude could protect a 200-foot barge dock while providing a 20' draft along the berth. Dredging of the harbor for the removal of washed out breakwater material would be required. Wave heights of about four feet along the berth would be expected several times per year during storm conditions. The evaluation of using a concrete caisson for the head section instead of the 30-ton dolos units may substantially affect the total possible breakwater length. Model testing of the caisson and our preliminary design for the trunk section is also required. We are presently investigating

Mr. Vern McCorkle

4 February 1985

Page two

the caisson alternative, but a precise construction cost estimate will be difficult. In summary, we are confident that a 1200- to 1500-foot breakwater can be constructed with a \$9.0 million budget. Estimated construction time for this project is seven months.

3. Estimated Costs for Re-build to Original Phase I/Phase II Project

Using Tetra Tech's preliminary design x-section and extending the project to STA 20+50 as shown in the Phase II construction drawings would cost about \$12.63 million in construction. Including a 5% contingency and allowances for engineering and design and supervision and administration would necessitate a \$14.9 million project budget. Estimated construction time for this project is 13 months, hence a two-season construction program would be needed.

4. Alternative X-Section Designs

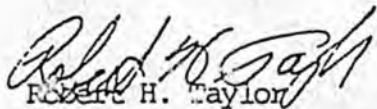
We have examined six alternative cross-sections plus Norgaard's trunk and head section designs. Based on the 25-foot design wave, Norgaard's original design would expect considerable damage (about 20% or more). The other six designs are expected to sustain about 0 to 5% damage on an annual basis, but model tests of some alternatives are necessary to verify this damage estimate. We are presently evaluating a caisson section for use as the breakwater head. This may be similar in cost to a rubblemound dolos protected head section but afford an additional 50 feet of breakwater length. See attached table for a summary of x-sections examined.

I would like to emphasize that some of our designs can only be verified by scale model testing. We have preliminary sections drawn, along with a plan of the project to STA 14+00, which can be made available for your use if you feel they would be of any assistance. Once Tetra Tech, or possibly some other firm, is given a notice to proceed with the development of detailed plans and specifications, it will take approximately four weeks to have them ready for bid. Also, if the dock facilities are to be incorporated in this project, a subsoil investigation of the harbor bottom must be completed. Tetra Tech would be pleased to act as St. Paul's agent for this work, or if you desire to contract directly for this work we will recommend firms specializing in this type of work.

If you have any questions, please don't hesitate to give me a call at 564-8144.

Sincerely,

TETRA TECH, INC.


Robert H. Taylor

Manager, Alaska Operations

RHT:rd

Enclosures

cc: Tony Smith, Attorney

ALTERNATIVE	COSTS/FT	CREST EL.	USEABLE ROADWAY	REMARKS
a. NORGAARD SECTION 12-ton ARMOR	\$ 5090	+30	30'	DAMAGE = 15-20% UNDER 25' DESIGN WAVE
b. NORGAARD HEAD 18-ton ARMOR	7800	+30	30'	DAMAGE > 50% UNDER 25' DESIGN WAVE
1. ALT. 1 14-ton stone 1:4 slope	8000	+37	40'	VERY WIDE STRUCTURE MAY ENCRASH ON HARBOR. CREST EL. REQUIRES MODEL TEST
2. ALT 2 18-ton stone 1:3 slope	7100	+30	none	18-TON PEBBLELT NOT AVAILABLE IN REQ'D QUAN.
3. ALT 3 30-ton dolos 1:2 slope	11600	+30	none	USE FOR HEAD SECTION. OVERTOPPED
4. ALT 4 20-ton dolos 1:2 slope	11000	+30	none	USE FOR TRUNK OVERTOPPED
5. ALT 5 4 1/2-ton tetrapod 1:1.5 slope	10300	+38	8'	CREST REQUIRES MODEL TEST
6. ALT 6 14-ton stone composite	6400	+40	30'	MODEL TEST NEEDED TO EVALUATE STABILITY
7. CAISSON	UNDER	EVALUATION		