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MATANUSKA RIVER EROSION  
TASK FORCE  
INTERIM REPORT

FEBRUARY 18, 1992

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# MATANUSKA RIVER EROSION

## TASK FORCE

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#### ADDENDUM

1. Matanuska-Susitna Borough Letter To ADES, 1/27/92
2. ADES Answer to Borough's Letter of 1/27/92
3. Matanuska-Susitna Borough Letter to Task Force, 2/10/92
4. Matanuska-Susitna Borough Letter to Task Force, 2/11/92

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# ALASKA TASK FORCE EROSION OF MATANUSKA RIVER BASIN

## FACTS

### AUTHORITY

This task force was authorized by the Commissioner, Department of Military and Veterans Affairs, with concurrence of the Governor of the State of Alaska and his Chief of Staff. The Alaska Division of Emergency Services was assigned the responsibility of chairing this task force.

### PURPOSE

The Task Force was assigned to complete a written report to the Governor by the end of 1991. The Matanuska River has historically demonstrated the ability to erode its banks. As civilization has moved into the valley, this erosion has at times caused extensive problems to both public facilities and private property. The latest problem has developed over the past few years at the Circle View Subdivision in the Matanuska/Susitna Borough near Palmer. The purpose of the task force is to assimilate the most up-to-date and objective information available about the capability of the State to react to this problem throughout the Matanuska River basin. The erosion information can then be used to develop policies and programs designed to reduce or eliminate the loss and suffering of Alaskans from this type of problem.

Topics investigated included but, were not limited to:

1. Engineering solutions
2. Relocation options
3. Federal Flood Insurance Program
4. Land management; Building codes; Zoning restrictions; and Hazard delineation

Each of these topics considered the following:

1. Current and possible future capabilities
2. Costs
3. Level of success possible
4. Difficulties or adverse affects
5. Legal issues

It was not the purpose of this task force to determine short-term solutions to the immediate problems currently taking place on the river at the Circle View Subdivision. The State provided the Matanuska-Susitna Borough a \$500,000 loan for addressing the short-term issue. The procedure for using this money was still being explored by the local government at the end of 1991. The task force directed its efforts to providing information that may be used for determining effective long term response to the erosion problem.

## **GOAL**

The goal of the Task Force is to prepare recommendations for the Matanuska River Basin, and to prepare general options on future programs, policies, and activities for mitigating of future losses and for responding to erosion statewide.

## **DISCUSSION OF PROBLEM**

Although the task force was created to study the erosion problems of the Matanuska River, the initial stimulus for the study has been the homes destroyed and threatened in the Circle View Subdivision. The residents of this subdivision have been facing the traumatic experience of seeing their homes either washed away by the Matanuska River's erosion or living under the threat of being carried away. Home owners whose homes are currently in danger are urgently encouraging government assistance in protecting their property. An example of this concern is evident in the memos submitted to the Task Force by Mary Moline, Don Karabelnikoff, and Ronald Thornly and included as attachments #1 and #2. Governments at the local, State and federal level when faced with this type of



request have a responsibility to ensure that any procedures initiated are cost effective for the result obtained. The environmental impact of any response to this type of situation must also be considered in an effort to assure that the cure does not cause more overall harm than the original problem. Governments have a responsibility to spend public money in a manner that provides a benefit for its constituents. Should a government decide to assist in this type of situation, response can take the form of disaster funds, capitol improvement funds, or government approval of privately developed solutions.

During disasters, governments usually provide various levels of life-saving assistance for its citizens. Efforts to provide protection or replacement of public facilities during disastrous situations is usually funded to a level to ensure the facility is returned to its pre-disaster condition, providing that adequate funding can be found. However, in some cases of personal property loss there is a difficulty in determining where the responsibilities of the original home owner to cope with the problem ends, and the obligation of the government to assist begins. This is particularly difficult when the damage consists entirely of personal property.

The State of Alaska has traditionally used a broad determination of disaster assistance based on whether the disaster effects the community as a whole. A possible definition of this determination could be, "A significant number of the citizen's of a local government have been adversely affected by the disaster either physically, economically, or emotionally." This definition allows the government to take into consideration the concept that, if government assistance is not provided for the personal losses of this significant number of victims, the community as a whole will have greater difficulty in successfully recovering from the disastrous effects of the incident. Extensive flooding or erosion along the Matanuska River could possibly create a significant problem to the citizens of the Matanuska-Susitna Borough. Flooding or erosion within a single subdivision along the river may not cause any significant difficulties to the majority of the individuals living within the Borough. In most cases each incident has its own particular characteristics, requiring governments to make their decisions based on the best information available at the time.

Government assistance for potential disaster situations can also be provided through mitigation efforts. In this case, government

programs or projects may effectively protect property from a disastrous situation. In the situation focused on by this task force, erosion control programs or projects for the Matanuska River as a whole may be more cost effective and beneficial for the community as a whole and still provides protection for the homes at Circle View Subdivision. This was one of the primary reasons for the task force studying the whole river rather than concentrating solely on the Circle View Subdivision.

It is important to realize that erosion in the State of Alaska is not restricted only to the Matanuska River. There are erosion problems throughout the State, both on the river systems and the coast line. Any policy or project implemented based on this task force report probably will be further evaluated in relation to future erosion problems throughout the State.

Currently there is no single lead agency or interagency group assigned responsibility for flood plain management policy planning or administration. Different agencies have provided different assistance within the flood management program (Alaska Department of Natural Resources/ water data collection and land disposal; Alaska Department of Transportation and Public Facilities/ capital construction on selected projects; Alaska Department of Community and Regional Affairs/ technical assistance; Alaska Division of Emergency Services/ emergency assistance and disaster relief oversight; and Alaska Department of Environmental Conservation, Alaska Department of Fish and Game, Alaska Department of Natural Resources, and the U.S. Army Corps of Engineers/permitting), creating a sometimes confusing, unapproachable interagency program. Furthermore, the State has no policy or administrative codes regarding State financed improvements or loans in flood and erosion prone areas. The State currently has no mechanism to mandate stronger local land use regulation or other actions to address the long-term impacts of the Matanuska River problem.



## DISCUSSION OF POTENTIAL SOLUTIONS

### ENGINEERING SOLUTIONS

Engineering solutions are one of the first considerations for protection of property from erosion. The initial question asked by the task force was whether an engineering solution was possible. The State Department of Transportation and Public Facilities and the U. S. Army Corps of Engineers prepared a brief preliminary report on the various types of technical solutions that are traditionally used for erosion protection. This report is included as attachment #3. Representatives of the Alaska Department of Transportation and Public Facilities and the U. S. Army Corps of Engineers have evaluated each of the solutions in the report and concluded that two of them (River Training and Rock Riprap Bank Protection) are worthy of further consideration. Both of these solutions would cost in the millions of dollars for a permanent solution at the Circle View Subdivision.

An additional preliminary study addressing the Circle View Subdivision was presented by the Matanuska/Susitna Borough (attachment #4). This study is based on the use of gravel extraction from the Matanuska River as a method of controlling the river's channel. The Borough feels that this solution could function both as an economical stimulus to the Borough economy, as well as an erosion control project. Homeowners from the Circle View Subdivision and the Department of Agriculture's Soil Conservation Service have shown support for this concept. If the gravel could be extracted profitably, the cost of erosion control will probably be minimal. However, there have been concerns expressed by the Alaska Department of Transportation and Public Facilities, the Alaska Department of Natural Resources, and the U. S. Corps of Engineers as to the projected economic success and erosion control capability of this specific plan. The primary concern is that if erosion control is started it must be continued whether or not the project remains economically viable, and if the project has a reasonable assurance of controlling erosion.

The Matanuska-Susitna Borough has hired the firm of Peratrovich, Nottingham and Drage to evaluate the erosion in the vicinity of Circle View Estates. This evaluation is described in Attachment #5. The Alaska Department of Transportation and Public Facilities has agreed that the evaluation has engineering possibilities for coping

with the localized erosion problem at the Circle View Subdivision. The environmental effects of the evaluation still must be determined.

It is important to remember that the long term environmental and ecological effects plus State land use permitting must be considered in any engineering solution. State and federal permitting agencies currently have in place procedures, to include emergency and non-emergency situations, for requesting permits to do construction in sensitive areas. It is essential that some responsible party apply for these permits in a timely manner.

It should be realized that any of the above solutions are only preliminary. The task force did not have the time or economical resources to conduct an extensive study. Some questions that need to be answered related to all of the suggested engineering solutions are:

1. From a policy standpoint, what is the design standard that will be met?
2. What is the environmental impact from a technical solution? Can the appropriate permits be obtained to protect the wildlife depending on the Matanuska River?
3. What is the benefit cost ratio for the project?
4. Should erosion control and flood control projects be combined or developed separately?
5. Is the State willing to accept the liability for further erosion after an erosion protection project has been approved and completed?

The benefit cost analysis was discussed extensively by the task force. A benefit cost ratio is one means by which the value of a pending effort can be measured. Currently the U. S. Corps of Engineers assess cost effectiveness prior to making recommendations on project alternatives, but these may be overridden in the event of serious social and economic repercussions. Social and economic repercussions are almost always present when evaluating erosion control alternatives, e.g., relocation. More definitive benefit cost guide lines must be



performed which includes some of the social and economic effects. The DOT/PF commonly does not perform cost effectiveness determinations when it is requested by the legislature to provide a cost estimate, as opposed to an agency initiated study of erosion alternatives. At the least the benefit cost analysis needs to be performed whenever state funds for erosion are granted so that those values that are quantifiable are known.

The adoption of an engineering solution for erosion control also requires a maintenance program for the project. The State of Alaska made a sizable investment in erosion control structures throughout the early and mid eighties. If this investment is to retain its worth then it has to be maintained, but many local communities are unable to, and do not, maintain them. Usually maintenance costs are relatively low compared to the initial investment. Since the State has expended over \$60 million for erosion structures themselves, the annual maintenance costs are likely to be more cost effective than letting the structures decay and eventually fail.

## RELOCATION OPTIONS

Relocation has been an inevitable requirement for some residents living near the Matanuska River, as well as many other Alaskans who have chosen to live adjacent to rivers and the coast. At least four families have been forced to relocate to avoid the erosive effect of the Matanuska River within the past three years. Relocation, the disruption of homes, has occurred and may continue to occur.

Alaska Statute 38.05.870 authorizes the Commissioner of the Alaska Department of Natural Resources to make grants of State land available to people and municipal corporations to replace land that is rendered unusable by a natural disaster but specifically for the purposes for which it was used before the disaster. This statute was used after the 1964 earthquake and is still available and on the books. There are no regulations. Because the law has been little used, there are very few guidelines to evaluate precisely how it might be applied in the case of the Matanuska River. The specific provisions will be developed through the written decision of the director of the Division of Land for each occurrence. A sample of a DRAFT director's decision related to the current erosion in the Matanuska River near Circle View Subdivision is included as attachment #6.

In this case, the director outlines the purpose and background of the proposed land grant program and sets forth his decision on the process and scope of the proposed land grants. The notice of the preliminary and final decision is published with appropriate time allotted for public comment and possible modification. Once the director's decision is finalized the process is established for the adjudication of applications of a land grant. The application filing period will be publicly noticed.

Alaska Statute 38.05.870 provides only for the replacement of the land rendered unusable by natural disaster, not developments thereon. The State may grant land of equal size or value or equal utility. Currently the State has existing residential subdivision land in the vicinity of Palmer which is available as grant land.

The Matanuska-Susitna Borough does currently contain a large inventory of vacant private subdivided land that is improved to varying degrees. If there were a way to make private property available for an exchange program, and an equitable application process established, then the landowner may have a better chance of mitigating the loss.

Another problem to relocation is that even if one were to make an acceptable exchange of property one must then face the formidable cost of the actual "relocation." Here, the complications expand almost without limit. Each case is different, other institutions such as banks and housing authorities become involved, insurance requirements are called into question, and evaluations must be made on such questions as reconstruction versus relocation costs.

A relocation program, with limitations to homes determined to be in imminent threat of loss due to erosion, coupled with a formula for funding developed by the Borough to provide some additional funding in addition to flood insurance coverage should be given further consideration by lenders, the Borough, local property owners, and agencies involved with lending or insurance.

Another program that should be considered is the Seconds for Health and Safety Repairs. This program provides financing to eligible borrowers who have a mortgage with AHFC (as do a majority of the Circle View and adjacent subdivision homeowners) and need to improve their properties to meet health and safety requirements relating to water, waste water, and structural integrity. Borrowers



must demonstrate an ability to repay this second loan. However, this concept should be explored further to see if a program specific to this erosion peril, perhaps coupled with the Disaster Relief Fund loan to the Matanuska/Susitna Borough, could be used to develop a viable relocation program.

In the case of the Circle View erosion problem, the State of Alaska has made available a loan of \$500,000 that can be used for some of these expenses. Presumably, if the residence is relocated, the new property can be used to secure the loan proceeds used to accomplish the relocation. The amount loaned becomes an obligation of the property owner to repay. It is readily apparent that the funds available will definitely not meet the entire costs of the relocation for the entire subdivision, and there will have to be a criterion and process established to distribute what funds are available. In the case of the Circle View Subdivision, only a few homes are in immediate risk with the possible threat to the other homes farther in the future. If a similar program were to be made available to the entire region of the Matanuska River that might be affected by erosion, it would be very costly and would probably find very limited acceptance by those affected.

If relocation is to be considered an option to address the potential erosion of private property along the entire Matanuska River, two of the major considerations will be the availability of land and money.

Relocation is an option that is more palatable to individuals who have lost their property rather than to property owners whose property is currently threatened by destruction. Homeowners that live on property that is satisfactory to them will usually prefer their property to be protected rather than replaced.

#### **FEDERAL FLOOD INSURANCE PROGRAM**

The Federal Flood Insurance Program can provide some assistance to policy holders within the Circle View Subdivision whose homes are currently destroyed or are in eminent danger of being destroyed. Flood insurance only provides, under certain qualifying criteria, for the relocation or demolition of insured structures subject to eminent collapse.

## Background:

The National Flood Insurance Program (NFIP) was created in 1968 to provide otherwise unobtainable flood insurance to flood-prone properties. In return, participating communities were to reduce future flood losses by, among other things, guiding new development out of hazard-prone flood plain areas. In this way, lives, money, and river and coastal ecosystems would be saved. The level of success this program has reached in obtaining these goals has been limited. The Alaska Department of Community and Regional Affairs' Municipal and Regional Assistance Division coordinates the federal flood insurance program aspects of flood plain management in Alaska.

In an attempt to improve the current federal program, a new National Flood Insurance, Mitigation, and Erosion Management Act of 1991 was introduced in Congress this year. The House passed the bill, as H. R. 1236, on May 1, 1991 by a vote of 388 to 18. The Senate is currently considering a similar bill, S. 1650. Should this Act be approved by the Congress and the President, major changes will take place in the Federal Flood Insurance Program. Attachment #7 is a summary of H. R. 1236 as passed by the House on May 1, 1991. Attachment #8 is a summary of S. 1650 as compiled by the National Wildlife Federation.

Although the Department of Community and Regional Affairs has provided extensive support for the National Flood Insurance Program on the Matanuska River, there are still misconceptions by property owners about the advisability of obtaining this insurance. Some of the benefits of the current program includes:

1. Reimbursement for buildings destroyed by the Matanuska River Erosion. Current interpretation of the law is that the erosion is caused by flooding of the Matanuska River, thus making the buildings eligible.

- A. Does not cover the loss of the land the building was on.

- B. Any walled and roofed structure is eligible for insurance coverage. Residential policy limits of \$185,000, or value of structure, or mortgage amount.

2. National Flood Insurance Program policy holders must have coverage continuous from date of purchase of property, or for two years continuously immediately preceding date of loss to be eligible for a relocation/demolition claim.
  - A. Structures must be condemned by a State or local authority or by court order. See Governor Hickel's letter to Representative Ron Larson (Attachment #9).
  - B. Relocation pays 40% of the value of the building (or actual cost of relocation, whichever is less).
  - C. Demolition pays 40% upon certification of condemnation, 60% upon demolition, 10% for cost of demolition (or actual cost whichever is less).
  - D. Value of the structure will be based on the lesser of:
    - 1) Comparable structure
    - 2) Price paid plus improvements, adjusted for inflation
    - 3) Value under NFIP policy (ACV or replacement cost)

In order for the National Flood Insurance Program to be successful in reducing property loss from flood and erosion disasters, acceptable indications that this type of danger exists must be made available, and property owners must participate in the program.

## **LAND MANAGEMENT**

Land Use Development Permits: The Matanuska-Susitna Borough land use code (Title 17) currently requires permits be issued for all development only within designated flood hazard areas. This permit requirement should be extended to all development within the area designated as the Knik-Matanuska River Area Meriting Special Attention (AMSA) under the Matanuska/Susitna Borough Coastal Management Plan. Thus, future developers in erosion prone areas may at least be notified of potential hazards through the local government's existing permitting program.

Subdivision/Platting Requirements: All subdivision and platting requirements associated with land use rest with the local



government. Future development within, or in the proximity of the Matanuska River should undergo geotechnical hazards engineering review, as currently required by the MSB Coastal Plan. Also, new Drainage and Erosion Standards need to be developed by the MSB for incorporation in Title 16 Platting code.

To bring the current plat maps into conformance with existing Matanuska-Susitna Borough Title 17 requirements, the Borough needs to revise Circle View Estate and Stampede Estates plats to indicate the 150 foot setback line from the current erosion bluff of the Matanuska River, and lots that may not currently meet the 20,000 square foot of contiguous usable area, 40,000 totals are code requirements.

Building Codes: No building codes currently exist within the State and Matanuska-Susitna Borough for residential development. If future residential construction is to take place adjacent to the Matanuska River, building codes that limit the use of basements and other nonrelocatable structures should be considered. Also, an analysis of erosion control measures should be made when plans for development in erosion prone areas are proposed. Erosion control should be required by the Borough when needed for proper development. Also, the Uniform Building Code for Abatement of Hazardous Structures, if adopted by the Borough, would meet the local condemnation requirements needed to satisfy the erosion insurance claim requirement of the National Flood Insurance Program.

Zoning is the primary tool used by local governments to protect the public, health, safety and welfare of the community in addition to promoting the orderly growth of the community. Zoning, through the designation of land use categories is also a means used to protect and enhance property values by separating incompatible land uses and restricting development within hazardous areas. It is the latter characteristic of zoning that is relevant to the flood and erosion hazards facing many Alaskan communities.

In order for a zoning ordinance to be effective (and legal) it must be based upon a comprehensive plan. Within the comprehensive planning process and inventory of existing conditions, e.g., land uses, hazard areas, etc., and forecasts of the future, e.g., growth, resource demand, population, etc., are made. During this process areas that may not be appropriate for development are identified. Information

that is needed includes maps of erosion areas with erosion rates identified, flood mapping, drainage patterns, soil characteristics, and location and type of waterbodies. The information is then analyzed to identify and map potential flood and erosion areas. After mapping and analysis, alternatives are considered for addressing them and a preferred alternative is selected. A zoning ordinance is the typical method used to address development within potential hazard areas.

Although some of the above mentioned planning processes have been attempted for the area of the Matanuska River, the amount of information currently available about the threat of flooding and erosion along the river is limited for making accurate determinations as to the severity of the threat. It is obvious that the river can flood and that erosion along the banks does happen. The difficulty is in obtaining adequate information for analyzing the full extent and location of future flood and erosion damage. If this information would be made available, then future problems such as the Circle View Subdivision situation could probably be avoided.

The U. S. Geological Survey in cooperation with the State of Alaska could undertake a mapping study of the Matanuska River. Automated digital photogrammetry and Geographic Information System (GIS) techniques could be used to map the locations of channels, banks, islands, vegetation, and geologic features. Digital analysis of historic maps, aerial photography, and engineering surveys would provide a more rapid and accurate measure of channel location. The historic rates of channel migration could be used to predict probable future limits of channel migration and to classify land of the Matanuska River according to relative hazard from erosion and sedimentation. This analysis could be used to predict future locations of bank erosion, using techniques that result in a channel-probability map. A less expensive alternative would be maps generated by interpreting historic and current aerial photos and calculating an approximate annual average erosion rate.

In addition to the above information, hydraulic characteristics of seasonal streamflow and the magnitude and frequency of floods would be analyzed to determine the effects on bank stability and channel migration. Flood magnitude needs to be reevaluated in the lower reaches where major channel changes have caused the Matanuska River to shift into the Knik River.

Identification of areas prone to erosion and deposition and a channel-probability map would provide planners and engineers useful tools to avoid potential problem areas and aid in the design of an effective zoning ordinance.

Recently the U. S. G. S. performed a study similar to the one described above on the Lower Copper Delta. The Geomorphology of the Lower Copper Delta studies an area about 180 square miles and predicts channel migration within the riverbed. The study cost approximately \$300,000 in federal and \$300,000 in state funds. Much less expensive maps can be generated by interpreting historic and current aerial photos and calculating an approximate annual average erosion rate.

Revise and re-issue the Governor's Administrative Order on public development in flood and erosion prone areas: The Task Force supports the Department of Community and Regional Affairs ongoing effort to revise and re-issue "Governors's Administrative Order No. 46 State Coordination and Participation with the Federal Insurance Administration", (signed January 24, 1978, by then Governor Hammond). Federal regulations (CFR 60.12) require the State to comply with minimum flood plain management criteria. Because of the lapse in the Administrative order, Alaska is no longer in compliance.

Continued noncompliance could jeopardize the State's standing in the National Flood Insurance Program. Suspension actions could result in loss of federal funding, including disaster assistance, flood insurance and federal secured loans and grants in flood plains.

## CONCLUSION

### OBSERVATIONS

The following observations were made by the task force:

1. Engineering solutions are possible to solve erosion problems along the Matanuska River. There is difference of opinion within the task force as to the most cost effective engineering solution for controlling erosion, the difficulties of implementing a solution, whether the benefits justify the costs (including environmental impacts), and liabilities of construction. Additional study by technical experts would be necessary before any engineering solution could be recommended.

2. The Task Force discussed a great many topics during our meetings. In many instances there were disagreements over the pertinence and/or effectiveness of some of the options presented. There did seem to be one point that did receive unanimous agreement. The Task Force feels that the current State policy is vague and confusing. The situation at the Circle View subdivision has shown that many people and agencies do not understand the role the State can and will play in preparing for and reacting to erosion situations. Erosion along Alaskan shores and riverbanks will continue to present a problem in the future. The Task Force believes that a well-defined State policy detailing the efforts the State will make in planning for and reacting to erosion problems would provide a better focus on living with this problem.

### SUMMARY OF RECOMMENDATIONS

The following is a brief abstract of the recommendations this task force believes that are worth consideration in averting future erosion problems throughout the State of Alaska. The Task Force realizes that many of these items will require additional study by additional individuals and organizations for complete implementation. Some of these recommendations may be too general to actually fit the term of recommendation, however, the Task Force feels this term is the most appropriate to convey the importance of these topics.



1. Clearly define the state's policy or position regarding erosion hazard, including, specifically who is responsible for erosion control for structures, what assistance is available to protect public or private properties, and under what conditions.
2. Designate a single point of contact to:
  - A) assist communities throughout the state
  - B) provide technical support and services to other agencies
  - C) implement the State's erosion policy
3. Require full disclosure in writing of known levels of erosion threats to purchasers, lenders, and renters of properties in or near erosion hazard areas. Many individuals are not aware of the erosion potential of the surrounding river systems. Disclosure would prevent many individuals from blindly buying into a problem, and lessen the prospect of the State, borough, or city from being held liable for erosion damage that was not forewarned. Disclosure should include in the plat notes any extended setback requirements because of erosion.

A coordination of this recommendation through the Alaska Housing Finance Corporation requiring this type of disclosure before State funding could be used for financing would provide this type of disclosure to individuals. Alaska Housing Finance Corporation and other State loan programs should be prohibited from making, increasing, renewing, or extending loans in erosion prone areas.

4. Develop State disaster loan program similar to federal disaster loan programs made available through the Small Business Administration. This program could be used at the option of the governor upon State disaster declarations. The actual creation of such a program would require additional study and agency coordination to determine the mechanics of the program and its administration.

5. Operate an "education campaign" to inform local officials, developers, and other interested parties of the state's policy regarding erosion hazard area management and the severity of the erosion risk along many of the Alaskan riverine and coastal areas.

6. Design a standard benefit cost analysis to be applied prior to release of any State erosion response funds.

7. Require design and construction review for all State funded erosion control structures by a state authorized engineer. Poorly designed and constructed erosion control structures have been installed by private contractors (with State funding) which have not met any design criteria applied to the specific area.

8. Identify erosion hazard areas and erosion rates in developed areas and areas of high development potential.

The State and Matanuska-Susitna Borough should adopt minimum standards and definitions for riverine (and coastal erosion) hazards and when delineating shorelines subject to erosion. These should include areas subject to imminent erosion hazards (within 10 years, E-10 zone), intermediate hazard (within 30 years, E-30), and long-term hazard (within 60 years, E-60 zone).

The physical location of erosion zones is dynamic. Therefore zone delineations should be based on a reference point (such as an erosion scarp, bluff, or vegetation line) that is a suitable indicator for determining erosion zones (E-zones). The location of this reference point moves as erosion takes place, and this fact must be incorporated in E-zone delineation.

9. Require the adoption of appropriate land use ordinances for communities adjacent to erosion hazard areas. Authority to identify in geophysical hazard areas in the coastal zone is given to coastal districts within the Alaska Coastal Management Program. See Alaska Administrative Code Title 6, chapter 80.050.

10. Create building standards for buildings on or near erosion prone areas. Also, an analysis of erosion control measures

should be made when plans for development in erosion prone areas are proposed. Erosion control should be required by the local government when needed for proper development.

11. Assistance should be provided to other State agencies in the siting of public facilities.

12. Research the status and maintenance needs of erosion control structures throughout the state and provide funding for maintenance where it is not feasible for the local community to uphold maintenance costs.

13. Require that communities which receive State funds for erosion hazards present some type of document or land use regulation(s) indicating they are taking measures to prevent future losses and development in high risk erosion areas.

Include a stipulation for approval of State Disaster Relief Act assistance pertaining to flooding and erosion response. This stipulation would require community adoption and implementation of flood and erosion mitigation actions. Appropriate mitigation actions (i.e., loss reduction measures) would be specific for each disaster situation.

14. Revise and reinstate by the Governor Administrative Order #46 for flood and erosion damage reduction standards for State owned buildings, structures and State land disposals.

15. Adopt flood hazard legislation that would encourage local governments to adopt and enforce flood and erosion management ordinances (amend Alaska Statutes Title 29, Chapter 40 Planning, Platting and Land Use Regulation).

16. Place a liability standard or limit for the local government and State by defining a design standard for the construction of erosion protective measures.

MEMORANDUM

**Karabelnikoff & Associates**  
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November 23, 1991

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To: The Governor's Task Force on the  
Matanuska River Long Term Erosion Solutions

From: Mary Moline Karabelnikoff and  
Don Karabelnikoff, CRE  
Real Estate Counselor

We understand you are solving the problem posed by the effects of erosion along the shores of the lower Matanuska River. We hope you are skillful at defining the problems, identifying alternative solutions, evaluating alternatives, and making recommendations to the Governor.

Please consider this input. Since our family is among the first real casualties that created public awareness about the disaster, our perspective is unique.

Many people have formed opinions or made comments based on ignorance or misinformation. We hope you get the facts to make logical decisions.

1. BACKGROUND

Our research shows the Matanuska River has a documented tendency to erode the river banks and change its course. This information was not readily available, despite inquiries at the local planning department.

- 1.1. The Matanuska Susitna Borough land use policies address land development. The Borough Platting Authority permitted development in the neighborhood known as Circle View Estates, but that was a tragic mistake. The decision-makers did not have vital information about the river. If the diligent members of the platting board fully understood the hazard, they would not have approved the plat. We believe carelessness, incapacity, or neglect created a situation that allowed and encouraged people to build homes in a dangerous location. The land should be restricted to use as farmland or open space.
- 1.2. About a dozen private homes and many lots once worth more than a million dollars are now valueless and unmarketable because of recent public awareness of the Matanuska River.
- 1.3. The river is almost certain to continue the erosion cycle that destroyed one house and rendered two homes uninhabitable. Others are in obvious jeopardy. The river can erode 100 feet in a day. Last July, we saw erosion that dropped the land twenty feet while it moved across the yard at the rate of four feet per hour during flood stage.

The Matanuska river threatens land on both sides of the river plus substantial buildings and other man-made improvements, including residential neighborhoods, farms, and the State's Plant Materials Center.

## 2. OBSERVATIONS

The items to consider are first, the immediate financial impacts, and second, the long-term prospects.

- 2.1. Financial Impact: The unfortunate process of developing a neighborhood that is affected by erosion causes financial losses to individual property owners, lenders, government agencies, and insurance companies -- everyone is affected one way or another.
  - 2.1.1. The homeowners are unable to sell their houses. Regular Homeowner's insurance does not cover these losses. Only a few people have flood insurance; it covers only part of the loss (not the land or site improvements like wells, sewer systems, decks, sidewalks, landscaping, driveways, or other property outside the walls of the home). The lenders, including Alaska Housing Finance Corporation, hold promissory notes where the homeowner's debt continues even after the property is destroyed. Who should bear the loss, the owner, the lender, or someone else?
  - 2.1.2. The Assessed value of land and buildings in the neighborhood reflects the precipitous drop in value of the property. This reduces property tax revenues while the borough continues to provide the normal level of service and incurs additional costs tied to the erosion problem. The expense will add up every year, becoming a significant hidden cost in time.
  - 2.1.3. The State Plant Materials Center is several thousand feet downstream from Circle View. The State has a substantial investment in land, plants, materials, and buildings that are also threatened by the river.
  - 2.1.4. Private and public landowners incur a financial loss because they own real estate that has depreciated; it is less usable and marketable than it was before public awareness of the erosion issue. Is this merely a personal problem?
- 2.2. Future development: The vacant land threatened by erosion includes many acres, lots, and homesites. Private property owners may want to build homes or otherwise develop the land in the future. This same situation is occurring in the Turnagain Earthquake Slide Area in west Anchorage. With the passage of a few decades, there is a tendency for private property owners to want to make use of their land. The issue needs attention.



3. RECOMMENDATIONS -- Consider these items:

- 3.1. Revise Land Use Regulations, Public Policy, and the process of approving land development to reduce the risk of permitting land development in hazardous areas. The development of Circle View, the Plant Materials Center, and other public and private projects should not have occurred.

Review the rules, policies, and procedures to ensure nobody makes a similar mistake again. Be sure government officials are responsible for making informed decisions. Current law says government has the power to make and enforce land use regulations, but government officials have no duty to enforce them! This seems ludicrous; it fosters an uncaring attitude.

- 3.2. Take steps to halt further damage to private and public property along the riverbanks IF the benefits justify the cost.

3.2.1. Consider a channelization program; mine gravel from the riverbed and sell it in the marketplace to recover the cost of the operation. This form of river control could stop or reduce erosion at minimal public expense.

3.2.2. Consider installing riprap, levees or other structures to protect the riverbank if they are feasible. (Benefits must equal or exceed cost of construction and maintenance operations.)

- 3.3. Where public or private property is damaged, reimburse the damaged party to the extent that other remedies, including insurance, do not offset the loss.

3.3.1. Investigate alternative ways to handle the debt affecting the properties; Alaska Housing Finance Corporation has a substantial interest in many homes in Circle View and other riverside locations.

- 3.4. Where public or private property is threatened, develop a relocation program along the lines of the Federal Uniform Relocation Act implemented by the Alaska Department of Transportation and Public Facilities where private property is acquired for public use (mainly in highway projects). This means the government acquires land & improvements and pays to relocate personal property. Further, the affected person has the opportunity to buy back the improvements (houses) and move them to another site.

3.4.1. Consider a land exchange program in lieu of purchasing threatened land because it may sidestep complications with land values and funding. DNR may have current programs or policies that are relevant.

CONCLUSION -- Two areas need attention:

- (1) redress (set right) the losses that have already occurred, partly due to the unfortunate and misleading government approvals that induced people to make decisions that caused financial hardship, and
- (2) stop the problem from becoming any worse along the shores of the Matanuska River and other similar rivers throughout Alaska.

February 10, 1992

TO: Matanuska Susitna Borough  
Don Moore, Manager

FROM: Ron Thornsley

RE: Recommendations for the loan program

I. That the Borough Assembly request from Peratrovich, Nottingham and Drage, Inc. the determination from an engineering standpoint, which 7 or 8 homes are in imminent danger; excluding Witts and Molines. This is the criteria that would determine who is eligible for loans from the \$500,000.00 state loan.

II. The Borough Finance Department through Desi Mayo has recommended that National Bank of Alaska set up an escrow account to receive the loan payments, with the borrower being responsible for the annual escrow fee of approximately \$50.00 per year. The bank would then disperse to the Borough to make the payment to the state. The interest rate to be 1%, the same as the interest rate the borough will pay the state.

III. That National Bank of Alaska Loan Department be contacted to see if they would be willing to assist in determining the qualifications of the borrowers.

IV. If and when loans are determined and approved, that no moneys be released until such time as all efforts and time have been expended toward an effort to mitigate the erosion by installing jetties or bank armament; or until erosion begins again this coming spring/summer.

V. That the Borough Assembly take whatever action is necessary to give the Erosion Control District limited power of condemnation to meet the federal flood insurance specifications. Also, that the borough have a qualified engineering firm do the actual condemnation.

Attachment #2

## Alaska Task Force Erosion Control of the Matanuska River

Task Force On Erosion Control Problems of the Matanuska River, the Task Force assigned the Alaska Department of Transportation and Public Facilities, and the U. S. Army Corps of Engineers were to draft a general outline of the possible engineering solutions, with a general discussion of the practicability of these solutions. To come up with an engineering solution we must first look at history of the erosion control problem that exists along the Matanuska River's banks.

The COE's report in summary found the following:

*The District Engineer finds that bank erosion and flooding have occurred along the Matanuska River below Bodenbug Butte; and that seasonal flooding..... Both areas studied are rural lands with woods, pastures, and scattered farmlands. Because of marginal economics, farming has decreased or been abandoned and only scattered homesites remain occupied.*

*The District Engineer concludes that economic justification does not exist for structural solutions to flooding or bank erosion in either area studied; and that local interests should avail themselves of technical information regarding non-structural alternatives for wise management of the flood plain.*

### Section IV

#### 23. General

*Matanuska River rises in the glacier fields of the Chugach Mountains and flows westerly about 68 miles to empty into the head of Cook Inlet through Knik Arm. In its upper reaches the channel of the Matanuska River is confined within high banks, but, in its downstream reaches the stream meanders over a bed more than a mile in width. Soils in the lower limits of the river are loosely consolidated alluvial gravel and silt. Banks of the river are low, readily erode, and course changes are common. The effective drainage area considered herein is 2,070 square miles. Recorded flows in the lower reaches (at the Old Glenn Highway erosion near Palmer) range from 300 to 24,000 cubic feet per second. However, maximum discharge in the lower reaches during flood flow is estimated at 40,000 cubic feet per second, which is out of bank conditions.*

#### 24. Flood Problems and Local Desires.

*Flooding of the Matanuska River in the Bodenbug Loop area was emphasized at a meeting held in Palmer 27 February 1964 to discuss the feasibility of flood control on the Knik River. As a result of the interest expressed, a subsequent reconnaissance was conducted relative to this specific area. Minor flooding have occurred during the fall of 1957, 1949, 1967, and in August 1971.*

*During the later two periods Corps observers were in the field to determine cause and extent of high waters. The following is an analysis of the problem. The Matanuska and Knik Rivers flow out of high mountain ranges, onto the floor of the broad flat Matanuska Valley, across which they flow to discharge into the head of the Knik Arm and Cook Inlet. At their mouths, the two rivers have converged to a point where*

they are separated by only 1/4 mile of marsh land and swampy ground. Lower limits of the rivers are under tidal influence and slope of the delta is so flat that tidal backwaters are observed to the study area. The locale reviewed herein is triangular in shape. It extends two miles above the river confluence to where the two rivers are separated by 2 1/2 to 3 miles of delta land. Elevation of farmland at this point averages 115 MSL. Bed elevation of Matanuska River averages 95 feet, whereas the bed of the Knik River averages 80 feet. These elevations establish a relative drainage from Matanuska River towards Knik River obstructed only by the shallow bank heights (10-25 feet) of the intervening farmlands. Subsurface percolation through the porous glacial till, and all over-bank flows, have established a dendritic drainage pattern across these lowlands, leading into the Knik River. It is this drainage and erosion preference from which local residents seek relief. Specific problem areas are defined below.

- a. Matanuska River over the years gradually washed away the bank adjacent to a small acreage of farmland near Bodenburg Butte about 4 miles (7 1/2 miles by road) south of Palmer, Alaska. Since 1916, in the present critical area, this erosion has amounted to about 860 feet or an average of 19 feet per year. During this 55 year period the bench land lost has amounted to 160 acres or 3 acres per year.
- b. The fear has been expressed by local residents that Matanuska River will divert across the total breadth of the Bodenburg Loop area at the southern base of the butte and hence on to join the Knik River above or near the present site of the highway bridge. Such flooding, it is feared, would destroy the agricultural value of the area and would constitute a direct threat to life and personal property of local residents. In recent years, less emphasis has been placed on agricultural values by abandonment of farms and active cultivation. Use of lands for homesites has, however, increased.
- c. Local interests anticipate that the continuing erosion of the left bank of Matanuska River will soon create a new channel and request that the cutting bank be protected, either by bank paving or by the construction of protective groins. A field survey was made to determine relative elevations in the problem area. This survey indicates very little likelihood that the river will breach the existing high ground and endanger major portions of the existing farm area or the main highway as presently anticipated by local interests. The elevations on the left bank west of Bodenburg Butte are high enough to forestall a direct overflow of Matanuska River in this area.

The river bed is approximately 1 mile wide at this location. During the maximum recorded flood, an average depth of 2 feet is all that is required to pass the flow. The river must therefore rise 12 feet above flood stage to threaten property in this way. In general this is considered extremely improbable. However, localized over-bank flows may occur due to riverbed obstructions. This is particularly true and has occurred in the low saddle area one half mile southwest of the butte.

- d. Recent surveys of the area in question have been conducted. Stream gradients, historic and anticipated flood stages, and current drainage patterns have been studied to determine the potential that exists for a major change occurring in the river channel. This office concludes that while some acres will continue to be flooded occasionally, the development of a major channel across the area is not supported by available data. Further, a recent channel change within the bed of the river has shifted major flows to the north bank of the river and away from the erosion area described in paragraph c above.

#### 25. Areas Subject to Flooding.

- a. Lands of 120 acres extent have been cleared in a flood plain area that is historically demonstrated to be subject to frequent flooding by high waters of the Matanuska River. Once cleared, these acres show more plainly the presence of waters during flood stages and give greater emphasis to the flooding conditions. In dry years these acres can be farmed and a partial crop realized.
- b. There are 240 acres additionally subject to only occasional flooding, and then, the extent is limited to well defined channels involving only a small part of the total area. All improvements of value access roads, and personal property within this Bodenbug Butte area are located adjacent to the Bodenbug Loop Road which follows higher ground, and are not within the area of frequent flooding.
- c. In establishing areas involved, 80 acres within the Bodenbug Loop area are subject to frequent flooding by Knik River and to some extent by both rivers. Areas that are threatened by the Knik River are excluded from this analysis since they would be subject to flooding even with complete control of Matanuska River.

#### 23. Improvements considered.



- a. *Training Dike.* The present erosion of the left bank of Matanuska River west of Bodenbug Butte could be controlled by paving, construction of groins or a protective training dike. Paving would require extensive dressing of the present bank and more riprap would be required than for the dike construction from riverbed sand and gravel. Due to the extent of erosion, and deep curvature of the riverbed, it is considered that a straight training dike would be more economical and effective than groins. Besides protecting the bank from erosion, the dike would divert the water to forestall cutting a new channel near the Matanuska Electric Association power line right of way which crosses the river. The proposed training dike is indicated on Plate 4. The dike would be constructed from riverbed gravel with a protective armor or quarry rock. A 2 foot layer of dumped riprap is derived, based upon an estimated maximum current velocity of 16 feet per second. During low water periods, heavy earth moving equipment could be used to construct the dike. Riprap may be quarried from rock formations comprising Bodenbug Butte and hauled to the site by truck. (This site is no longer available) The top width of 10 feet would facilitate initial placement of subsequent maintenance of the dike,
- b. *Overflow Dike.* The present overflow pattern into low lying areas of section 28 and 29, 32 and 33 could be controlled by construction of an overflow dike. Presently, floodwaters of Matanuska River spill over into woodlands at a point approximately 1 mile southwest of McKenley Airstrip. This low-lying area, approximately 4,000 feet wide, lies between a natural rock butte 100 feet in height and a natural bluff line 30 feet in height. Floodwater movement through this gap, and natural ground water percolation have induced a natural dendritic drainage pattern southeasterly toward Knik River. A natural drainage gradient approximating 20 feet per mile extends along this pattern toward Knik River. Present surface overflow through this area could be controlled by construction of an overflow dike. In addition to diverting water, the dike would forestall any possible cutting of a new river channel through an old power line right of way. The proposed overflow dike and old power line location are shown on Plate 4. The dike would be constructed from riverbed sand and gravel with a protective armor of quarry rock available at the south end of the dike section. A 2 foot layer of dumped riprap is based on a need for protection:

from floating debris. During normal low water the construction site is dry and would allow heavy earth moving equipment to be used. The dike has a projected top width of 5 feet, including width of riprap. Heavy maintenance on this dike is not anticipated.

27. Projected Cost Estimate

The following estimates are based on January 1972 (1991) price levels.

- a. *Training Dike.* The following cost estimate is based upon construction of a training dike extending from the point where North Bodenbug Loop turns south to the southwest for a distance of approximately 10,000 feet, as shown on Plate 4. A detailed survey of the river bottom was not made; however, the estimate is believed to be adequate to provide the required protection. Location interest have made no indication of their capability to meet requirements for local contribution.

Description	Quantity	1972
River Gravel	88,000	\$352,000.00
Quarry Rock	39,000	\$585,000.00
<i>Sub Total</i>		<i>\$937,000.00</i>
Engineering and Design		\$155,000.00
Supervision and Administration		\$135,000.00
Contingencies		\$90,000.00
<i>Total Federal Cost</i>		<i>\$1,317,000.00</i>
<i>Non-Federal Costs</i>		
Lands, Easements, Right of Way and Quarry Rights		\$15,000.00
<i>Total Project First Cost</i>		<i>\$1,332,000.00</i>

- b. *Overflow Dike.* The following cost estimate is based upon construction of an overflow dike along the center-line station 60+50 (bluff point) southeasterly 3,500 feet to station 95+50 (small bume). Location of this and construction interest are as reflected for the training dike.

<i>Description</i>	<i>Quantity</i>	<i>1972</i>
<i>Earth Excavation</i>	<i>3,850</i>	<i>\$10,587.50</i>
<i>River Gravel</i>	<i>16,000</i>	<i>\$64,000.00</i>
<i>Finish Grading</i>	<i>3,500</i>	<i>\$1,750.00</i>
<i>Quarry Rock</i>	<i>6,390</i>	<i>\$95,850.00</i>
<i>Subtotal</i>		<i>\$172,187.50</i>
<i>Engineering and Design</i>		<i>\$28,500.00</i>
<i>Supervision and Administration</i>		<i>\$20,000.00</i>
<i>Contingencies</i>		<i>\$20,000.00</i>
<i>Total Federal Cost</i>		<i>\$240,687.50</i>
<i>Lands, Easements, Right of Way and Quarry Rights</i>		<i>\$5,000.00</i>
<i>Total Federal Cost</i>		<i>\$245,687.50</i>

29. *Estimate of Benefits.*

- a. *Benefits to be derived from flood protection, in the case of occasional flooding, would be the difference in value between land subject to flooding and land not subject to flooding. There are 120 acres flooded frequently and 240 acres flooded only occasionally. Land values were established through the coordinated efforts of farm agencies and the local estimator through the coordinated efforts of farm agencies and the local borough tax assessor and are for September 1971. This value, \$325.00 per acre, represents the raw price of land, \$100.00 plus the average cost of land clearing, \$225.00. The lack of comparative land sale records showing net profit per acre discouraged efforts to establish land values by capitalization methods. For the purpose of this report the value of \$325.00 per acre will be used. Land that is flooded frequently is assessed by the local assessor at \$125.00 per acre as the benefit to be gained by flood protection of this area. Land that is flooded only occasionally show an evaluation of \$275.00, leaving a benefit to be gained by flood control of \$50.00 per acre.*
- b. *Annual benefits for increased land values are determine by multiplying the threatened areas in "a" above by the per acre value of flood protection. For 120 acres x \$200.00 per acre + 240 acres x \$50.00 per acre the total value of protecting these acres = \$24,000.00 + \$12,000.00 or \$36,000.00. Annual benefits for land improvement are determined by*

applying a capital recovery factor for 25 years at 5 3/8 percent to the value of protection. This value is  $\$36,000.00 \times 0.0736 = \$2,650.00$ . Annual benefits attributable to an overflow dike which prevents flooding only are estimated to be: increase in land value  $\$2,650.00$ , plus other preventable damages of  $\$1,000.00$  for an annual total benefit of  $\$3,650.00$ .

- c. In addition to prevention of flooding ( $\$3,650.00$  average annual benefit), construction of a training dike would prevent further loss to erosion. On the basis of the estimated 3 acres per year loss, an additional savings of  $3 \times \$325.00$  or  $\$1,000.00$  per year benefit for losses prevented is derived. Total average annual benefit for prevention of a training dike which prevents both flooding and erosion is therefore  $\$4,650.00$ .

30. Economic Justification.

*Training Dike*

Annual Benefits/Annual Costs =	\$4,650.00	\$101,000.00	0.05	to 1	\$1,000.00	\$4,000.00	0.25	to 1
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*Overflow Dike*

Annual Benefits/Annual Costs =	\$3,650.00	\$19,000.00	0.19	to 1	\$1,000.00	\$4,000.00	0.25	to 1
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31. Summary.

- a. The annual cost of a training dike providing flood and erosion protection from the Matanuska River far exceeds the annual benefits realized from such protection.
- b. The major re-channeling of the Matanuska River feared by local interests is not supported by recent surveys, making need for an overflow dike questionable.
- c. Clearing within the flood plain, for agricultural purposes, other than pasture lands, should be discouraged on the grounds that flood protection is not economically justified.
- d. However, should Matanuska River deviate from its present course and form a new confluence with Knik River, localized bank erosion will occur periodically. These isolated cases will call for individual attention and corrective measures.

In January 1974, the Alaska Department of Highways (DOT/PF) reviewed the COE above report and came to the same conclusions.

## Current Evaluation of the Erosion Control Problem at Bodenburg Butte

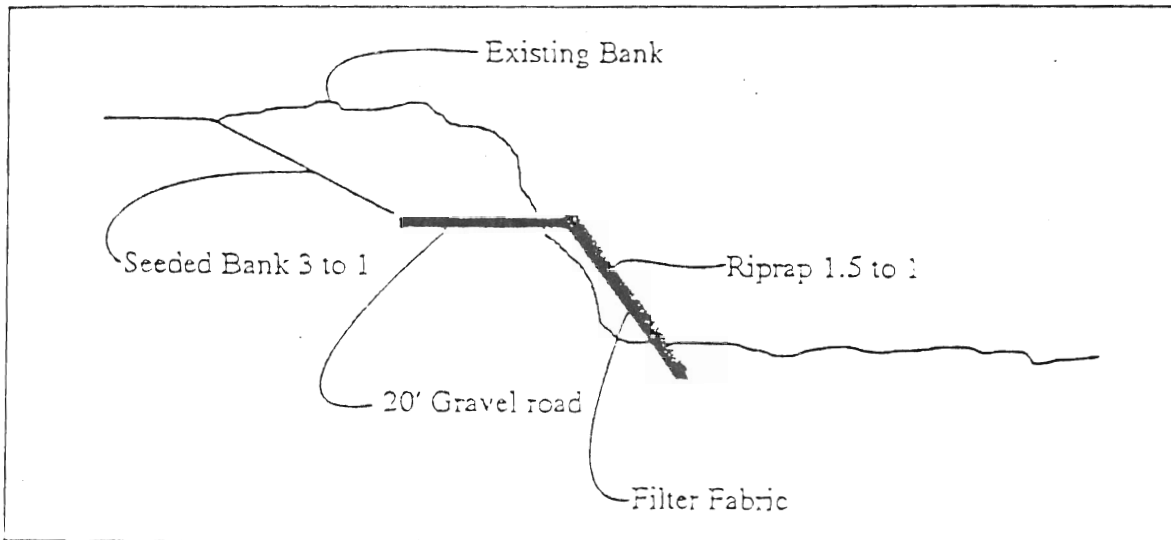
It is the opinion of the COE and the DOT/PF that there is little that has changed since the 1972 report. In this report we have outlined several possible design solutions that have been considered:

### Possible Solution Reviewed

### Discussion

Flexible Revetment, Riprap

Rock Riprap. Dumped rock riprap is the most widely used revetment. Its effectiveness is well established where adequate size, of suitable size gradation, and properly installed. A cost general review of this design and cost analysis was done using the following typical section:



Typical Section

### Assuming:

- Average bank height 20 feet above channel bed elevation
- Scour depth 4 feet below channel bed elevation
- Riprap height 10 feet above channel bed elevation

### Cost Estimate per Linear Foot of Bank Protection

Description	Quantity	Unit	Unit Cost	Cost
Mobilization		L/S		\$101.00
Excavation	19	cu/yds	\$13.00	\$247.00
Land	1	feet	\$100.00	\$100.00
Road	1	foot	\$177.00	\$177.00
Seed	3.9	sq yd	\$1.00	\$3.90
Filter fabric	3.9	sq yd	\$2.50	\$9.75
Riprap	3.32	cu yd	\$40.00	\$132.80
Engineering		L/S		\$100.00
<b>Sub Total</b>				<b>\$871.45</b>
Contingencies				\$130.72
<b>Total Costs per linear foot of protection</b>				<b>\$1,002.17</b>
<b>Total Cost per mile</b>				<b>\$5,291,444.40</b>
<b>Total Cost for 3 miles of protection</b>				<b>\$15,874,333.20</b>

Based on the above cost estimate the estimated capital improvement cost for protection of approximately 3 miles of the Matanuska River would be \$5,291,444.40 per mile or \$15,874,333.20 for this area of the Matanuska River. Plus general maintenance and inspection costs which have not been estimated for this report.

#### Selective Gravel Mining

We felt that this solution had some merit. In general some questions that would need to be answered are: 1. Who will purchase a dredge capable of mining in excess of 276,000 cubic yards of material? 2. Would the costs for transportation and removal of this material be competitive. 3. Is there a market? 4. What are the environmental problems? 5. What methodology can be used? (scrapers, or dredge)

A cost analysis was computed using a mechanical dredge system:

Description	Quantity	Unit	Unit Cost	Cost
Dredge (capital cost)	1	ea	\$10,735,000.00	\$10,735,000.00
Contingencies		L/S		\$2,683,750.00
				\$13,418,750.00
Average Annual Dredge Cost	50	year	\$1,145,000.00	\$57,250,000.00
Annual Repair and Replacement Cost	50	yr	\$1,350,000.00	\$67,500,000.00
Annual Operation	50	yr	\$3,150,000.00	\$157,500,000.00
<b>Total cost for 50 years</b>				<b>\$295,668,750.00</b>



Total yearly cost in 1991 dollars

\$5,913,375.00

Cost per cu/yd of material on bank

\$21.43

A review of the costs of local suppliers show that the estimated \$21.43 cost per cubic yard would be unrealistic for the market forces.

Another methodology which was considered was the use of scrapers to remove the material. It was generally felt that this method would cause excess environmental damage and the costs would be similar because the location where the work would have to be completed in the river.

Dam at the Old Glenn Highway

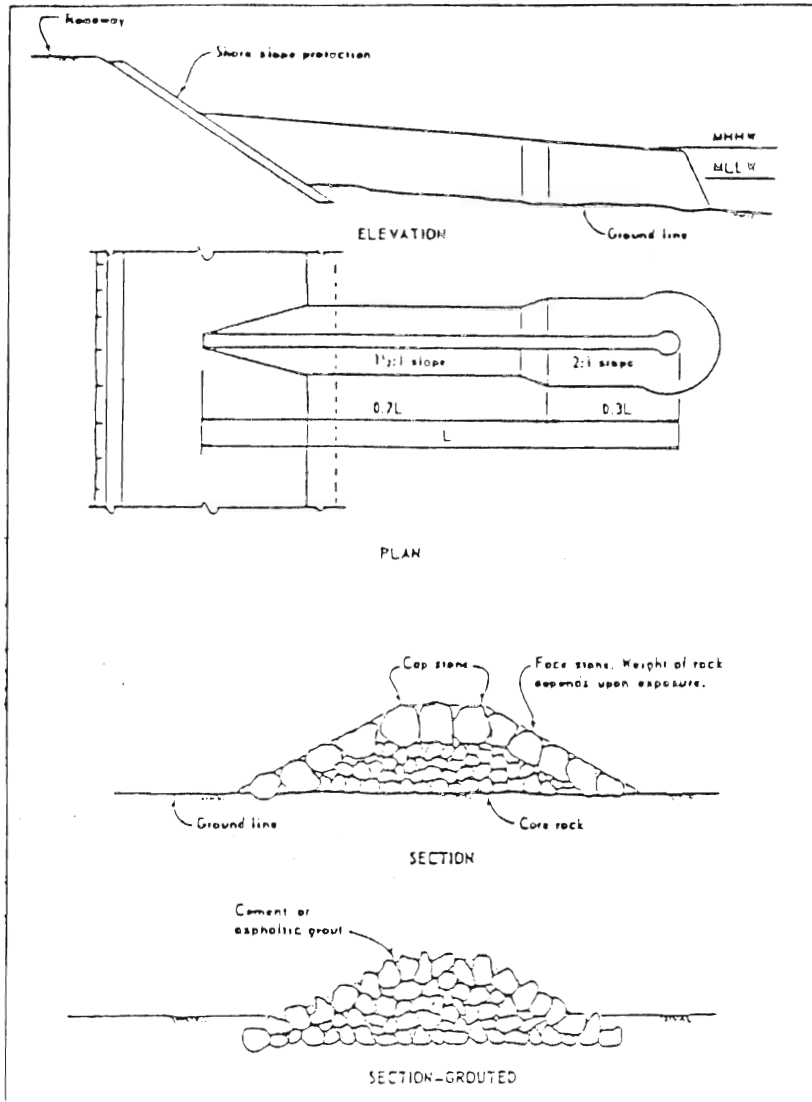
We felt that this solution was not viable because of the general topography of the Matanuska River at the proposed location and because it would fill with bed load material in a very short period. The Matanuska River generates approximately 276,000 cubic yards of material annually.

Re-channeling of the Matanuska River

We felt that this was not either an engineering or an economically sound solution. The costs to maintain this solution (even unless there was an complex dredging operation) would be excessive. Other areas of concern were the environmental costs.

Riprap Spur Dikes

It should be noted that this solution would provide the needed protection. Care must be made in the design to insure that the design solution does not move the problem either up or down stream of the currently affected area. In general it is felt that these structures would not work in this area because of the Matanuska Rivers instability, and the possibility that the spur dikes would encourage the river to move to the opposite bank.



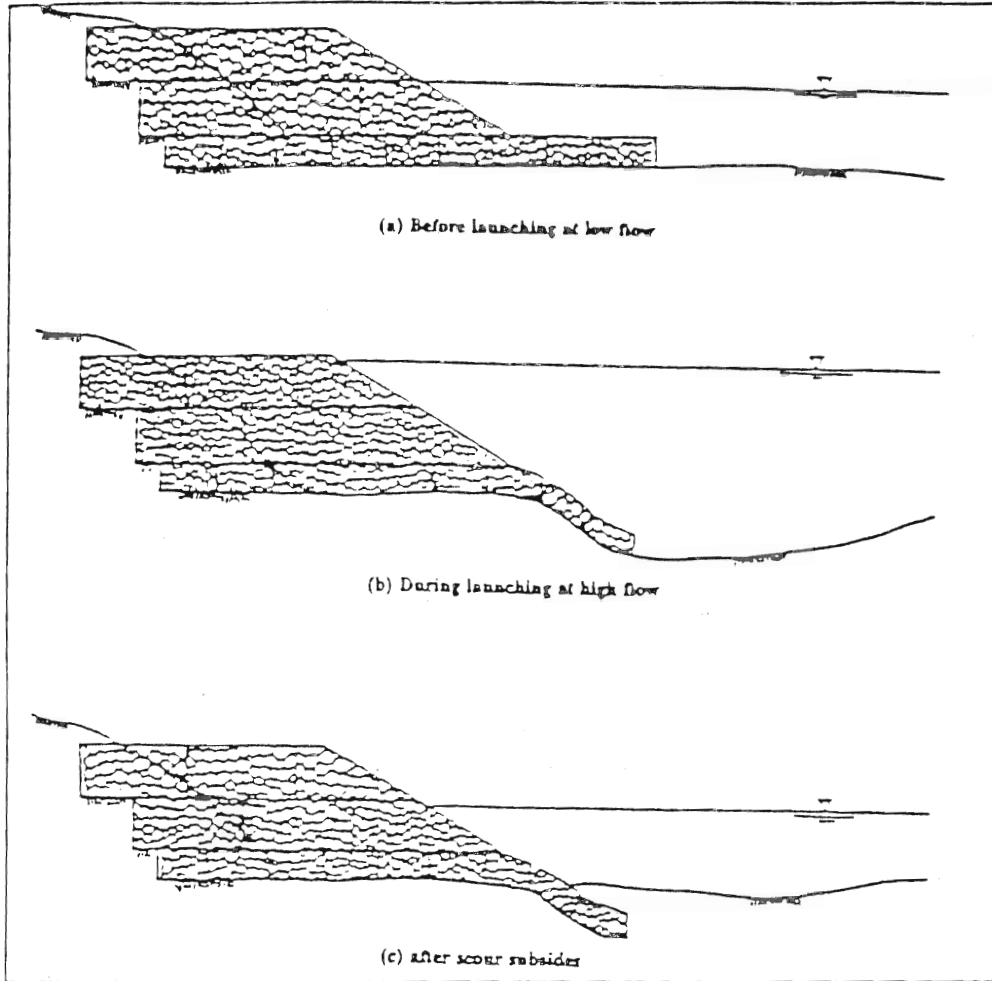
Typical Groin

Broken Concrete

Broken concrete is used in emergencies. A review of the performance of this type of structure is generally unsatisfactory.

Gabions

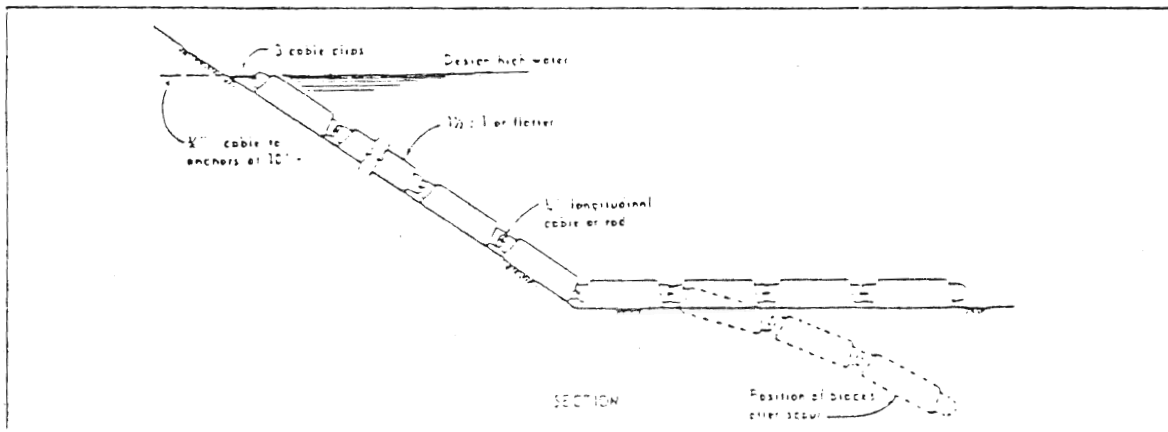
Gabions are in the dimensions of the devices. Gabions rigid structures therefore requiring regular inspection, maintenance, and are subject extremely susceptible to scour failure.

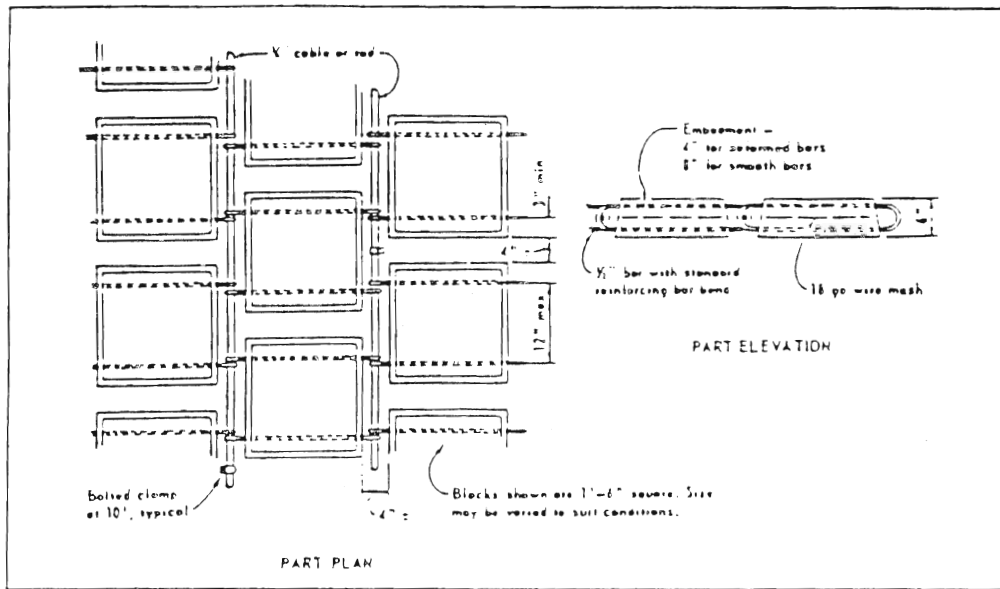


### Gabions

#### Precast Concrete Blocks

Precast concrete blocks such as Armor Teck have a good track record if they are properly designed. In general, they are more costly than a riprap solution unless riprap of size and gradation is not available.



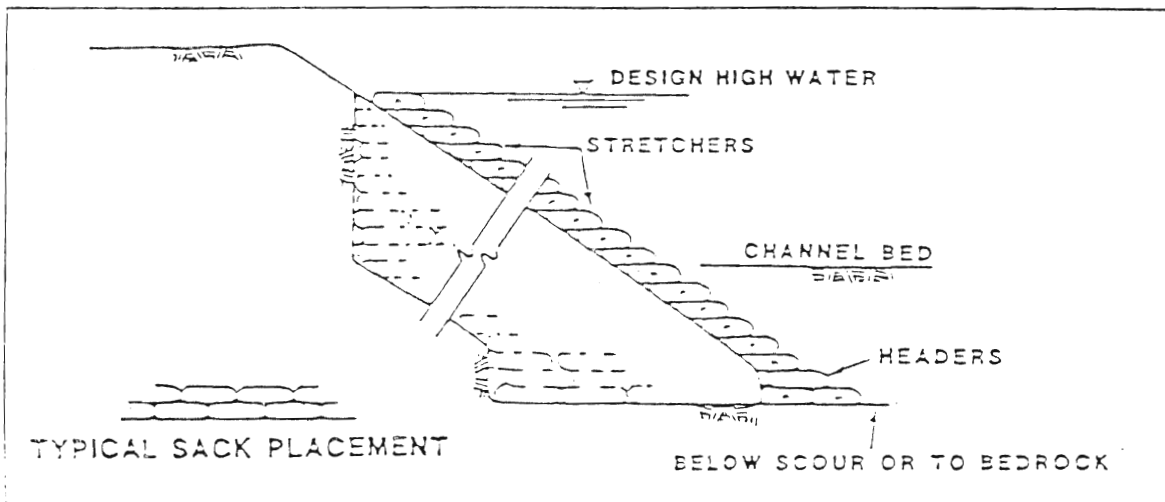


**Rigid Revetments Concrete Pavement**

Well designed concrete is satisfactory providing considerable care insuring that the leading edges and toe are not subject to the river. We have found this solution to be impractical in Alaska. Failure can be catastrophic should it be undermined.

**Sacked Concrete**

This solution is very susceptible to undermining. If any section of the protected area should become undermined the entire structure can fail.



Typical sand-cement bag revetment

**Concrete Grouted Riprap**

Concrete grouted riprap allows use of smaller rock, a lesser thickness, and more latitude in gradation of rock than dumped riprap. This type of structure requires an inspection and maintenance program.

### Concrete filled Fabric Mat

Concrete filled fabric mat is a patented product (Fabriform) consisting of porous, pre-assembled nylon fabric forms that are placed on the surface to be protected and then filled with high strength mortar by injection. Variations of Fibriform and Fabricast consist of nylon bags similarly filled.

### Soil Cement

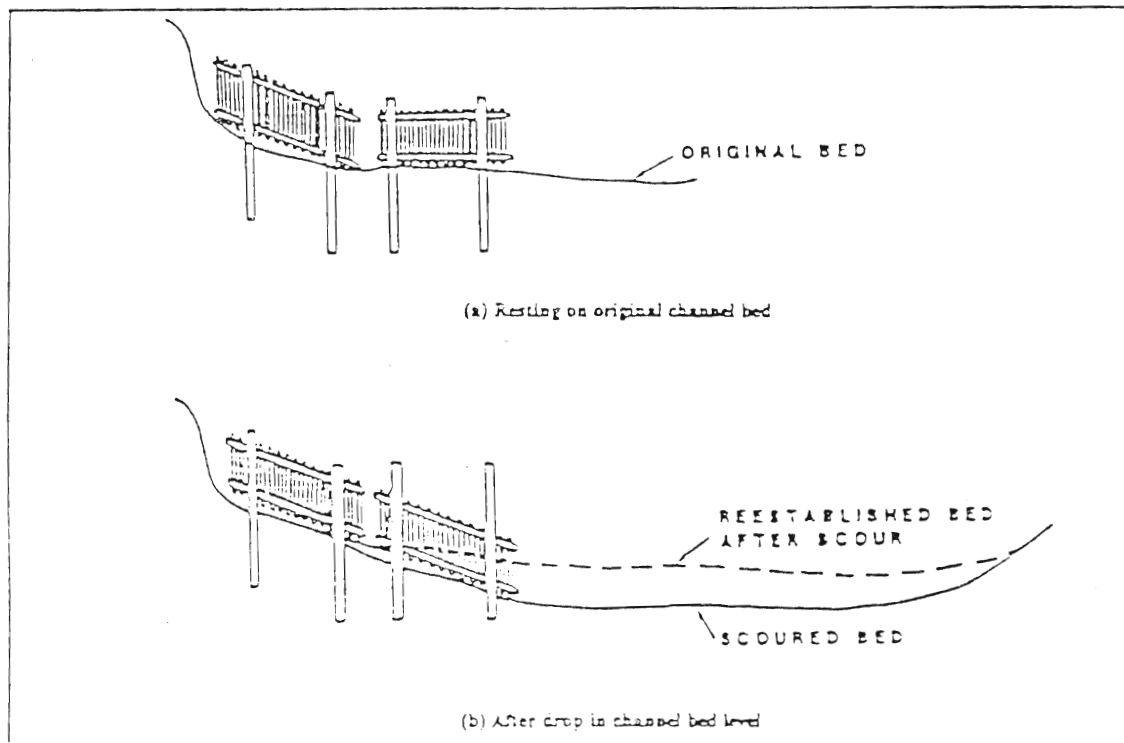
The use of in place soil combined with cement provides a practical alternative. The resulting mixture, soil cement, has been used as bank protection in many areas of the Southwest. To my knowledge we have never used this solution in Alaska.

### Bulkheads

A bulkhead is a steep or vertical wall to support effected area. This solution is extremely expensive. There are several typical design solutions such as the patented Reinforced Earth, sheet piling, and the standard concrete bulkheads.

### Permeable Spurs

A variety of permeable spur designs are also shown to control bank erosion. There are several case histories where failures experienced at a site that is highly unstable with rapid lateral migration, abundant debris, and extreme scour depths.



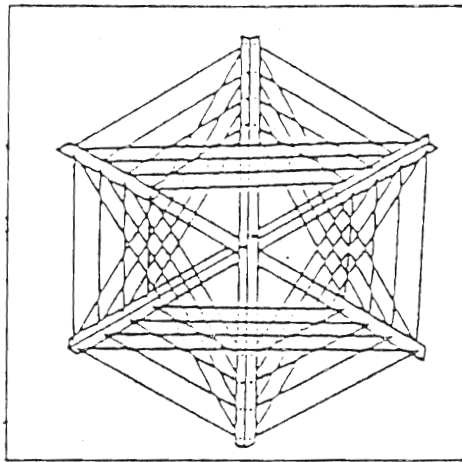
### Henson Spurs

### Sheet pile vanes in the river

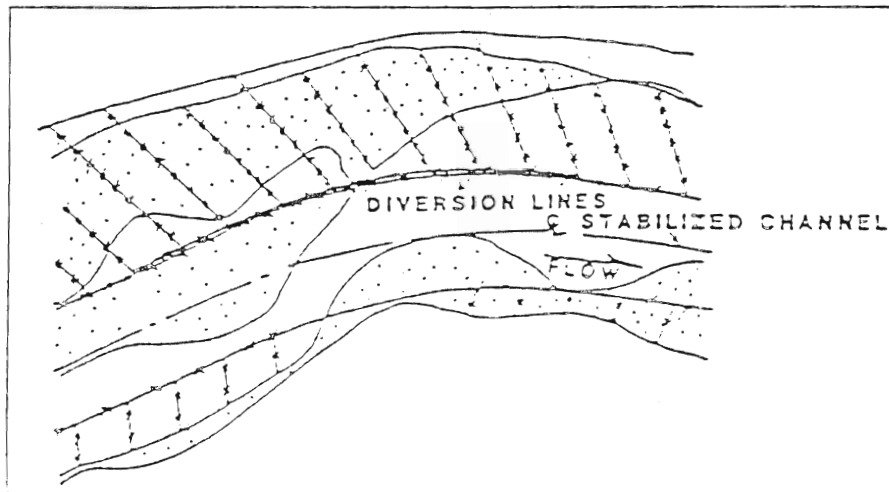
This solution would require the placing of vanes in the river that would interrupt and change the hydraulic forces in the water column. This method has not proven to be effective under conditions such as we have in the Matanuska River. The vanes tend to work in well defined channels. The Matanuska River is generally a braided shallow river in the subject area.

### Retarder Field

This system works well in general in grading rivers. The system has been used only works well in "light debris" conditions.



Typical Jack Unit



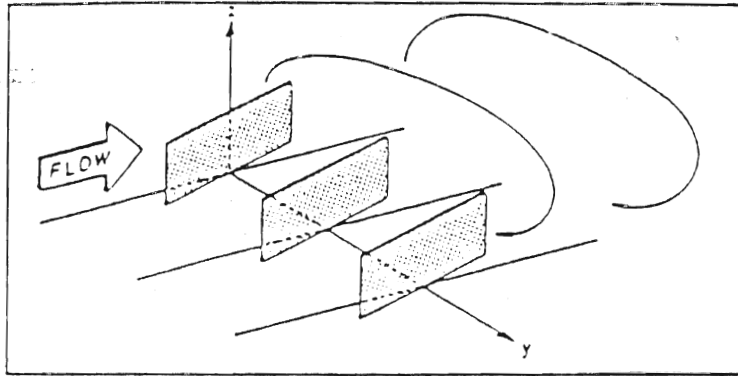
Retarder field schematic

### Vane Dikes "Iowa Vane"

Vane Dikes are a series of low elevation structures designed to guide flow away from the eroding bank line. The structures can be constructed of rock or other erosion resistant material such as sheet pile. The crests are below the design water elevation and

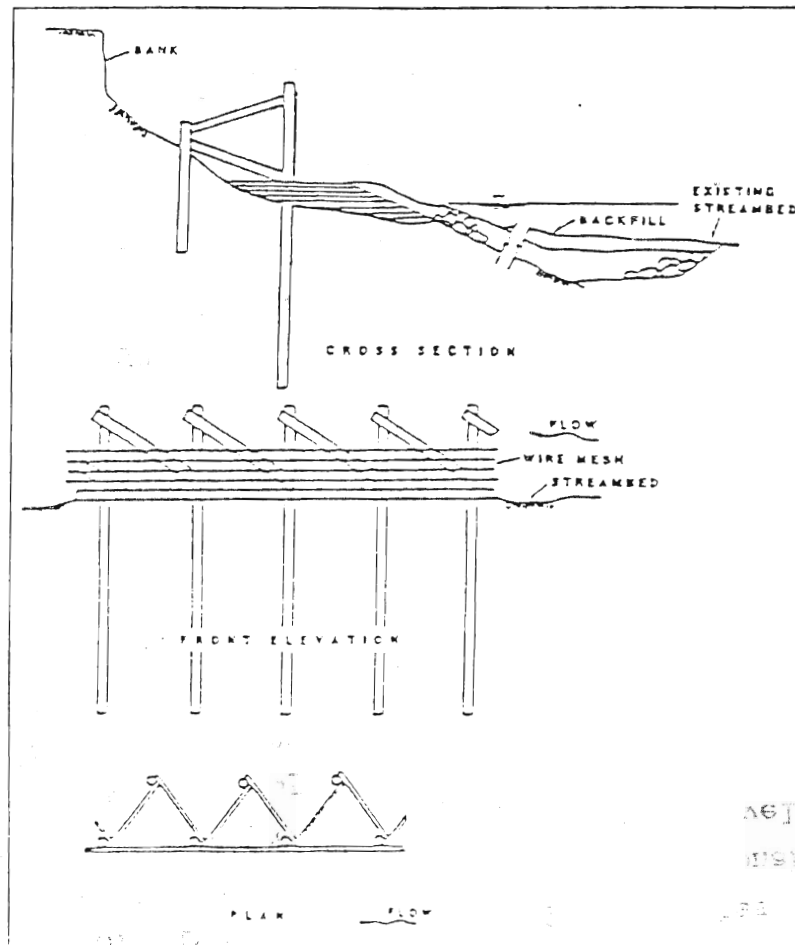


flow can pass over or around the structures, with the main thread of flow directed away from the eroding bank. These structures have a mixed success history.



Perspective of an Iowa Vane layout

Heavy timber pile and wire fence retarder structures



Heavy Timber pile wire fence retarder structures

## PROTOTYPE EROSION ABATEMENT SYSTEM

In July of 1991, the Matanuska-Susitna Borough hired the firm of Peratrovich, Nottingham and Drage to evaluate the erosion in the vicinity of Circle View and Stampede Estates Subdivisions on the Matanuska River and to design a reasonable and hopefully inexpensive bank protection system. PN&D developed a design using a series of short "spur dikes" which would extend approximately 50 feet into the Matanuska River at critical points with a rip rap protected bank extending several hundred feet down stream of the spur dike. The borough applied for and received emergency permits from the various regulatory agencies for the construction of the bank protection system. Construction was unable to proceed however, because the borough did not have the authority under the statutes as a second class borough to undertake erosion control powers to protect private property. The liability risks associated with a borough construction project which would alter the course of a state river was unacceptable to the borough.

In October of 1991, the residents of the area voted to exercise flood and erosion control powers as a service area within the Matanuska-Susitna Borough. With the formation of the service area the borough now has the authority to exercise or construct erosion control measures within the service area. In the mean time, the engineering firm, PN&D, has revised and refined its design of the erosion control system to an even less expensive and more reliable design. If the construction was done during the winter season, the costs would be much lower due to the ability to use gravel fill and more stable access on the frozen river and low water. The only remaining concern is the question of legal liability for the borough to undertake work in the state river.

The borough proposes that the state of Alaska, through its agencies of Department of Natural Resources, Department of

Transportation/Public Facilities, ~~and Department of Fish and Game,~~ join with the Matanuska-Susitna Borough in a cooperative plan to share the responsibility and liability to construct the erosion abatement system as designed by Peratrovich, Nottingham and Drage at the location of the Circle View and Stampede Estates erosion disaster. The project could be executed by the borough provided the state would hold the borough harmless for the construction or, alternatively, the state could execute the construction using the PN&D design. The usual permits and approvals from all appropriate agencies would be a requirement of either party that performed the work. Funding would be through the \$500,000 loaned by the state of Alaska to the Matanuska-Susitna Borough for erosion abatement.

Both the borough and the state of Alaska have a large interest at stake to control the erosion in this area. The borough, because of the considerable tax base and public road that is threatened by the erosion and the state because of the eventual threat to the Bodenbug Loop Road, which is state owned. The major significance of the above proposal however is in the fact that the PN&D design may have implications and application to similar erosion problems along the Matanuska River or even throughout the state of Alaska. If this design can be tested as a prototype at the Circle View location, the state of Alaska may have a lower cost alternative to some of the projects that have been undertaken in other areas of the state.

For these reasons, the borough proposes a joint venture between the state of Alaska and the Matanuska-Susitna Borough to construct and test the PN&D design erosion control system as a possibility to protect both the state and borough interests located in the vicinity of Circle View Subdivision and for possible application throughout the state of Alaska where river erosion threatens public or private property.



# **MATANUSKA RIVER EROSION CONTROL**

**Prepared for:**

***Matanuska-Susitna Borough***

**Prepared by:**

***Peratrovich, Nottingham & Drage,  
Inc.***

**November 1991**

## **EXECUTIVE SUMMARY**

Peratrovich, Nottingham & Drage, Inc. was commissioned by the Matanuska-Susitna Borough to produce a report addressing the prefeasibility of a proposed gravel extraction project on the Matanuska River. The extraction of gravel from the main channel of the river would serve as a control measure to keep the river from eroding its banks and destroying bordering developed properties.

The project would involve the removal of gravel from a pit located within the braided channel system of the lower Matanuska River, west of the Circle View subdivision. At the beginning of the project, channels would be constructed upstream and downstream of the pit. Natural river processes would cause the river to incise those channels. Gravel would be removed from the pit annually to ensure that the river remained incised and did not migrate toward and erode its banks. A railroad spur would be constructed to facilitate the removal of gravel. The estimated project cost is about \$3 million.

This report presents a preliminary concept for the gravel extraction/bank erosion control program. Although preliminary, the report contains sufficient detail for its distribution to, and critical assessment by, potential funding sources, permitting agencies, and industry.

## **BACKGROUND AND STATEMENT OF PROBLEM**

The Matanuska River is a braided, glacial stream. At Palmer, the drainage area of the river encompasses more than 2,000 square miles, twelve percent of which is occupied by glaciers in the rugged Talkeetna and Chugach Mountains (Freethy and Scully, 1980). The glaciers supply a steady and significant sediment load to the waters of the Matanuska River and its tributaries. The U.S. Geological Survey has estimated the annual total sediment load for the Matanuska River at Palmer to be about 5,000,000 tons. The bedload portion of that, assumed to be eight percent of the total sediment load, is 397,000 tons (257,000 cubic yards) (Reckendorf, 1989).

Flood flows on the Matanuska River are of moderate size. The two-year recurrence interval flood (a flood with a 50 percent chance of being equalled or exceeded in a given year),  $Q_2$ , has been estimated at about 24,000 ft.<sup>3</sup>/sec. by the U.S. Geological Survey. The 100-year recurrence interval flood (with a one percent chance of being equalled or exceeded),  $Q_{100}$ , has been estimated at about 50,500 ft.<sup>3</sup>/sec. A graph of flood magnitude versus recurrence interval for the Matanuska River is shown in Figure 1.



River channel braiding occurs as active channels are episodically abandoned and flows seek out new paths through the system. When a river's ability to carry its sediment load is decreased, it deposits the coarser portion of that load in its bed. The deposition results in the blockage of flow in the active channels. Flows are then directed to another channel or channels within the braided system. The process is repeated over and over, producing a broad, intricately braided channel system.

The river's ability to carry sediment is tied to the interaction of its fluid discharge, sediment discharge, gradient, and other factors. Fluctuations in discharge occur as a result of spring runoff, rainstorms, glacier melt, and other reasons. Increases in fluid discharge result in exponential increases in the river's ability to transport sediment. Thus, relatively small increases in fluid discharge can result in very large increases in sediment discharge. The gradient plays a major role in determining the size of material the river can transport and is dependent, for the most part, on the fluid and sediment discharge of the river.

The characteristic instability of a braided river makes prediction of its behavior difficult. Flows rapidly change from channel to channel within the braided system. When flows are directed along the edge of the river bank, serious erosion of the bank can occur. This behavior has historically caused problems along developed regions of the Matanuska River's easily erodible banks and is presently causing a great deal of bank erosion in the Circle View Subdivision. The material composing the banks is finer-grained than the material in the river bed making the river banks especially susceptible to erosion. Documentation of erosion and flooding problems on the Matanuska River can be found in U.S. Army Corps of Engineers, 1972; Lamke, 1972; Alaska Department of Highways, 1974; Hulbert, 1989; and Reckendorf, 1989.

To compound the effects of the braiding on channel instability, the Matanuska River is also aggrading in the Palmer area (Hulbert, 1989). (A braided river is not necessarily also aggrading). This gradual raising of the elevation of the river bed through deposition causes the system to be even more unstable and unpredictable. The aggradation reflects the Matanuska River's adjustment of its gradient to accommodate its large sediment discharge. The raising of the bed level also means that floods of similar magnitude will reach progressively higher elevations through time.

## PROJECT DESCRIPTION

The project would consist of several parts. A pit would be constructed in the middle of the Matanuska River's braided channel system, west of the Circle View subdivision (see attached map). The pit would be roughly circular in plan view with a diameter of 1,200

feet and a maximum depth of 20 feet. The excavated volume of the pit would be approximately 600,000 yd.<sup>3</sup>. This material would be used to construct work pads, haul routes and initial stockpiles associated with the project.

Two channels would be excavated. One would extend roughly 8,000 feet upstream of the pit to the control constriction, north of the Triple Crown subdivision. The other would extend about 3,000 feet downstream of the pit. These channels would function as guide channels into which the flows of the river would be diverted. As the river adjusts to the presence of the pit it will incise and enlarge these channels. (The reasons for the incisement and enlargement will be discussed in more detail below).

The channels will be designed to accommodate the two-year flood, initially. (Design for larger flows will not be necessary since the river will begin incising the channel as soon as flows are directed down it). The excavated channels will be about 300 feet wide and five feet deep. The excavated material would be pushed to the side by bulldozer to form a berm five feet higher than the present surface's elevation, thus making the channel 10 feet deep. This would involve moving roughly 400,000 yd.<sup>3</sup> of gravel. Flows would enter the channel leading into the gravel extraction pit through a flared section approximately 1,000 feet wide at the control constriction. Flows would then be restricted to the guide channel for a distance of about 8,000 feet until they entered the pit. After depositing the coarse fraction of the sediment load in the pit, flows would then leave the pit via the 3,000-foot guide channel.

A railroad spur would be constructed to haul gravel from the site by rail car. It would be roughly 6,500 feet long and would allow a one-half section of unit train to be loaded from a gravel loading facility at the site. Also, an access road and work pad would be constructed for access to the pit.

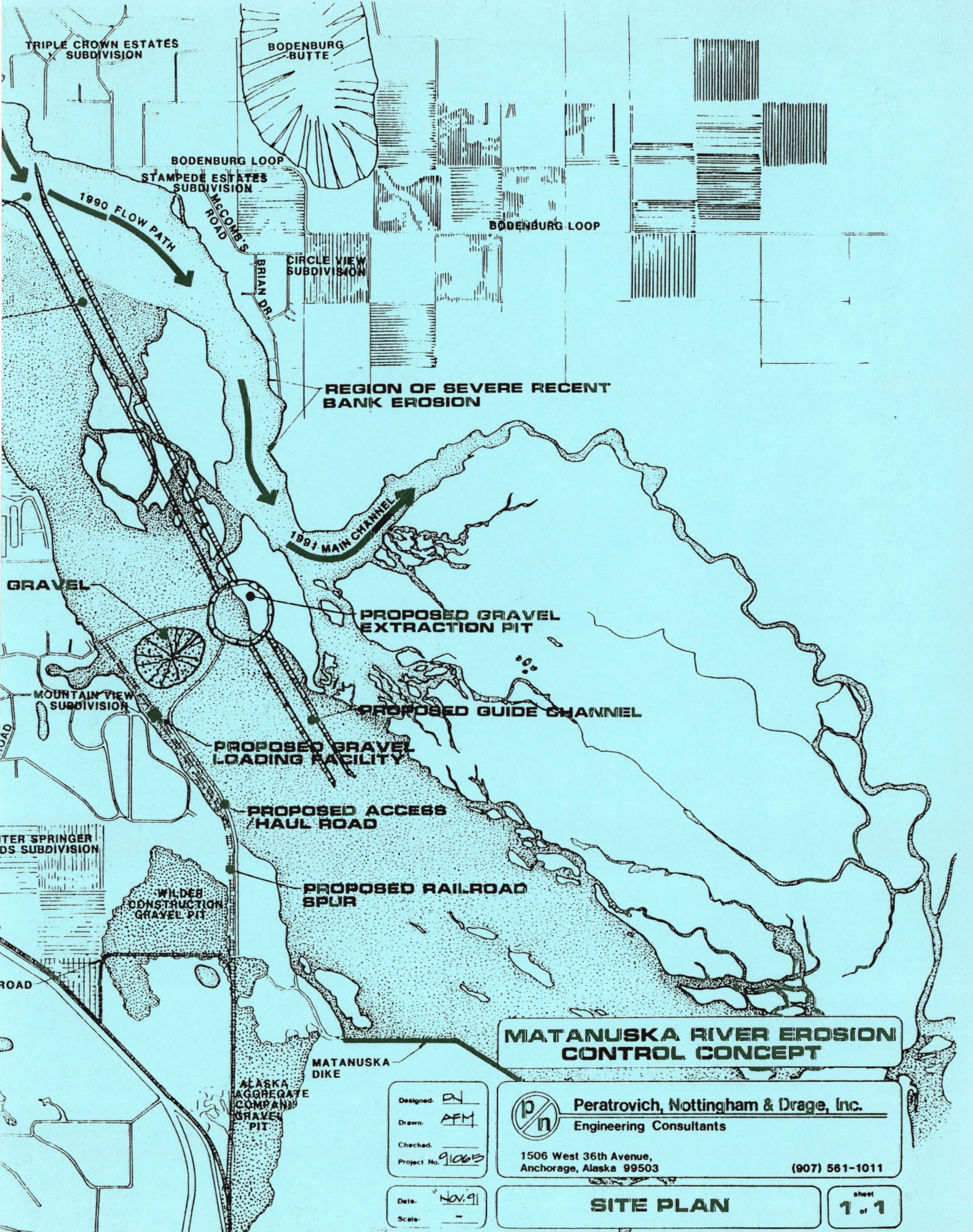
Gravel would be stockpiled just north of the pit. The railroad spur and gravel loading facility would be located adjacent to the stockpile.

Gravel would be removed at the rate of roughly 250,000 yd.<sup>3</sup>/year from the pit in order to balance the amount of gravel coming down the river each year.

## EXPECTED PHYSICAL EFFECTS OF GRAVEL EXTRACTION


The Matanuska River has a relatively steep gradient. The overall gradient of the river is approximately 0.015 ft./ft. (Freethey and Scully, 1980). In the region in which this project is concerned, the gradient of the river is approximately 0.003 ft./ft. (Lipscomb, 1989). One





**MATANUSKA RIVER EROSION CONTROL CONCEPT**

Designed: *PN*  
 Drawn: *AFM*  
 Checked:  
 Project No. *91063*

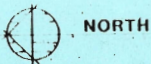
 **Peratrovich, Nottingham & Drage, Inc.**  
 Engineering Consultants  
 1506 West 36th Avenue,  
 Anchorage, Alaska 99503  
 (907) 561-1011

Date: *Nov. 91*  
 Scale: *-*

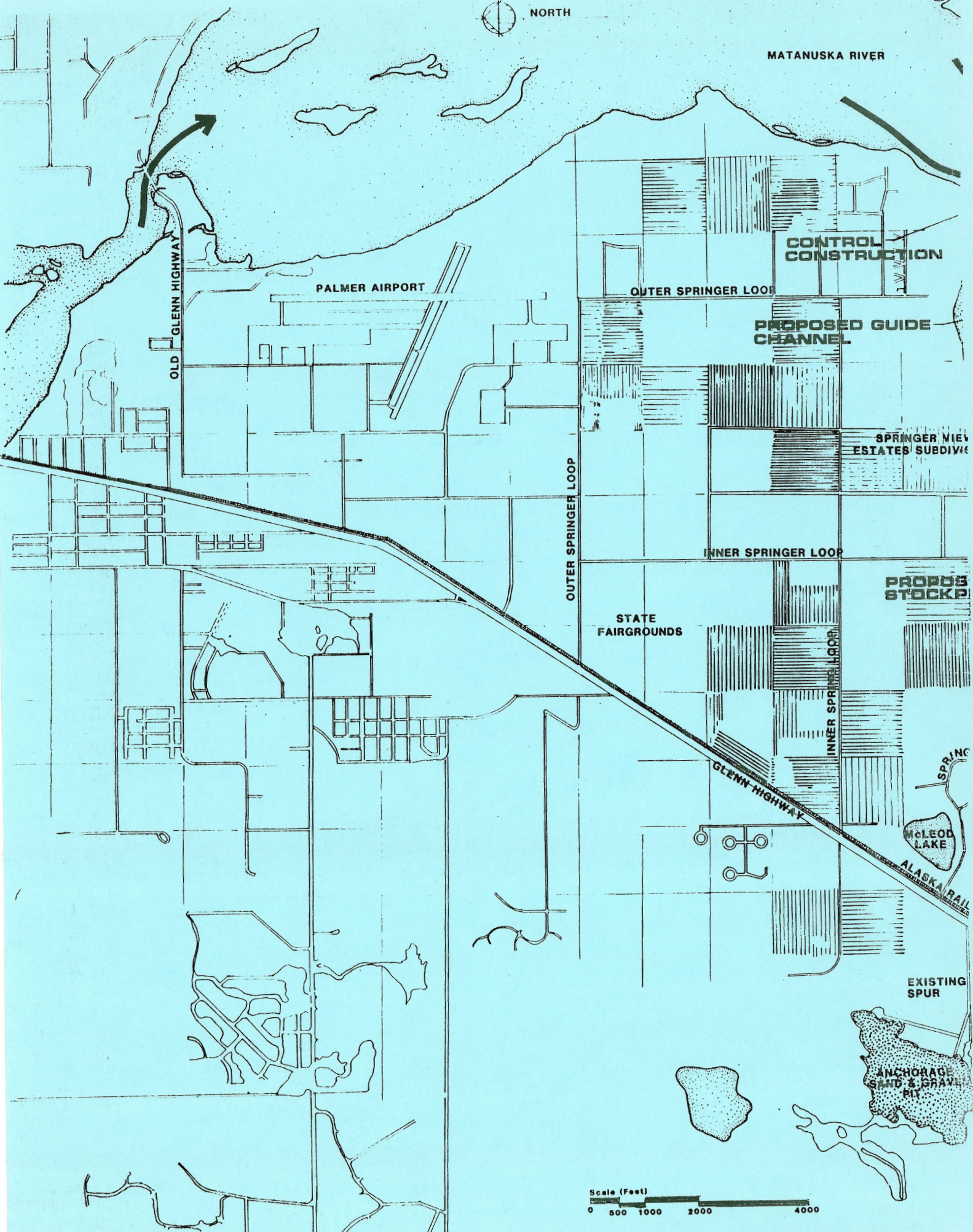
**SITE PLAN**

sheet  
**1 of 1**





MATANUSKA RIVER



OLD GLENN HIGHWAY

PALMER AIRPORT

CONTROL CONSTRUCTION

OUTER SPRINGER LOOP

PROPOSED GUIDE CHANNEL

SPRINGER VIEW ESTATES SUBDIVISION

OUTER SPRINGER LOOP

INNER SPRINGER LOOP

STATE FAIRGROUNDS

PROPOSED STOCKPILING

INNER SPRINGER LOOP

GLENN HIGHWAY

SPRING

McLEOD LAKE

ALASKA RAILROAD

EXISTING SPUR

ANCHORAGE SAND & GRAVEL PIT





of the effects of a steep gradient is to increase the sediment-carrying capacity of the stream.

The effect of gravel mining would be to locally manipulate the gradient and sediment load characteristics of the river in order to control erosion along the channel banks.

The gravel pit will cause the local gradient upstream of it to become steeper by acting as a new, lower temporary base level. The response of the river flowing within the excavated channel upstream of the pit would be to incise through headcutting in order to adjust to the steeper gradient. This process has been described in relation to subarctic streams (Woodward-Clyde, 1980).

As the river enters the pit, the rapid expansion of flow and consequently low flow velocities will cause deposition of much of the river's sediment load. This loss of sediment will increase the sediment-carrying capacity of the river as it exits the pit into the excavated channel. The effect will be to degrade the excavated channel downstream of the pit. This process has been well documented for placer mining settling ponds (Madison, 1981), as well as dams (Williams and Wolman, 1984). Once the flow leaves the guide channel, its behavior will be difficult to predict so it is important that the guide channel extend downstream of access/haul road and railroad spur.

The channel incisement and thus, stability could be expected to persist as long as the gravel mining of the pit persists.

## **AREA GRAVEL DEMAND**

Gravel excavated from the Matanuska River floodplain should ideally be used for some commercial venture or possibly stockpiled along the river edge, should no market be available.

Economics will play an important part in any river stabilization/gravel extraction plan and it is important to identify costs and material volumes.

Gravel is used for many types of construction in Alaska's central region, and over the years, numerous pits have been opened, depleted and closed. Much gravel now used is imported to Anchorage on the Alaska Railroad, and available reserves in Anchorage, estimated to be about 1.5 million cubic yards, appear only adequate for the short term. The Anchorage Municipal Landfill expects to excavate about 10 million cubic yards of gravel over its life, but will need about 14 million cubic yards, thus instead of a gravel surplus, imports will be required.

During the past two years, the Alaska Railroad has moved about 1.6 million tons from Palmer to Anchorage. This quantity came from three primary pits owned by Anchorage Sand and Gravel, Alaska Aggregate Company, and Wilder Construction, and is considerably below peak years where three to four million tons was imported.

While it appears that the major gravel companies have adequate reserves for some time, there may be some interest in developing a very long-term pit such as in the Matanuska River floodplain.

Such a development may be important should gravel exports to Pacific Rim countries become a reality. Limiting factors for this in the past has been gravel quality and delivered price. Alaska is so short of transportation infrastructure, including access to deep-draft ports and large staging areas, that to-date inquiries for four million tons on up have not resulted in any contracts. Rail transport to an accessible port would positively impact not only export of gravel, but other resources.

## **RECOMMENDATIONS**

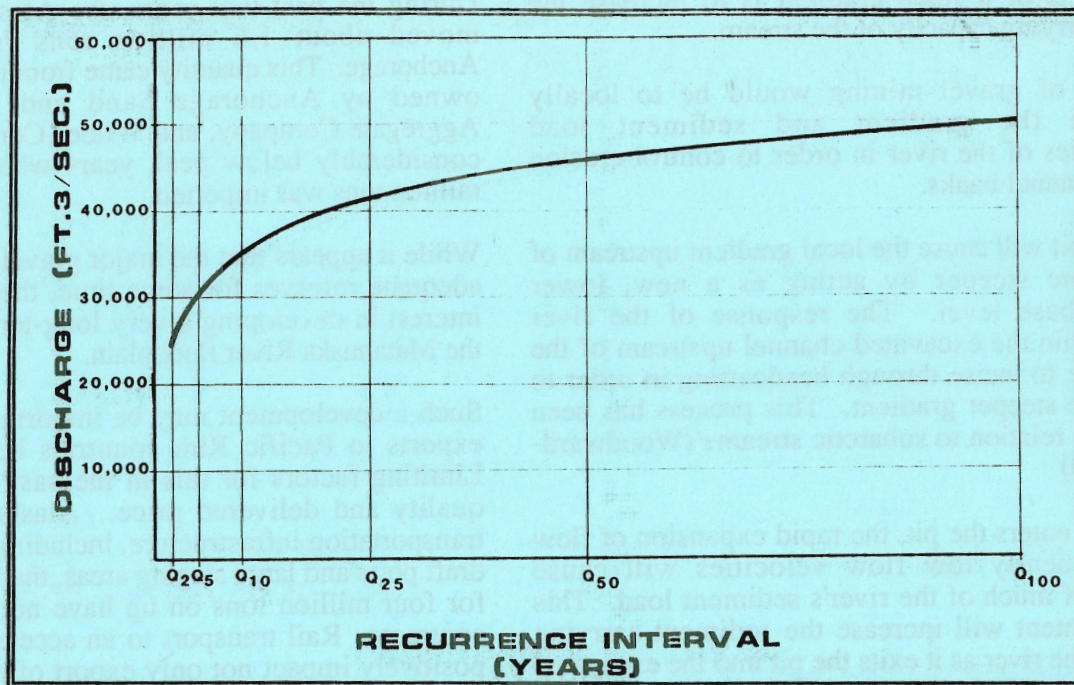
A project of this nature is dependent upon several variables which should be investigated in a set sequence if costs are to be minimized.

First, the quality and nature of the resource must be defined and compared to gravel desired by users.

Second, contact should be made with potential users, especially export markets, to set limits on their needs. These would include unit costs, port facilities needed, aggregate size and quality, and long-term quantity.

Following positive results of the first two tasks, a mechanism for competitive bid for the resource should be structured. For this, numerous possibilities exist for capital improvements, royalties, etc., all of which require detailed thought.





**FIGURE 1.**

**MATANUSKA RIVER FLOOD FREQUENCY (AFTER U.S. GEOLOGICAL SURVEY).**

**REFERENCES**

Alaska Department of Highways; 1974; A Report on the Matanuska River Erosion and Overflow in the Vicinity of Bodenbug Butte.

Freethy, G.W., and Scully, D.R.; 1980; Water Resources of the Cook Inlet Basin, Alaska; Hydrologic Atlas HA-620; U.S. Geological Survey.

Hulbert, R.; 1989; Sedimentation in the Lower Matanuska River; submitted in partial fulfillment of requirements for UAA graduate course.

Lamke, R.D.; 1972; Floods of the Summer of 1971 in Southcentral Alaska; U.S. Geological Survey, Alaska District, Water Resources Division; Anchorage, Alaska.

Lipscomb, S.W.; 1989; Flow and Hydraulic Characteristics of the Knik-Matanuska River Estuary, Cook Inlet, Southcentral Alaska; Water-Resources Investigations Report 89-4064; U.S. Geological Survey, Anchorage, Alaska.

Madison, R.J.; 1981; Effects of Placer Mining on Hydrologic Systems in Alaska-Status of Knowledge, Open-File Report 81-217; U.S. Geological Survey; Anchorage, Alaska.

Reckendorf, Frank; 1989; Matanuska River Special Report; Soil Conservation Service; West National Technical Center; Portland, Oregon.

TFOECPMR (Task Force On Erosion Control Problems of the Matanuska River); 1991; Erosion Control of the Matanuska River near Bodenbug Butte, September, 19, 1991; State of Alaska Department of Transportation and Public Facilities, and the U.S. Army Corps of Engineers.

U.S. Army Corps of Engineers; 1972; Matanuska and Little Susitna Rivers, Flood Control, Alaska; Alaska District, Corps of Engineers; Anchorage, Alaska.

Williams, G.P., and Wolman, M.G.; 1984; Downstream Effects of Dams on Alluvial Rivers, Geological Survey Professional Paper 1286; U.S. Geological Survey; U.S. governmental Printing Office, Washington, D.C.

Woodward-Clyde Consultants; 1980; Gravel Removal Studies in Arctic and Subarctic Floodplains in Alaska, Technical Report, FWS/OBS-80/08; U.S. Department of the Interior Fish and Wildlife Service.



## PROTOTYPE EROSION ABATEMENT SYSTEM

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STATE OF ALASKA  
DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF LAND

Director's Decision  
ADL XXXXXX

Matanuska River Natural Disaster Grant  
AS 38.05.870

Proposed Action: To designate replacement land for land rendered unusable by the erosion of the Matanuska River "in the vicinity of Circle View Estates" south of Palmer and set out the operation of the proposed grant. The replacement land is located within the Matanuska-Susitna Borough near Palmer as set forth in Attachment D.

Legal Authority: Alaska Statutes 38.05.035(e), AS 38.05.057, 38.05.870 and AS 38.05.945 constitute the legal authority for this decision.

Administrative Record: Case file ADL XXXXXX constitutes the administrative record used in this decision.

Background: During the late 1980s, the Matanuska River altered its course in its lower reaches (south of Palmer), causing severe erosion to certain properties along its banks. By the spring of 1991, land under a house and greenhouse within the Circle View Estates subdivision, belonging to Myrtle Moline, eroded away causing them to fall into the Matanuska River. Other homes in the area were also threatened with the fast moving erosion.

On July 18, 1991, Governor Walter J. Hickel declared a Disaster Emergency within the Matanuska-Susitna Borough under Alaska Statute 29.23.020. The declaration was due to "serious damage and threats to life and property resulting from erosion of the Matanuska River, in the vicinity of Circle View Estates."

The declaration authorized an Alaska Division of Emergency Services loan (up to \$500,000) to the Matanuska Borough "to provide public protection, initiate emergency action to stabilize bank erosion or otherwise mitigate the erosion threat to local citizens." The Division of Land prepared and presented an early entry authorization for the Matanuska-Susitna Borough to construct an erosion control project (see ADL 225673) on July 26, 1991. However, the Borough declined the entry authorization on August 5, 1991, stating that it would not construct an erosion control project. Borough officials have stated that the project would have been only a temporary solution to the problem, and that the funds would be better spent helping

ADL XXXXXX

Matanuska River Natural Disaster Grant

Page 2

the area residents relocate to other land to be granted either by the state or the borough. An August 15, 1991 letter from Borough Manager Donald L. Moore to the Executive Director of Alaska Housing and Finance Corporation (holder of many of the Circle View Estates mortgages), Barry Hulin, also sets out this view.

By the end of July, several residents of the affected area had contacted the Division of Land regarding the possibility of a disaster grant of state land on which to relocate. The Division developed an application form (Exhibit C) for individuals to use when applying under the disaster land grant statute (AS 38.05.870) and began assembling possible state replacement land. The Matanuska-Susitna Borough also apparently began consideration of possible borough lands that could be used as replacement lands.

On August 6, 1991, the Matanuska-Susitna Borough Assembly adopted an ordinance (ORD: 91-087, AM: 91-233) creating the "Circle View and Stampede Estates Flood and Erosion Control Service Area No. 131. . . in order to undertake flood and erosion control efforts in the affected area." The documentation for that ordinance indicates that the Stampede Estates subdivision is adjacent to the Circle View Estates Subdivision, borders the Matanuska River, and is suffering from severe erosion problems similar to those experienced in the Circle View Estates Subdivision. The total population of the service area is estimated at 79 based on a 1990 survey. The accompanying map indicates that there are approximately 65 lots within the service area.

Discussion and Findings: As the Director, Division of Land, I have been delegated the authority to make grants of state land to victims of disaster under Alaska Statute 38.05.870. I must also make a finding under AS 38.05.035(e) and provide public notice under AS 38.05.945.

Several tests must be met under the natural disaster land grant statute, AS 38.05.870. That statute states at subsections (a) and (f) that

(a) The director may make grants of state land to persons and municipal corporations to replace land which is rendered unusable by a natural disaster for the purposes for which it was used before the natural disaster. The director shall designate state land which is available to replace land rendered unusable. (emphasis added)

ADL XXXXXX

Matanuska River Natural Disaster Grant

Page 3

(f) In this section "natural disaster" means a flood, drought, fire, storm, earthquake or other catastrophe which, in the determination of the governor, is or threatens to be of sufficient severity to warrant state assistance to persons and municipal corporations to alleviate damage, suffering and hardship caused by the catastrophe. (emphasis added)

I therefore find that Governor Hickel's July 18, 1991 proclamation makes clear that he has determined that, in general, land "in the vicinity of the Circle View Estates" is, or is in immediate danger of being, rendered unusable by a natural disaster.

I find further that the Matanuska-Susitna Borough ordinance (ORD: 91-087, AM: 91-233) defines the "vicinity of Circle View Estates" as set out in the Governor's July 18, 1991 Declaration of Disaster Emergency to include land within both the Circle View and Stampede Estates subdivisions (see Exhibits A and B). Therefore, applications from residents of both subdivisions will be considered for state disaster relief land grants made subsequent to this decision. No applications from owners of land outside this area will be considered.

A pool of replacement land (100 lots) has been chosen from the Goldstreak, Pinnacle Mtn., Greensward, and Bruce Lake state subdivisions (see "State Land Grant Pool" at Attachment.D). All of these subdivisions are classified "Settlement", and are located near Palmer within the Matanuska-Susitna Borough. These lands are appropriate to be designated as land available to replace the land rendered unusable by natural disaster.

The basic criteria for the establishment of natural disaster under AS 38.05.870 having been met and the area defined, I must now examine the discretionary aspects of the grant.

Subsection (b) of AS 38.05.870 states that

Only a person who is the owner of land rendered unusable that was used or leased before the natural disaster for private residential, business or commercial purposes is eligible for a grant of state land. A person who incurs a binding obligation to purchase land before the natural disaster shall be considered the owner of the land for the purposes of this section.



Subsection (c), which specifies the contents of the application, requires at (4) that an application filed with the director contain

a statement of the purpose for which the land was used before the natural disaster rendered it unusable.

Past history of the grant was consistently applied on a use-for-use basis. Informal advice from the Attorney General dated August 19, 1965 also indicates that use of the land before the disaster is the overriding criteria for making grants.

In addition, AS 38.05.035(e) states that the director may

in addition to the conditions and limitation imposed by law, may impose additional conditions or limitations in the contract as the director determines, with the consent of the commissioner [now delegated to the director], will best serve the interests of the state.

I do not consider vacant lots as having been actively "used" prior to the disaster and do not consider them eligible. I will only consider subdivision lots with actively used commercial buildings or residences on them to be eligible for grants under this decision. Because each subdivision lot is capable of sustaining use as a residence, no adjacent lot or lots without dwellings (e.g. those used for lawns, gardens and greenhouses), will be eligible for a grant.

Because a disaster relief grant is meant to bring finality to an emergency situation within a short period of time the grant will be handled through a single offering. Residents will be allowed to apply for land from the State Land Grant Pool contained in Exhibit D during a filing period of no less than 45 days. Application must be made on the form provided by the Division.

Each completed application will be individually considered under AS 38.05.870. Subsection (d) of that statute states

The director shall, within 30 days of receipt of the application, approve or disapprove the application. The director's determination of eligibility for a grant of state land is final. Upon approval of the application or as soon thereafter as

ADL XXXXXX

Matanuska River Natural Disaster Grant

Page 5

possible, the director shall specify the land which shall be granted to an eligible applicant. In making the designation the director shall consider the value, size and use of the land rendered unusable as a result of the natural disaster, and shall as nearly as possible grant land of equal size or value or of equal utility.

Because the utility of the lots in the replacement pool is similar, more than one eligible resident may choose a lot from the State Land Grant Pool. For that reason, I am instructing the Southcentral Regional Office staff to use the provisions of the land lottery statute, AS 38.05.057, for this disposal. The division will hold the allocation drawing in the Borough.

Finally, AS 38.05.870(e) states that

The applicant shall pay costs, not to exceed the administrative cost of transferring the property and the cost of surveying the land. In addition, the state may require a quitclaim deed to the unusable land in exchange for the grant of state land.

Those who are granted state replacement land will be required to reimburse the state for the administrative costs as required by law. All of the lots being offered have been surveyed and appraised. The reimbursable costs will include the cost of survey and advertising; the cost of existing appraisals will not be charged as they are unnecessary to convey these lots under the disaster grant.

Many of the lots, or portions of them, have not yet been destroyed or made unusable for its current function. As land is eroded, it will become part of the Matanuska River, a navigable waterbody owned by the state. Therefore, to preserve the state's right to any useable land, and to ensure that title to the Matanuska River is not in doubt, a quitclaim deed for the land replaced by the state land be issued to the state at the time the replacement land is granted.

Some of the residents in the area may owe money to lending institutions (e.g. Moline has indicated that she still owes approximately \$70,000.00 on her mortgage). The August 15, 1991 letter from Moore to Hulin referenced above, indicates that there is some reluctance on the part of lending institutions to allow the houses to be relocated. Both state and borough officials are working with these institutions to resolve this issue. While it

ADL XXXXXX

Matanuska River Natural Disaster Grant

Page 6

may be argued that without the concurrence of the lending institutions, the application of useability is meaningless, I do not agree. The criteria used is the useability of the land before the natural disaster. It is unthinkable to penalize those who may lose their homes for having mortgages held by hesitant lending institutions.

Decision:

I find that the governor has declared the erosion of the land in the vicinity of Circle View Estates subdivision by the Matanuska River to be a natural disaster emergency, thus activating the provisions of AS 38.05.870. I find that the Matanuska-Susitna Borough has defined the area affected by the disaster in ordinance 91-087. Therefore, individuals who owned, or incurred a binding obligation to purchase, land in the eligible area with homes used for private residential, business or commercial purposes before the natural disaster are eligible to apply for the grant.

The state must be concerned with the welfare of all of its citizens. Those who qualify under this statute have been harmed by a natural calamity: certainly something that is not of their own making. Sufficient state land within nearby state subdivisions exists to satisfy the grants. I therefore find that making such grants to qualified applicants is in the best interest of the state under the requirements of the law and the following conditions:

- \* Only that land actually substantially improved and used prior to the disaster will be replaced. Vacant land, or land used for such things as lawns and gardens, is not eligible.
- \* Application can be made during a period of no less than 45 days at a time to be announced. To be considered, applications must be on the form provided and contain complete, correct information.
- \* Applicants may only choose from land listed in Attachment D. Lots will be chosen by lottery under the method described in AS 38.05.057.
- \* The applicant, and any involved lending institution, will be required to quitclaim the land affected by the natural disaster to the state.

ADL XXXXXX

Matanuska River Natural Disaster Grant

Page 7

Notice of this decision will be given under AS 38.05.945. If no substantive comment is received, this decision will become final 30 days from its initial notice. If substantive comment is received, a revised final decision will be issued and additional public notice will be given.

A person aggrieved by this decision may appeal in writing to Harold C. Heinze, Commissioner, Department of Natural Resources, 400 Willoughby Avenue, Juneau, Alaska 99801, within 30 days after the date the decision is made final. Any appeal must state the action to be reviewed and specify the basis for the appellant's belief that the decision should be reversed or modified. If no appeal is filed within the time specified, this decision becomes final.

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Ron Swanson, Acting Director  
Division of Land

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Date

SUMMARY OF H.R. 1236,  
THE NATIONAL FLOOD INSURANCE, MITIGATION,  
AND EROSION MANAGEMENT ACT OF 1991  
AS PASSED BY THE HOUSE, MAY 1, 1991

COMPLIANCE PROVISIONS

- Clarifies that federal agencies may not waive the mandatory purchase requirement for any purposes.
- Extends the mandatory purchase requirement to all mortgaged structures.
- Requires lenders to review their portfolio for compliance unless:
  - 1) the lender has initiated the escrow of flood insurance and reviewed its loans to the satisfaction of the Secretary or the federal entity for regulation, or
  - 2) the lender conducts a 5% sampling of its loans or a lesser representative sampling and is 95% accurate in its flood hazard determination compared to the original determination and has maintained a flood insurance policy on 95% of those mortgages determined to be subject to the mandatory purchase requirement.
- Allows lenders to charge borrowers a reasonable fee for flood hazard determinations on loan origination and, on a one time basis, up to 50% of the cost to redetermine outstanding loans.
- Requires lenders to establish an escrow account for flood insurance for residential real estate loans, if the lender escrows for any other purposes including homeowners or other hazard insurance, taxes, mortgage insurance etc.
- Regulators may levy a \$350 fine on lenders who have a pattern and practice of failing to require the purchase of flood insurance with an annual penalty not to exceed \$100,000 per lender.

- Lenders may forceplace insurance to avoid penalties, but the lender must provide notice to the homeowner of the mandatory purchase requirement, the availability of flood insurance elsewhere and the relative costs of individual insurance versus forcedplace cost.
- Requires development and lender usage of a Standard Hazard Determination form to include map and panel numbers, flood zone and the date of the map.
- Requires lenders to redetermine the original flood hazard determination in the event the lender sells, extends, or changes the loan after a five year period.
- Establishes standard notification requirements and procedures to ensure compliance with the mandatory purchase requirement.
- Outlines procedures for the FDIC and the RTC to comply with the mandatory purchase requirement when the FDIC and RTC are acting in their corporate capacity or as a conservator or receiver.
- Creates a Flood Insurance Interagency Task Force to provide recommendations and guidelines on compliance with the mandatory purchase requirement.

### MITIGATION PROVISIONS

- Establishes an office of mitigation assistance within the Federal Insurance Administration to administer and carry out the coastal and flood mitigation programs.
- Creates a National Flood Mitigation Fund, funded by a \$5 mitigation surcharge on policyholders per policy term and any available 1962 funding, and any penalties levied on lenders. The fund is to be used to issue grants to states and communities with approved mitigation plans.
- Grants would be available to participating states and communities that:
  - 1) are proactive and exceed minimum NFIP standards and implement erosion management measures if applicable,
  - 2) have suffered \$250,000 in non-infrastructure flood damage and claims within the past 12 months, or

3) have suffered repetitive flood damage and claims.

- Individuals are eligible for grants if they have had flood insurance for at least two years and have suffered insurable flood damage since December 31, 1977. Projects must be consistent with state and local land use and hazard mitigation plans.
- Eligible mitigation activities must be technically feasible and cost effective, including but not limited to acquisition, elevation-in-place, relocation, and flood proofing.
- Grants are 75% federal and 25% state and local funds. Matching funds may include materials, time and salary.
- Qualified States may provide technical assistance and approve mitigation grants.
- Provides for a transition period and implementation of a mitigation pilot program prior to issuance of final regulations funded by 1362 funds.
- Repeals section 1362, with provisions for a transition period.

### EROSION MANAGEMENT PROVISIONS

- Requires development of regulations and implementation of a program to reduce coastal erosion hazards along the U.S. coastal waters and Great Lakes shorelines.
- Directs FEMA to designate erosion prone communities. Requires FEMA to gather new and available data on erosion rates and delineate 10-, 30- and 60-year setbacks.
- Requires designated erosion-prone communities to adopt setback requirements for new and substantially improved structures in order to be eligible for mitigation grants and relocation/demolition assistance.
- Communities which adopt setbacks and implement land use standards are eligible for relocation/demolition assistance for structures subject to imminent collapse, subsidence or located in 10-year erosion zone. Eligible applicants must have had flood insurance coverage for two years or since ownership.
- Relocation/demolition assistance is funded with \$5 million per year from the National Flood Insurance Fund.

- If an owner is eligible for relocation or demolition assistance and fails to relocate or demolish the structure in compliance with setback requirements before the expiration of a 24 month period, the owner is limited to one claim of 40% of the value of the structure or actual damage expenses. The Director is instructed to cancel the policy upon payment.
- For communities who fail to participate in the erosion management program, premium rates will be increased for existing structures in erosion-prone communities with subsidized rates located seaward of the appropriate setback.
- {

Denies insurance for new construction seaward of the appropriate setback in communities which do not participate in the erosion management program.
- Establishes minimum land use management measures in erosion hazard areas.
- The Director is required to conduct a riverine erosion study to be completed 2 years after enactment. The Director is also required to submit a progress report on the erosion management program in 24 months and a report, in conjunction with the Under Secretary of Commerce, on coordination with the Coastal Zone Management Program 12 months after enactment.
- Repeals section 1306(c) of the National Flood Insurance Act of 1968 12 months after a community is notified of their erosion-prone designation or 60 months, whichever is earlier.

## NATURAL AND BENEFICIAL FLOODPLAIN FUNCTION PROVISIONS

- Under the NFIP declaration of purpose states and communities are encouraged to protect natural and beneficial floodplain functions that reduce flood-related losses.
- Defines Natural and beneficial floodplain functions.
- Authorizes additional CRS credits for communities that implement measures to protect natural and beneficial floodplain functions that reduces flood-related losses.



- The select Subcommittee of the Interagency Task Force (NOAA, EPA and Fish and Wildlife) is authorized to make recommendations on the protection of natural and beneficial floodplain functions.

#### OTHER PROVISIONS

- Authorizes the Community Rating System, requires a biennial report to Congress and provides funding for CRS from the NFIF.
- Increases maximum available coverage for all structures.
- Provides for the review of the Flood Insurance Rate Maps every 5 years to determine the need to revise and update maps.

Provides flood insurance maps free of charge for lenders, states, communities, insurance companies and their agents.



NATIONAL WILDLIFE FEDERATION

1119 R Street, N.W., Washington, D.C. 20037-2875



coast alliance

205 Pennsylvania Avenue, S.E., Washington, D.C. 20003

202-546-9664

## NATIONAL FLOOD INSURANCE PROGRAM REFORMS

### Introduction

The National Flood Insurance Program (NFIP) was created in 1968 to provide otherwise unobtainable flood insurance to flood-prone properties. In return, participating communities were to reduce future flood losses by, among other things, guiding new development out of hazard-prone floodplain areas. In this way, lives, money, and river and coastal ecosystems would be saved.

Weak regulations and poor enforcement, however, have kept the NFIP from meeting these mandates. With over 2.4 million policies with insurance coverage totaling \$214 billion, the NFIP has grown into one of the largest domestic liabilities of the federal government. The Federal Emergency Management Agency's (FEMA) computer models predict that in a catastrophic flood year, losses to these policies could cost up to \$4 billion, yet the flood insurance fund currently holds less than \$400 million in reserves. The difference will be made up by the American taxpayers.

### The National Flood Insurance, Mitigation, and Erosion Management Act of 1991

On Friday, August 2, 1991, Senator John Kerry (D-MA) introduced S. 1650, the National Flood Insurance, Mitigation, and Erosion Management Act of 1991, with co-sponsors Paul Sarbanes (D-MD), Alan Cranston (D-CA), Alfonse D'Amato (R-NY), and Donald Riegle (D-MI). S. 1650 is based on H.R. 1236, also known as the National Flood Insurance, Mitigation, and Erosion Management Act of 1991 and introduced earlier this year by Representative Ben Erdreich (D-AL). As a result of the strong bipartisan support enjoyed by H.R. 1236, the House passed the bill on May 1, 1991 by a vote of 388 to 18.

Both the Office of Management and Budget (OMB) and the Congressional Budget Office (CBO) estimated that H.R. 1236 would save \$11 million over four years. H.R. 1236 was endorsed by more than 60 regional, state, and local citizen groups, and by ten national environmental groups. The Coastal States Organization, the Association of State Floodplain Managers, and the Federal Emergency Management Agency (FEMA) which implements the Flood Insurance Program, also endorsed the bill. S. 1650 provides the same savings, and will have the same broad base of support.

## Summary of S. 1650

Both S. 1650 and H.R. 1236 do the following:

- **Improve lender compliance**

When Congress established the Flood Insurance Program, a fundamental goal of the program was widespread participation by owners of properties subject to flood hazards. To encourage participation, Congress mandated that all flood-prone properties mortgaged by lending institutions backed by federal deposit insurance must purchase flood insurance. Yet, studies by and for FEMA have shown that nationally only about 14 percent of flood-prone properties are insured.

S. 1650 improves lender compliance through a number of measures that simplify the enrollment procedures for flood insurance and penalize lenders that fail to comply. S. 1650 also extends the compliance provisions to lending institutions that are not federally regulated.

Improved lender compliance will help balance the current financial instability of the Flood Insurance Program. The Flood Insurance Fund currently stands at about \$370 million, a frighteningly low figure considering that FEMA has estimated that one catastrophic loss year could bear a price tag of as much as \$3.5 to 4 billion in losses.

- **Institutionalize a recently created "Community Rating System" and incorporate it into the Flood Insurance Program.**

The Community Rating System reduces premium rates for communities that undertake floodplain management measures in addition to those required for participation in the Flood Insurance Program. S. 1650 adds a provision that will give communities participating in the rating system "extra credit" points for measures that protect undeveloped floodplains.

- **Establish a mitigation assistance program.**

Currently, the Flood Insurance Program does not address the reduction of repeated flood losses. Although the building standards required under the Program have helped reduce damage to buildings, no matter how many times a building is damaged by flood, premiums for that policy remain constant as the owners continue to make claims. By the same token, property owners are not given any help in taking steps to reduce their repeated flood losses. As a result, in the 1980s, about 2 percent of all flood insurance policies accounted for approximately 33 percent of total loss payments made.

S. 1650 addresses this repetitive loss problem by creating a mitigation assistance program designed to make communities and individual buildings less susceptible to flood damage through non-structural means. An Office of Mitigation Assistance will provide technical assistance and grants to states, communities, and individuals for eligible mitigation

activities according to an approved plan. The grants will come from a National Flood Mitigation Fund that will be created through a \$5.00 surcharge on all flood insurance policies and with penalties levied against lenders that fail to comply with the new compliance provisions (mentioned above).

Eligible mitigation activities include acquisition, elevation, relocation, and flood proofing. Erosion-prone coastal communities that do not participate in the coastal management program (discussed below) will not be considered eligible for mitigation assistance grants.

- **Direct FEMA to recognize and promote the natural and beneficial functions of floodplains.**

In their natural state, floodplains, which include wetlands, beaches, coastal dunes and river banks, serve numerous purposes ranging from water purification and fish and wildlife habitat, to groundwater recharge and sedimentation reduction. Of particular importance to the Flood Insurance Program are the natural functions of floodplains in reducing flood losses by slowing waves, retaining flood waters and reducing shoreline erosion. Despite federal recognition of the importance of these functions in minimizing flood damages in the *Unified National Program for Floodplain Management (UNPFM)*, the Flood Insurance Program contains no provisions that encourage the protection of natural floodplain functions. S. 1650 remedies that situation with explicit language concerning the complimentary role of loss reduction and floodplain protection.

An interagency task force established by S. 1650 (the purpose of which is to make suggestions to FEMA on the administration of various aspects of the NFIP) will include three members who will represent the USFWS, NOAA, and EPA, and will form a subcommittee on natural and beneficial floodplain functions. The subcommittee's purpose is to make recommendations to FEMA on the implementation of measures that would improve floodplain protection.

- **Establish a management program for erosion-prone communities on the tidal and Great Lakes coasts.**

About 80 percent of the nation's sandy beaches are currently eroding. Moreover, even mid-range estimates predict a sea level rise of 4 to 7 feet by the year 2100, a rise that will increase erosion rates by 100-400 percent. Currently, however, the Flood Insurance Program has no restrictions to prevent or discourage building in severely eroding coastal areas. The program only addresses erosion through the existing "Jones-Upton" provision, which makes advance insurance payments available to relocate or demolish buildings in "imminent danger of collapse." As a result, the Flood Insurance Program's lack of erosion damage management provisions works at cross purposes with the Jones-Upton provision and the damage reduction goals of the program. This means that new structures are being built (and insured) today in highly erodible and highly hazardous areas, and then the owners are given money to move or demolish a building when it is about to fall in. While funds should be available

to people who build away from the water's edge only to have it come to meet them, new construction that is wittingly put in an eroding area must be stopped.

S. 1650 creates a program designed to discourage unwise construction in hazardous eroding areas. The Jones-Upton provision, *per se*, is repealed, but the provision's intent is retained and expanded on. The S. 1650 management program will apply to communities identified as "erosion-prone." Participation in the program will be voluntary; however, sanctions will be placed against erosion-prone communities that choose not to participate.

To designate erosion-prone communities, FEMA will identify erosion zones along the U.S. tidal and Great Lakes coasts by delineating 10-, 30-, and 60-year "setbacks." The setbacks define the area that is likely to erode in 10, 30, or 60 years respectively, based on the historic average annual rate of erosion for that area. The 10-year erosion setback applies to all buildings. The 30-year setback applies to "small" buildings (one to four dwelling units, or less than 5000 square feet). The 60-year setback applies to all other buildings. The federally established setbacks are intended as minima. If a state chooses to implement more restrictive setbacks, they will take precedence over the federal setbacks.

The numbers selected for setbacks were not simply picked at random. The National Academy of Sciences, in its 1990 report *Managing Coastal Erosion*, recommends 10-, 30-, and 60-year setbacks nationwide. Further precedent is set by already established state programs. Eleven coastal states have implemented erosion setbacks of some sort through their state coastal zone management programs. North Carolina, in fact, has 30- and 60-year setbacks.

**The program addresses current and future development within the designated erosion zones.**

For Current Development. Any building seaward of the 10-year setback will automatically be considered "in danger of imminent collapse." (Currently, under the Jones-Upton provision, buildings need to be professionally certified as "in danger of imminent collapse," a process that has caused much confusion. This new provision simplifies the process by saying that anything within a certain area--the 10 year erosion zone--is automatically certified.) Grants will be available for the relocation (40 percent of the value of the building) or demolition (110 percent of the value of the building) for buildings seaward of the 10-year setback.

Relocated buildings will have to be placed landward of the applicable erosion setback in order to continue receiving flood insurance benefits. For instance, if a small building (one to four dwelling units) is removed from the 10-year erosion zone, it must be relocated landward of the 30-year setback.

If, however, a property owner chooses not to relocate or demolish the building within two years of notification, the owner will be allowed one more claim of up to 40 percent on the flood insurance policy after which the policy will be canceled.

Substantial improvement (anything over 50 percent of the value of the building) or rebuilding of buildings will also be prohibited within the applicable erosion zone (seaward of the 30-year setback for small buildings, seaward of the 60-year setback for larger buildings). Any substantial improvement or rebuilding between the 30- and 60-year setbacks will have to be readily moveable.

For Future Development. No new small buildings will be allowed seaward of the 30-year setback and no new large buildings will be allowed seaward of the 60-year setback.

Any new small building between the 30-year and the 60-year setbacks will have to be readily moveable.

Phasing out flood insurance and development in particularly hazardous, rapidly eroding areas represents a major strengthening of the Flood Insurance Program. The beneficial impacts from this management program will be sizeable: improved coastal water quality, protection of sensitive habitat such as wetlands, protection of fisheries and shellfisheries, and preservation of beaches for future generations.

As mentioned, participation in the management program will be voluntary. If an erosion-prone area or community chooses not to participate in the erosion management program, the following will occur.

- Flood insurance will not be available for new construction or substantial improvement of small buildings seaward of the 30-year setback and larger buildings seaward of the 60-year setback.
- Owners of buildings seaward of the 10-year setback will be allowed one claim of up to 40 percent of the value of the building before their flood insurance policy is canceled. No funds will be available to assist with the costs of relocation or demolition.
- "Pre-FIRM" buildings (buildings built before the Flood Insurance Rate Maps, or FIRMs, were issued for the area) within the erosion zones--smaller buildings seaward of the 30-year setback and larger buildings seaward of the 60-year setback--will be subject to increased premium rates until their community joins the management program.
- No mitigation assistance will be available under the mitigation assistance program established by S. 1650.

All of the provisions of the management program and the incentives for participation will take effect as soon as a community or area is notified by FEMA of their status as "erosion-prone." FEMA will have two years from date of enactment to issue regulations and begin implementation of the program. The process is to be completed within five years of the date of enactment. FEMA must coordinate coastal management activities with NOAA under the Coastal Zone Management Act of 1972.

- Authorize a study of riverine erosion hazards.

S. 1650 directs FEMA to study erosion hazards along rivers. This study will be similar to the National Academy of Sciences 1990 study, *Managing Coastal Erosion*. S. 1650 excludes riverine areas from the management program for erosion-prone communities discussed above, because riverine erosion is not understood as well as coastal erosion. Unfortunately, the theories of coastal erosion cannot be applied readily to rivers. The information gained from the study called for by S. 1650 will be used to guide the design of a management program for erosion-prone riverine areas and communities.

#### Issues not addressed in S. 1650

On the whole, the provisions of S. 1650 are excellent and we strongly support the timely passage of the bill. Several appropriate refinements have been made of the House version by the Senate version of the National Flood Insurance, Mitigation, and Erosion Management Act of 1991; however, two issues have yet to be addressed.

1. The definition of coasts in S. 1650 is improved over H.R. 1236 through the deletion from the definition of the phrase "riverine portions of estuaries." Unfortunately, the exclusion of "bayous" remains in the definition. The danger in this exclusion is that "bayou" is not a technical term. We recommend that the term "bayous" be excluded or accurately defined.
2. Communities should be strongly discouraged against the use structural erosion control measures, such as seawalls and groins, as a response to coastal erosion. The use of environmentally damaging erosion control measures that exacerbate erosion elsewhere will only serve to defeat the purposes of the Flood Insurance Program. We recommend clarification that S. 1650 is intended to encourage non-structural approaches to floodplain management, and that communities will not be allowed to manipulate their erosion-rates or their designation as erosion-prone through the construction of erosion control structures.

For additional information, please contact:

Kathie Dixon or David Conrad  
National Wildlife Federation  
(202)797-6839, -6697

Beth Millemann or Melissa Sagun  
Coast Alliance  
(202)546-9554

## Activities Credited Under the Community Rating System

[Sections 100 and 200 cover other topics in the CRS Schedule]

### 300 Public Information Activities

- 310 Elevation Certificate: Maintain FEMA's Elevation Certificate and make copies available to inquirers.
- 320 Map Determinations: Respond to inquiries for Flood Insurance Rate Map zone and flood data.
- 330 Outreach Projects: Advise residents about the flood hazard, flood insurance, and flood protection measures.
- 340 Hazard Disclosure: Advise potential purchasers of flood-prone property about the hazard.
- 350 Flood Protection Library: Maintain and publicize a library of references on flood insurance and flood protection.
- 360 Flood Protection Assistance: Provide direct advice to property owners desiring to protect themselves from flooding.

### 400 Mapping and Regulatory Activities

- 410 Additional Flood Data: Develop new flood elevations, floodway delineations, wave heights, or other regulatory flood hazard data.
- 420 Open Space Preservation: Credit is provided according to the amount of vacant floodplain that is kept free from buildings and filling.
- 430 Higher Regulatory Standards: Regulations that require new development to be protected to a level greater than the NFIP rules.
- 440 Flood Data Maintenance: Make the community's floodplain maps more current, useful, or accurate.
- 450 Stormwater Management: Regulate new developments throughout the watershed to minimize their impact on surface drainage and runoff.

### 500 Flood Damage Reduction Activities

- 510 Repetitive Loss Projects: Develop and implement a plan to mitigate losses in repeatedly flooded areas.
- 520 Acquisition and Relocation: Purchase or relocate buildings and convert flood-prone properties to open space.
- 530 Retrofitting: Credit is provided according to how buildings have been retrofitted to protect them from flood damages.
- 540 Drainage System Maintenance: Conduct periodic inspections and maintain the capacities of the channels and retention basins.

### 600 Flood Preparedness Activities

- 610 Flood Warning Program: Provide early flood warnings to the general public and special facilities.
- 620 Levee Safety: Maintain levees that are not credited with providing base flood protection and emergency response plans for them.
- 630 Dam Safety: All communities in a state with an approved dam safety program receive credit.



105. PL  
Sent  
5-13-91  
L

May 20, 1991

RE: Matanuska River Erosion

The Honorable Ronald L. Larson  
Alaska State Legislature  
Box V  
Juneau, Alaska 99811

Dear Representative Larson:

I appreciate your request for state assistance in certifying to the Federal Emergency Management Agency (FEMA) that structures are subject to imminent collapse under the provisions of the National Flood Insurance Act of 1968, as amended (the Act).

The Act requires that a property owner's claim for flood insurance benefits on structures subject to imminent collapse from river flood erosion be based on state or local government condemnation action. To be eligible for benefits under the Act, the erosion must be due to water levels exceeding anticipated cyclical levels. Neither the state or the Matanuska-Susitna Borough have adopted the authority necessary to condemn structures which are subject to imminent collapse due to erosion. Without this condemnation action, the property owner must wait until the structure is actually damaged by the river's erosion due to flooding before a claim can be submitted.

National Flood Insurance is only available in locations where local governments have formed and adopted the required flood control ordinances. Local governments have the ability to establish the necessary authority to implement the provisions of the Act relating to condemnation of structures subject of imminent collapse. This alternative would provide the greatest local control over this process. The necessary authority can be established as part of local building code or land use ordinances.

The Matanuska-Susitna Borough has met the minimum requirements for participation in the National Flood Insurance Program once structural damage occurs. However, the Borough has not adopted condemnation powers for structures associated with erosion hazard or adopted a building code for residential structures. They have the ability to establish this authority, if the local voters are willing to adopt this power. An erosion control district covering the area adjacent to the Matanuska River near Butte was

Representative Larson

-2-

May 20, 1991

formed by the Borough in the recent past. However, after this erosion control district was established, it was dissolved through a Borough referendum.

At the present time, no state agency has the authority to condemn the residential structures adjacent to the Matanuska River which are subject to erosion hazard. The Division of Emergency Services may have condemnation authority for erosion hazard purposes, if a state disaster declaration has been previously issued for a specific event. A state disaster declaration has not been issued for the erosion problem on the Matanuska River and the magnitude of this problem does not warrant a state disaster declaration.

In order for the state to obtain the eligibility from FEMA to certify that structures are subject to imminent collapse from coastal erosion, the state must apply for this authority and meet specific requirements. These requirements are identified under 44 CFR, Ch. 1, Part 63.15. Under current FEMA policy, state certification of structures in imminent danger of collapse is a potential option limited to coastal erosion only and can not be utilized for river erosion. If the state did obtain this certification authority from FEMA, it could not be utilized to certify structures subject to imminent collapse along the Matanuska River.

The Department of Community and Regional Affairs has been delegated the responsibility to assist communities with implementation of the Act. Please contact me or Commissioner Blatchford if you wish to discuss this matter in more detail.

Sincerely,

Walter J. Hickel  
Governor

cc: Edger Blatchford, Commissioner, Department of Community and Regional Affairs

bcc: Christy Miller, Flood Insurance Program Coordinator, DCRA

Roger Maggard/ey

*Track 7/80*

CENTRAL REGION  
DEPARTMENT OF TRANSPORTATION and PUBLIC FACILITIES

**MEMORANDUM** **State of Alaska**

TO: Frank Turpin  
Commissioner

DATE: May 13, 1991

THRU: W. Keith Gerken  
Deputy Commissioner

FILE NO:

FROM: Kit Duke  
Regional Director  
Central Region

TELEPHONE NO: 266-1653

SUBJECT: Briefing Paper: Authority  
to Condemn Structures  
Subject to Imminent  
Collapse from Erosion by  
the Matanuska River

**PURPOSE**

The purpose of this briefing paper is to provide additional information regarding the certification or condemnation of structures subject to imminent collapse under the requirement of the National Flood Insurance Act of 1968, as amended (the Act). Representative Larson has written the Governor on behalf of constituents affected by erosion along the Matanuska River. He is requesting state assistance in certifying that the affected structures are subject to imminent collapse. A draft response to Representative Larson is attached for the Governor's signature.

**BACKGROUND**

Once a structure has been damaged by flood erosion an insured claimant can submit their claim in a routine manner. However, before the structure is in imminent danger of collapse from river erosion has actually been damaged, a claim can only be evaluated based on a condemnation notice issued by the state or local government.

There are currently two houses near Butte which are in danger of imminent collapse. It is probable that one house and possibly the second house will be destroyed this summer. There are an estimated six to eight other houses in the subdivision which are considered to be at significant risk from future erosion. Due to the spot variability and difficulty in predicting the Matanuska River's erosion at this location on a year to year basis, it is questionable when the other houses could be in danger of imminent collapse.

**ISSUES**

The following issues are associated with this request:

1. The primary issue is to what extent, if any, the state should assume the responsibility for condemning structures subject to imminent collapse from erosion. Condemnation is

Mr. Frank Turpin  
Page 2

necessary to allow insured property owners to file a claim under the National Flood Insurance Program (NFIP) for structures which have not actually been damaged by erosion. The affected local governments have the ability to provide this service, if they are willing to adopt the necessary powers.

2. Administrative Order 46, adopted in 1978 by Governor Hammond, is out of date. Since AO 46 was adopted, other state agencies have assumed the primary responsibility for developing their own capital projects. Clarification is needed to determine what the department's current responsibilities are or should be regarding the development of state capital projects in areas subject to erosion and flooding.

## ANALYSIS

### Implementation Responsibility

#### Condemnation of Structures Subject to Imminent Collapse

The Act requires that a property owner's claim for flood insurance benefits on structures subject to imminent collapse from river flood erosion be based on state or local government condemnation action. To be eligible for benefits under the Act, the erosion must be due to water levels exceeding anticipated cyclical levels. Neither the state or the Matanuska-Susitna Borough have adopted the authority necessary to condemn structures which are subject to imminent collapse due to erosion. Without this condemnation action, the property owner must wait until the structure is actually damaged by the river's erosion due to flooding before a claim can be submitted.

National Flood Insurance is only available in locations where local governments have formed and adopted the required flood control ordinances. The Matanuska-Susitna Borough has met the minimum requirements to be eligible under the Act. The Borough has not adopted condemnation powers for structures associated with erosion hazard or adopted a building code for residential structures. According to the Borough Manager, the Borough could establish this power through adoption by the Borough Assembly. However, due to the political sensitivity of this issue, this power would not be adopted by the Borough unless it was first approved through a public referendum. An erosion control district, which covered the area adjacent to the Matanuska River near Butte, was formed by the Borough in the recent past. However, after this erosion control district was established, it was dissolved through a Borough referendum.

For river erosion impacts, claims for flood insurance benefits

can only be evaluated on the basis of condemnation. Condemnation may be in a form authorized by state or local law. It may consist of a notification to the property owner of an unsafe condition or other deficiency at the property address, coupled with a statement that the property owner must vacate the property if the deficiency is not corrected. At the present time, no state agency has the authority to condemn a structure subject to an erosion hazard with the following possible exceptions:

1. The Division of Emergency Services may have condemnation authority for this purpose if a state disaster declaration has been previously issued for a specific event. A state disaster declaration has not been issued for the erosion problem on the Matanuska River and the magnitude of this problem does not warrant a state disaster declaration.
2. The Division of Fire Prevention has the authority to enforce the Fire Code Section of the Uniform Building Code. The state has no structural building code. In the case of erosion, the Division of Fire Prevention could issue a notice requiring that no one occupy a residential structure until corrective action was taken if:
  - a. the residential structure consisted of four or more living units; and
  - b. the erosion had impacted the structure to the extent that an occupant's ability to exit the building was affected.

#### Certification of Structures Subject to Imminent Collapse

At the present time, FEMA will only consider allowing states to use a certification of imminent collapse in lieu of condemnation for coastal erosion. If the state did obtain this certification authority from FEMA, it could not be utilized to certify structures subject to imminent collapse along the Matanuska River. In order for the state to obtain the eligibility from FEMA to certify that structures are subject to imminent collapse, the state must apply for this authority and meet the requirements identified under 44 CFR, Chapter 1, Part 63.15. This certification ability is a potential option available to the state, not a requirement for state participation under the National Flood Insurance Act. To date, the state has not applied to FEMA for the authority to certify structures subject to imminent collapse.

The criteria the state must meet to obtain this certification authority include:

Mr. Frank Turpin  
Page 4

1. Adopting statutes requiring a setback for location of new construction or relocated structures along coastal shorelines. Uniform enforcement throughout the state's shorelines is also required.
2. Establishing the state's mean annual erosion rate through a data base for all reaches of coastal erosion within the state which are subject to the National Flood Insurance Act.

The costs associated with providing this service for coastal areas would include funding for staff and travel to collect the necessary data, inspect structures subject to erosion and certify their condition and enforcing setback requirements.

Administrative Order 46

Administrative Order (AO) 46, adopted by Governor Hammond in 1978, designated:

1. The Department of Transportation and Public Facilities as the state agency responsible for ensuring compliance of state capital improvement programs with the provisions of the Rules and Regulations of the NFIP. It also delegated the department the responsibility to encourage a broad and unified effort to lessen the risk of flood losses in connection with state lands and installations and state financed or supported improvements.
2. The Department of Community and Regional Affairs, as the State Coordinating Agency for the NFIP, shall assist state agencies in complying with AO 46 and the NFIP. This responsibility consists of assisting the following in compliance with the NFIP:
  - a. All state agencies responsible for the administration of grant or loan programs involving the construction of facilities to minimize their exposure to flood damage and the future need for flood protection or disaster relief.
  - b. All state agencies responsible for the disposal of lands or properties to other public agencies or private interests.
  - c. All state agencies responsible for land use planning and permitting to include flood hazard evaluations in their decisions.

Mr. Frank Turpin

Page 5

3. Each affected state agency shall adopt regulations to implement their coordination with the DOT&PF under Section 1.

The order did not authorize the state to certify that structures were subject to imminent collapse or authorize any state agency to condemn private property that may be subject to erosion danger. The provisions of the Act relating to certification by the state of structures subject to imminent collapse and to the condemnation of structures were adopted by Congress in 1988.

The status of AO 46 is uncertain. The Attorney General's Office has verbally indicated to staff from the Department of Community and Regional Affairs that AO 46 is no longer in effect. The primary reasons for the uncertain status of AO 46 are its adoption by a former administration, the lack a specific direction regarding this issue since 1978, and its questionable degree of implementation by state agencies.

The DCRA included a draft analysis of AO 46 in the report State of Alaska, Flood Hazard Mitigation Plan covering the Yukon, Kuskokwim, Koyukuk, Kobuk, and Tanana Rivers and Tributaries. This draft analysis discussed their concerns with AO 46, in terms of compliance with federal floodplain management regulations.

## RECOMMENDATIONS

### Condemnation Authorization

Any insurance benefits obtained by condemning structures subject to imminent collapse will be limited to locations within the jurisdiction of local governments which have met the requirements to participate in the National Flood Insurance Program. We recommend that local governments assume the primary responsibility for condemnation of structures subject to imminent collapse.

Local governments which participate in the National Flood Insurance Program are assumed to have the ability to establish the necessary condemnation authority. They also have the greatest familiarity with their particular erosion problems. This alternative would provide the greatest local control over this process. The necessary authority can be established as part of local building code or land use control ordinances. However, it is likely that many local governments will not be willing to establish this condemnation authority. If the Administration determines that this service is a state priority and it was limited to only those cases where the affected property owner requested the condemnation action, it could be adopted by statute with a relatively moderate cost to the state.

Certification of Imminent Collapse

Certification would only be effective in addressing coastal erosion problems and could not be utilized in addressing riverine erosion problems. In order to meet FEMA's certification requirements, the establishment of state statutory authority to control setbacks from the coastline would be required. The establishment and enforcement of this authority would be controversial and expensive. In addition, the state would be required to establish a data base for coastal erosion, which would also be expensive. It would be simpler, less expensive and more efficient to establish any needed authority through condemnation powers rather than certification through FEMA.

Administrative Order 46

Clarification is needed to determine if AO 46 remains in effect. It is unlikely that it is currently being effectively implemented or that it appropriately reflects the current relationship between departments. Since 1978, most other state agencies have assumed the primary responsibility for constructing their own facilities with very little direct DOT&PF involvement or oversight. We recommend AO 46 be reviewed to determine if it needs to be reissued with modifications.

Copies of Representative Larson's request, AO 46, DCRA's draft analysis of AO 46 contained in the State Flood Hazard Mitigation Plan and the relevant portion of 44 CFR are attached. If you have any questions regarding this matter, please call me.

RM/cmj





# Matanuska-Susitna Borough

BOROUGH MANAGER

January 27, 1992

Ervin Paul Martin, Director  
Alaska Division of Emergency Services  
Department of Military &  
Veterans Affairs  
P. O. Box 5750  
Ft. Richardson, Alaska 99505-0801

Dear Mr. Martin:

The Matanuska-Susitna Borough is again calling upon the state Division of Emergency Services to help us with the disastrous erosion of the Matanuska River into the private property in the vicinity of Circle View and Stampede Estates subdivisions.

The problem is at somewhat of a low ebb right now because of winter, however, it has by no means left us. The river, even in ice conditions, has advanced into the low area adjacent to the Thornsley property and will probably rampage in that direction this Spring.

We are expecting further loss of houses--certainly the Witt's and probably the Thornsley's--this summer.

Last year, the river destroyed the Moline property, as had been predicted. During the disaster there was a concurrent problem on the Kuskokwim River which resulted in a Federal Disaster Declaration. We, here in the borough, later learned only by accident that this event made the residents of Circle View eligible for certain disaster relief as residents of an "adjacent county." Because we were not advised of this however, the opportunity to apply for relief was lost.

The state Division of Emergency Services is the lead agency for disasters of this nature and is the agency we rely upon for guidance in these situations.

My purpose in writing now is to inquire if there is any provision in the law that would allow eligible residents to apply now for a Federal Disaster loan as a result of last summer's activity.

Ltr/12091-4

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January 20, 1992

I have spoken to representatives of the Federal Emergency Management Agency (FEMA) about this and they basically directed me to work through your office. I would like an opportunity to discuss the matter at your earliest opportunity if there is any possibility that may be helpful to the people threatened by this river.

In October, residents of Circle View and Stampede Estates Subdivisions voted to form a flood and erosion control service area. With the formation of the service area, the borough now has the statutory authority and power to construct erosion abatement, or protection structures such as dikes or other bank protection systems on the river. Under Alaska Statute 29.35.110 areawide tax revenues of the borough cannot be used for this purpose. The cost of any construction measure must be limited to the funds that can be raised within the service area or by grants or sources other than areawide tax revenue. Invariably, the cost of most reliable protection systems are estimated to be in the several millions of dollars, well beyond what the service area could afford to construct or support financially .

Last year, the borough hired the engineering firm of Peratrovich, Nottingham and Drage to evaluate the erosion problem and make recommendations on an engineering design for a constructed system. PN&D has developed a very simple system using bank armor rock and very short spur dikes that would serve the purpose and require little or no maintenance. The engineers estimate that most of the construction could be accomplished for approximately, \$500,000, **IF THE CONSTRUCTION WERE DONE DURING THE WINTER SEASON.**

Until very recently, the state and federal agencies have held fast to the view that the only reliable engineering solution to control this erosion would cost approximately 15 million dollars. This position is expressed in the draft report from the Alaska Task Force appointed by the Governor to evaluate the erosion problem of the Matanuska River basin. I have included a copy of this draft in the enclosures. Recently, however, there appears to be more acceptance of the PN&D "prototypical" design as a possibility by these agencies. Our problem, right now, is one of time. If the agencies continue to debate through the winter, the system will cost much more to construct and may not be completed in time to save the homes that are threatened this Spring.

In my own personal view I feel that the PN&D designed project is as reliable as anything can be when it comes to dealing with a braided stream like the Matanuska River. This engineering firm certainly has a proven track record in Alaskan construction, much of it involving structures in rivers. If their design was applied to the erosion problem at Circle View, and proved to be successful, it would have significant implications to a variety of other areas in this state and borough where these problems exist. It would certainly protect a very significant portion of the borough's tax base, and come to the relief of some very deserving citizens.

It seems to me that there just has to be a way for the state and borough to at least share the responsibility and liability to make the decision and try the PN&D designed river protection system at Circle View and Stampede Estates Service Area. Keep in mind that the rate and direction of this erosion will eventually threaten a state road, Bodenbug Loop, which is essential

to the transportation in the area and is the state's responsibility to protect. If the erosion could be halted now, it would save the state a much greater effort later on as well as a very significant portion of the borough's tax base.

There is much more to this very complicated issue than I can even attempt to cover in a single letter. However, I would like to emphasize that we should at least make the effort to hear out this idea. I would like to propose that the state and federal agencies and the borough meet to thoroughly evaluate this concept.

If it is decided that the design is not workable, or that the state cannot share in the responsibilities or liability for its construction then we will simply have to do something else. The borough assembly has already directed the service area to develop a loan program for the residents of the service area using the \$500,000 which the state had loaned the borough. This is an all-around less desirable option in many ways, however, it is the only one we can think of that gives the residents of Circle View some relief that does not put the areawide taxpayer of the borough at risk.

Finally, we note with interest the Governor's recent decision to take legal action against the federal government to "confirm" the state's ownership of Alaskan rivers. The borough wholeheartedly agrees with this assertion, and also believes this confirms the state's responsibility to at least share in the protection of its people and property when one of its rivers gets out of control. That's all we are asking for here and is what we have said all along.

Please contact me at your earliest opportunity if you agree we should pursue the suggestion I set forth above. I will be meeting with the Governor's Task Force which includes most of the agency representatives necessary to make a decision, or at least a recommendation which would allow us to proceed with a shared responsibility for the erosion control design from PN&D.

Regardless of this possibility however, we are looking once again to the state of Alaska for guidance in the disaster that is sure to occur this summer. The \$500,000 loan from the state to the borough may be insufficient to meet the needs of either a constructed solution or the relocation of the residents. We will try, however, to make these funds go as far as possible toward their relief.

Sincerely,

Donald L. Moore  
Borough Manager

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90-97

WALTER J. HICKEL, GOVERNOR

**DEPARTMENT OF MILITARY  
AND VETERANS AFFAIRS**  
ALASKA DIVISION OF EMERGENCY SERVICES

PO BOX 5750  
FT. RICHARDSON, AK 99505-5750  
PHONE: (907) 428-7000

February 4, 1992

Mr. Don Moore, Borough Manager  
Matanuska-Susitna Borough  
350 East Dahlia Avenue  
Palmer, Alaska 99645-6488

Dear Mr. Moore:

Thank you for your letter of January 27, 1992. I would like to respond to inquiries and clarify some issues relating to the Circle View erosion problem as expressed in your letter.

Pertaining to your inquiry about any federal disaster loans available, the only agency that provides Federal Disaster Loans is the Small Business Administration (SBA). This is the agency that was involved in the disaster loan program made available due to the flooding on the Yukon and Kuskokwim River during the spring of 1991. Your implication that individuals of the Circle View subdivision lost out on an opportunity for assistance during this period is not entirely correct. I would like to offer this explanation as to what happened in this particular situation:

1. Governor Hickel declared a State disaster declaration on May 7, 1991, in response to the flooding that caused extensive damage to many communities on the interior river system. On May 30, 1991, Governor Hickel's request for Federal Disaster Assistance was approved by President Bush.
2. One result of the Federal Disaster Declaration was the assistance of the Small Business Administration (SBA) with their disaster loan program. The SBA did include in their disaster declaration (as mandated by federal law) adjacent counties to the political jurisdictions directly damaged by the floods. The purpose of this nationwide procedure is to include local governments that might normally depend on the damaged localities as an economic base. Generally, the distance from the actual disaster damage and the adjacent counties is quite small in the lower 48. In this case, the distance was a great deal and the effect of the flooding of the interior river systems was no problem to the Mat-Su Borough. However, since the Matanuska-Susitna Borough was a neighboring political subdivision to a local government that actually received damage, residents of the Mat-Su were eligible to file claims with the SBA.

Mr. Don Moore  
February 4, 1992  
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3. The majority of publicity for this program was generated by the SBA in the river communities receiving damage by the flooding. I understand that one individual from the Circle View Subdivision applied for loan assistance based on advertising seen in the Fairbanks newspaper. The SBA did process this individual's application.
4. In November of 1991, the Alaska Division of Emergency Services (ADES) learned of the above application and contacted the SBA to further explain the situation at the Circle View subdivision and determine if any additional assistance could be made available to those residents. SBA informed ADES that only individuals that suffered damage to their structure (not land) during the time of the interior flooding would be eligible to apply for assistance. Unfortunately very few residents of the Circle View Subdivision could actually meet this criteria. However, SBA agreed to consider any Circle View subdivision application based on its own merits even after the deadline for the application process had passed.

This situation did involve a certain amount of confusion on the areas that SBA covered under its disaster program, in particular the "adjacent county" concept. However, SBA has been willing to work with the State to insure that no individual would lose their opportunity to make their best claim as the result of any confusion. If anyone in the Circle View Subdivision feels they have not had an opportunity to apply to the SBA for the spring 1991 floods, ADES would be happy to assist all interested individuals in contacting the SBA.

In reference to your concerns on the Peratrovich, Nottingham, and Drage proposal, I can provide you with the following guidance. On July 18, 1991, Governor Hickel signed a State Disaster Declaration for the Matanuska-Susitna Borough for the purpose of providing assistance to the Borough in coping with the immediate problems of the homeowners in the Circle View Subdivision. This assistance took the form of a \$500,000 loan with the only restriction being that the loan be repaid. Should the Mat-Su Borough decide to use this loan to implement the Peratrovich, Nottingham, and Drage proposal, the State has no objections provided that the proposal meets all engineering, environmental, and ecological requirements of the State and federal permitting agencies. It is my understanding that representatives of the State Department of Transportation and Public Facilities and the U. S. Army Corps of Engineers have tentatively deemed this plan a possible solution to the immediate problem for the impacted area of the Circle View subdivision. ADES will help the Mat-Su Borough in coordinating with the proper agencies in an effort to request the correct permits if the borough decides to use the \$500,000 loan for this

Mr. Don Moore  
February 4, 1992  
Page 3

proposal. I would agree with your assessment that the problem right now (winter) is at a low ebb which will accelerate come spring. You should initiate immediate action on this proposal if you have determined it to be the preferred alternative using State funds.

I would like to conclude with a concern I have been developing with this situation. I recognize that people in the Mat-Su Borough are concerned about the problems of the individual homeowners of the Circle View subdivision. In fact, any person who has met these homeowners cannot help but think how they would feel if placed in a similar situation. Unfortunately government officials, in addition to their personal feelings, have a responsibility to justify the expenditure of the public's funds. One of the best guidelines in carrying out this responsibility is the attitude of the local citizens.

I am inclined to believe that the average citizen of the Matanuska-Susitna Borough does not support the spending of public funds for the assistance of the Circle View residents. I base this belief on the extended period of time it has taken the Mat-Su Borough in developing a plan for using the \$500,000 loan provided by the State. Virtually all of the disaster declarations that I have been involved with in the past five years, and from State disaster records dating back over twenty-five years, local communities have come to a rapid decision on how to utilize either State or federal disaster funds. There are many times when the actual expenditure of the funds are delayed due to construction seasons, etc., but the decision on how to use the money is rapidly agreed. It seems that in this case, the elected and administrative officials of the Mat-Su Borough have not experienced a high level of concern (with exception of the local homeowners of the Circle View subdivision) from their constituency to solve this problem using public funds.

Hardly a day goes by in the State when some individual or family suffers their own personal disaster. This may take the form of loss of property through fire, or theft, or perhaps injury or death through accidents. Government attempts to provide some assistance in these situations, generally through emergency responders. Local citizens generally expect some level of local support in these areas. A local disaster extends past the individual first responder and begins to take into consideration the impact of a disaster on the community as a whole. In the local disaster situation there is widespread support within the community for public assistance, and this support comes across loud and clear to their elected representatives. I would think that local elected leaders of the Mat-Su Borough would have received more conclusive feedback from your citizens long before six months had passed from the original declaration. I have no doubt that the borough's

Mr. Don Moore  
February 4, 1992  
Page 4

original disaster declaration was made in good faith with the feeling that it had the full support of the populace of the entire borough. However, I have my doubts on whether that original feeling was correct. State disaster declarations are reserved for those events which impact a significant portion of a local government jurisdiction, beyond local government resources to effect relief, and only after the local government has expended available relief assistance and determined appropriate relief measures. State government has never intended to usurp local government prerogatives in a disaster emergency, but rather to assist in supplementing deficiencies within the determined course of action.

I hope I have clarified your misconceptions and provided additional useful information. Please contact me if I may be of further assistance.

Sincerely,

EPM:JS:af

Ervin Paul Martin  
Director





# Matanuska-Susitna Borough

350 EAST DAHLIA AVE, PALMER, ALASKA 99645-8488 • PHONE 745-9880  
BOROUGH MANAGER

February 10, 1992

## MEMORANDUM

To: Matanuska River Task Force

From: Donald L. Moore, Borough Manager *DM*

Subject: PROTOTYPE EROSION ABATEMENT SYSTEM

In July of 1991, the Matanuska-Susitna Borough hired the firm of Peratrovich, Nottingham and Drage to evaluate the erosion in the vicinity of Circle View and Stampede Estates Subdivisions on the Matanuska River and to design a reasonable and hopefully inexpensive bank protection system. PN&D developed a design using a series of short "spur dikes" which would extend approximately 50 feet into the Matanuska River at critical points with a rip rap protected bank extending several hundred feet down stream of the spur dike. The borough applied for and received emergency permits from the various regulatory agencies for the construction of the bank protection system. Construction was unable to proceed however, because the borough did not have the authority under the statutes as a second class borough to undertake erosion control powers to protect private property. The liability risks associated with a borough construction project which would alter the course of a state river was unacceptable to the borough.

In October of 1991, the residents of the area voted to exercise flood and erosion control powers as a service area within the Matanuska-Susitna Borough. With the formation of the service area the borough now has the authority to exercise or construct erosion control measures within the service area. In the mean time, the engineering firm, PN&D, has revised and refined its design of the erosion control system to an even less expensive and more reliable design. If the construction was done during the winter season, the costs would be much lower due to the ability to use gravel fill and more stable access on the frozen river and low water. The only remaining concern is the question of legal liability for the borough to undertake work in the state river.

The borough proposes that the state of Alaska, through its agencies of Department of Natural Resources, Department of Transportation/Public Facilities join with the Matanuska-Susitna Borough in a cooperative plan to share the responsibility to construct the erosion abatement system as designed by Peratrovich, Nottingham and Drage at the location of the Circle View and Stampede Estates erosion disaster. The project could be executed by the borough provided the state would hold the borough harmless for the construction or, alternatively, the state could execute the construction using the PN&D design. The usual permits and approvals from all appropriate agencies would be a requirement of either party that performed the work.

The estimated cost of the project is \$500,000 if constructed under winter conditions. Funding would have to be arranged by agreement of the parties. A potential source of some funding was originally considered to be the loan made by the state of Alaska to the Matanuska-Susitna Borough for the 1991 disaster. However, these funds are currently directed by the Assembly for a pass-through disaster loan program to be available to the service area residents. Any proposed change in the use of these funds would require formal action by the borough assembly.

Both the borough and the state of Alaska have a large interest at stake to control the erosion in this area. The borough, because of the considerable tax base and public road that is threatened by the erosion and the state because of the eventual threat to the Bodenbug Loop Road, which is state owned. Another consideration of the above proposal however is in the fact that the PN&D design may have implications and application to similar erosion problems along the Matanuska River or even throughout the state of Alaska. If this design can be tested as a prototype at the Circle View location, the state of Alaska may have a lower cost alternative to some of the projects that have been undertaken in other areas of the state.

For these reasons, the borough proposes a joint venture between the state of Alaska and the Matanuska-Susitna Borough to consider the construction and testing of the PN&D design erosion control system as a possibility to protect both the state and borough interests located in the vicinity of Circle View Subdivision and for possible application throughout the state of Alaska where river erosion threatens public or private property.

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# Matanuska-Susitna Borough

BOROUGH MANAGER

February 11, 1992

Jack D. Sharp  
Emergency Management Officer  
Alaska Division of Emergency Services  
P. O. Box 5750, Suite B-210, Bldg. 49000  
Fort Richardson, Alaska 99505-5750

Dear Mr. Sharp:

Re: **MATANUSKA RIVER EROSION TASK FORCE**

I wish to express my appreciation for the opportunity to serve on the Governor's Task Force concerning the Matanuska River erosion problem within the Matanuska-Susitna Borough. We, in the borough, are indeed grateful for the Governor's interest in the problem and are confident that this attention will eventually lead to the development of better programs for dealing with this problem than we currently have. Erosion along river banks in Alaska, particularly glacial fed, braided streams such as the Matanuska is a serious threat to many citizens of the state and I sincerely hope we will someday find a way to avoid the kind of suffering the residents of Circle View Subdivision along the Matanuska are currently having to endure.

Although I willingly participated in the work of the committee as the official representative from the Matanuska-Susitna Borough, I do need to qualify my contribution as being my opinion and effort only. The Borough Assembly, as the elected body, has not reviewed the draft report or my contributions to it. As Borough Manager, however, I did attempt to make certain that any effort I put forth on behalf of the borough as a member of this task force was in keeping with the policies and position of the Borough Assembly as I understand them. Nevertheless, I would like it clearly on the record that although the Borough Manager participated in the work of the task force as a member, the task force's final report has not been reviewed or endorsed by the Borough Assembly and may contain items that are at variance with the Assembly's position. I am not aware of any such issues at this point.

I would also like to take this opportunity to express what may be considered a "minority report" on certain of the task force recommendations. First, the draft report contains a lot of detail in recommendations of what the Matanuska-Susitna Borough should do, such as changes to its land

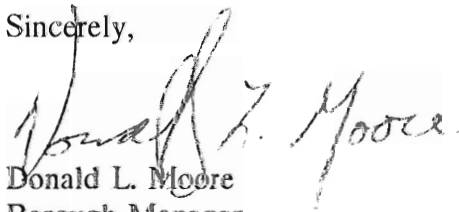
use codes, subdivision/platting requirements, and building codes. Options for state and federal action are generally more vague. I feel the report lacks emphasis on the state and federal responsibilities, particularly regarding the state-owned river bed, and federal hazard mapping, and insurance programs. The report encourages the state and/or federal government to mandate greater regulation by local government. This would increase cost of local government while possibly decreasing real estate values and economic activity where development options are reduced due to flooding or erosion hazards. These financial impacts may be larger than the local government can afford. Mandates should include compensation by the level of government requiring such action.

Lending and insurance requirements are the largest influence on standards for building in the Matanuska-Susitna Borough. The report does not really address private sector options that could be taken by the Alaska Housing Finance Corporation, FDIC, FHA, other lenders, and/or insurance companies to prevent erosion hazards to properties they are financing or insuring. Use of lending and insurance practices reduces government costs, and necessary bureaucracy while focusing responsibility and costs on the parties directly involved.

Finally, there is the matter of the private property owners responsibility when building near water courses. The predominant desire of property owners, especially in the Matanuska-Susitna Borough, is to minimize government interference in their land use decisions. This attitude is reflected in the current level of government regulations. There is significant public opinion that the government (the public) is not responsible for the losses of those who want the advantages of less regulation. Perhaps to recognize this attitude there should be some discussion of the "least regulation option" in which the government makes existing information available to the public about potential hazards and otherwise leaves the responsibility and consequences for dealing with those hazards with the property owner.

Again, thank you for the opportunity to participate in the work of the task force. We look forward to the implementation of some measure of these recommendations.

Sincerely,



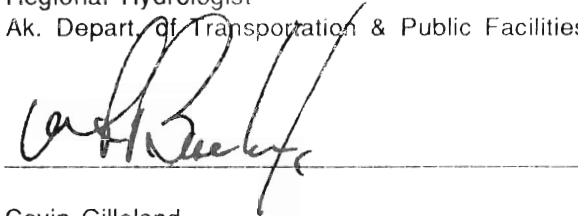
Donald L. Moore  
Borough Manager

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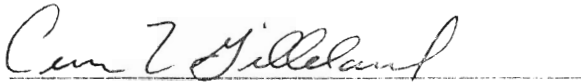
**SIGNATURE PAGE:**

The following individuals took part in the majority of the meetings and discussions of the Task Force. Any individual or group is free to provide additional information, rebuttal, or comments under separate submission.

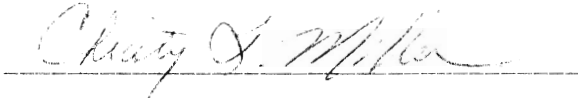
W. F. (Skip) Barber  
Regional Hydrologist  
Ak. Dept. of Transportation & Public Facilities



Cevin Gilleland  
Ak. Depart. of Fish & Game



Christy Miller  
Ak. Depart. of Community & Regional Affairs



Paul Pinard  
District Supervisor, MSDO  
Ak. Depart. of Environmental Conservation



Allan T. Samet  
Area Manager  
Ak. Dept. of Natural Resources



Jack D. Sharp  
Emergency Management Officer  
Ak. Div. of Emergency Services



Bill Siedler  
Staff Assistant  
Senator Curt Menard's Office



**ADDITIONAL PARTICIPANTS:**

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U. S. Army Corps of Engineers

Don Moore  
Borough Manager  
Matanuska-Susitna Borough

Dor & Mary Moline Karabelnikoff  
Real Estate Counselor

Myrtle E Moline  
Circle View Resident

Russell W. Sanders  
Circle View Resident

Ron Thornsley  
Circle View Resident