

HJR

27

Development in Alaska's Waterways and Wetlands

The Corps of Engineers and You



Cover photos by
Joel Ward
Jim Brogdon

Alaska District
U.S. Army Corps of Engineers
Regulatory Branch
(907) 753-2712
or toll free
(800) 478-2712

Larry Reeder





Steve Lund

The U.S. Army Corps of Engineers permit program regulates the development and protection of waters and wetlands so they will be used in the best interests of the public. Congress has delegated this responsibility to the Corps to ensure the continued wise use, survival and health of these waters through the public interest review process.

The Corps has jurisdiction over placing dredged or fill material in wetlands and waterways, construction of any structure in or over navigable and tidally influenced waters, excavation of material from these waters, or any obstruction or alteration in such waters.

Section 10 of the **River and Harbor Act of 1899** requires Corps permits for any construction or

Heleen Vellinga





Photo: Lund

activity that alters the navigability of the waterways. This includes the ocean, rivers, streams, lakes and adjacent waterways.

Section 404 of the **Clean Water Act of 1977** requires Corps permits for placing dredged or fill material in all waters, including wetlands.

These laws apply to all projects affecting these waters, from the smallest recreational dock to the largest commercial undertaking, including site development and road fills, artificial islands, bank

protection and utility line crossings.

Structures requiring permits include bulkheads with backfill, piers, pilings, ramps, breakwaters, jetties, groins, stone revetments, boathouses and buoys or mooring devices.

Other work requiring permits includes dredging and fill associated with utility lines, pads to support structures, dikes and dams, stream crossings, stream channelization, and riprap for shoreline protection.

Photo: B. Green



The Importance of Wetlands

Wetlands provide direct economic, social and environmental benefits to the public. They serve as buffer areas, protecting the shoreline from erosion by waves and moderate storm surges. They act as natural barriers between develop-

ment and waterways and as storage areas during floods and storms by retaining and gradually releasing high waters after subsidence. Wetlands often serve as groundwater recharge areas by replenishing sources of drinking water. They also filter and remove pollutants from water.



John Ward

Larry Reeder



Wetlands are valuable resource areas. They include swamps, marshes, bogs, wet tundra, tidal waters, lakes, and stream and river systems. They are breeding, spawning, feeding and nursery areas for fish such as salmon and char. Wetlands are important nesting, feeding and wintering areas for waterfowl and shorebirds. They are a source of food and cover for moose, bears, and important furbearers like beavers and otters. Some aquatic areas may be the last stronghold for threatened and endangered species such as the Eskimo Curlew, Aleutian Canada Goose and Arctic Peregrine Falcon.

Waters Regulate Corps of Engine

Terms and Definitions

Dredged Material: Material excavated or dredged from water.

Fill Material: Used for the primary purpose of replacing an aquatic area with dry land or of changing the bottom elevation of any body of water.

Discharge of Dredged or Fill Material: Addition of material into water, including the addition of material to a specified discharge site and the runoff or overflow from a contained land or water disposal area.

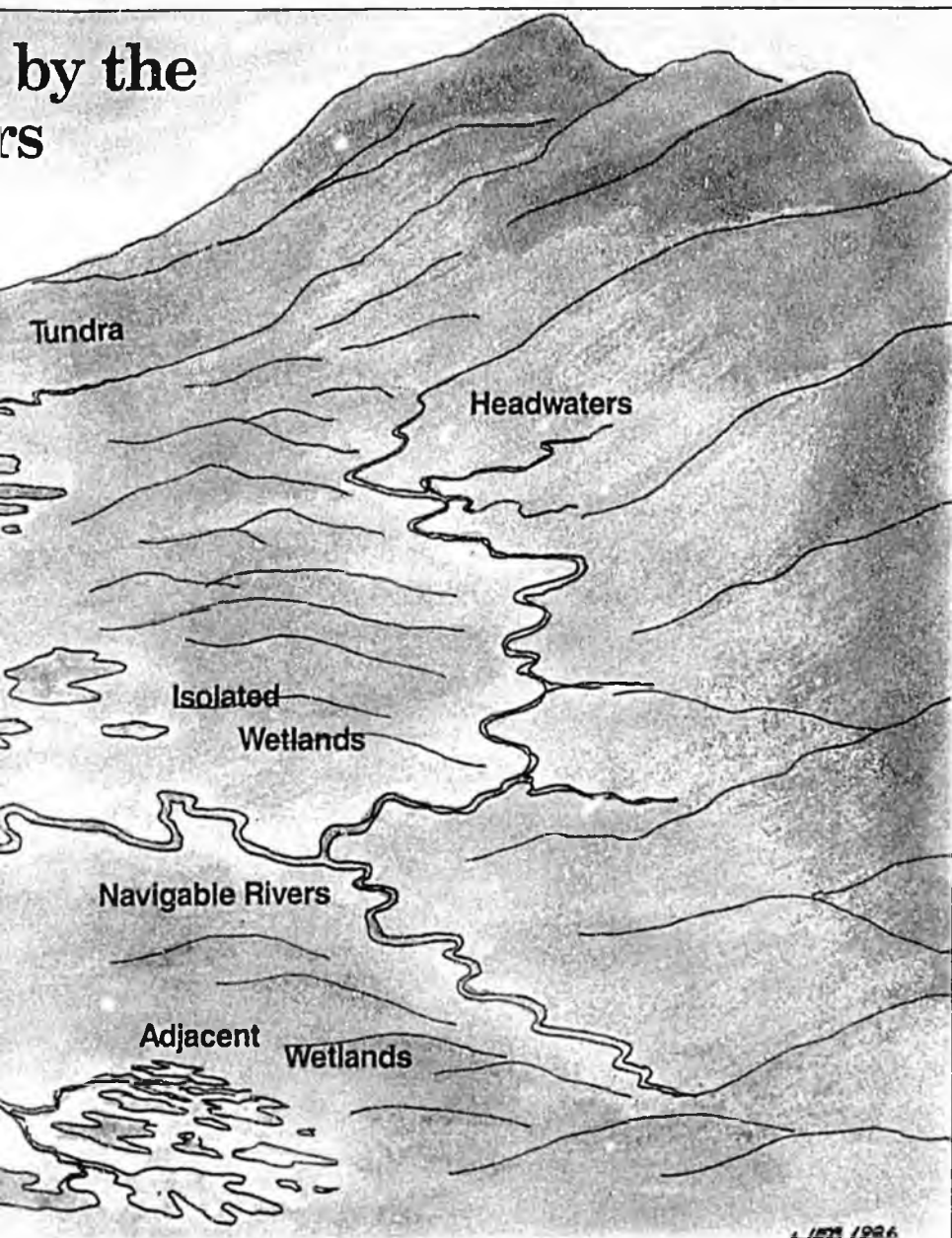
Headwaters: The point on a non-tidal stream above which the average annual flow is less than five cubic feet per second.

Navigable Waters: Waters subject to the ebb and flow of the tide shoreward to the mean high water mark and/or presently used, or have been used in the past, or may be susceptible to use for transportation of interstate commerce.

Ordinary High Water: The line on the shore established by the fluctuations of water indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of the soil; destruction of terrestrial vegetation; the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding area.



by the
rs



Wetlands: Areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support vegetation typically adapted for life in saturated soil conditions.

Adjacent Wetlands: Bordering or contiguous to water. Wetlands separated from other water by such things as constructed dikes or barriers, natural river berms or beach dunes are also "adjacent wetlands."



Karen Veiniga

Mary Leikom

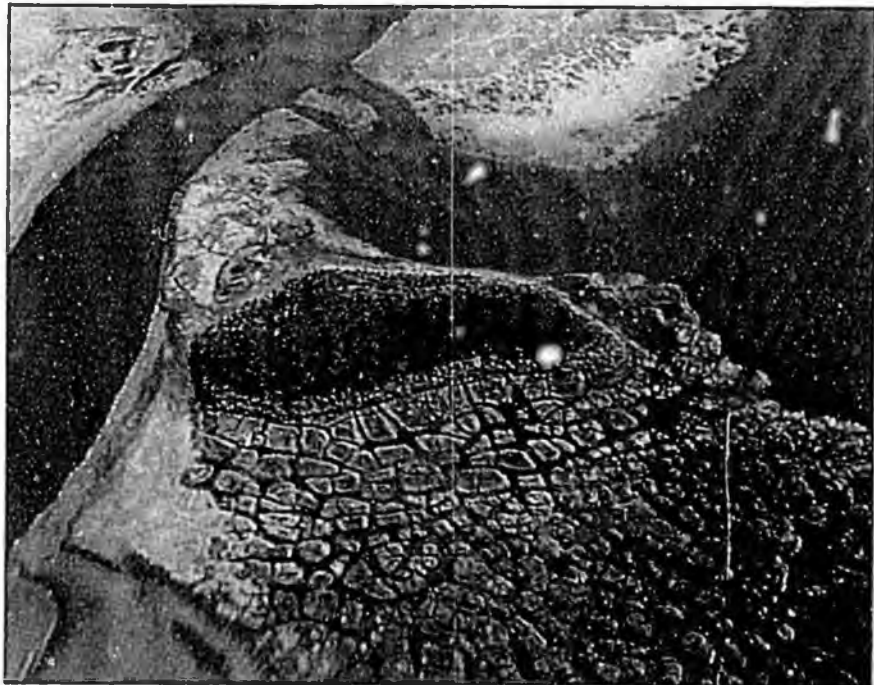
Obtaining a Permit

Any individual, company, corporation or government body planning construction or fill in waters of the United States, including wetlands, must obtain a permit from the Corps before starting the work. These permits are required on private land as well as on public land.

To determine whether a permit is required, contact the Corps. This service is provided by the Corps' Regulatory Branch at no charge.

If the proposed project requires a permit, a formal application must be submitted. A public notice is issued and a review is made by other federal, state and local agencies and the public. If the project is controversial a public hearing may be held.

Corps specialists analyze the impacts of the proposed activity, con-





Jim Bregman

sidering several important factors, including economics, environmental concerns, water quality, navigation, flood storage, cultural resources, aesthetics, recreation, water supply, energy needs, safety,

food production and the needs and welfare of the applicant.

As a result of this review, an applicant may be required to modify potentially detrimental aspects of the proposed project to comply with





Jim Bragdon

the intent of the laws. Permits are issued by the Corps' district engineer when the project is found to be in the public interest. An applicant must obtain other federal, state and local permits for the project in addition to the Corps permit.

Considerable time and expense may be saved by contacting the

Corps for a permit before beginning work in waterways or wetlands. Penalties for non-compliance with the laws are high. Violators are subject to fines up to \$25,000 per day or imprisonment for up to one year, or both.

For permit application information and jurisdictional determinations, contact:

Regulatory Branch
Alaska District
U.S. Army Corps of Engineers
P.O. Box 898
Anchorage, Alaska 99506-0898

phone:
(907) 753-2712
toll free (800) 478-2712



Sensitivity to our nation's important natural resources, including waterways and wetlands, is in the public's best interest - now and in the future. With cooperation, the need for developing our nation's resources can be successfully balanced with the values that are important to all of us.

Alaska District
U.S. Army Corps of Engineers
Regulatory Branch
(907) 753-2712
or toll free
(800) 478-2712

Larry Frazier



SENATE COMMITTEE REPORT

FURTHER:

5/6/87

DATE TURNED INTO OFFICE _____

Mr. President:

RESOURCES Committee considered CSHJR 27(Res)

United States Army Corps of Engineers' permit for dredging or filling wetlands.

and recommended:

replace with CS FOR _____) same title
 or adopt _____ CS FOR _____) new title

attached amendment(s) and

do pass

do not pass

no recommendation

individual recommendations

further referral to _____

letter of intent adopted _____

Committee attached or adopted fiscal note(s)

new updated or previous
 zero fiscal impact

MEMBERS SIGNING DO PASS

OTHER RECOMMENDATIONS

[Signature]
[Signature]
[Signature]
[Signature]
[Signature]

[Signature]
Chairman signature and recommendation

Committee Backup Attached

Alaska State Legislature

Senate Resources Committee



Sen. John B. (Jack) Coghill, Chairman
Sen. Paul Fischer, Vice-Chairman
Sen. Lloyd Jones
Sen. Arliss Sturgulewski
Sen. Jim Duncan
Sen. Fred Zharoff
Sen. Dick Eliason

Box V
Juneau, Alaska 99811
(907) 465-4907

TO: SENATE RESOURCES COMMITTEE
FROM: COMMITTEE STAFF
DATE: MAY 8, 1987
RE: HJR 27, "Permafrost Wetlands Permit Process"

CONTENTS

1. Sponsor's Statement
2. DNR and DEC Fiscal Notes
3. Cowper Administration Opinion
4. Permafrost Map
5. Department of Agriculture Memo
6. Study by Professor Alan C. Epps

MR CHAIRMAN, MEMBERS OF THE COMMITTEE, HOUSE JOINT RESOLUTION 27 IS BEFORE THE RESOURCES COMMITTEE TODAY FOR CONSIDERATION, THIS LEGISLATION IS THE RESULT OF ESCALATING PROBLEMS IN MY DISTRICT STEMMING FROM THE UNITED STATES ARMY CORPS OF ENGINEERS 404 PERMITTING PROGRAM.

SECTION 404 OF THE FEDERAL CLEAN WATER ACT DIRECTS THE CORPS OF ENGINEERS TO REGULATE THE DISCHARGE OF DREDGED OR FILL MATERIAL INTO THE WATERS OF THE UNITED STATES INCLUDING WETLANDS. THE PROBLEM WITH THIS BASICALLY ADMIRABLE INTENT BEGINS WHEN FEDERAL REGULATIONS, WHICH I BELIEVE ARE DIRECTED PRIMARILY AT PROTECTING MARSHES, BOGS, SWAMPS AND BAYOUS IN THE CONTIGUOUS UNITED STATES, ARE APPLIED TO ALASKA LANDS WITH NO CONSIDERATION OF OUR UNIQUE CLIMATE OR SOIL CONDITIONS.

IN ORDER TO OBTAIN A ZERO FISCAL NOTE ON THIS RESOLUTION, MY STAFF WORKED WITH DEC, DNR AND F&G IN DRAFTING THE HOUSE RESOURCE COMMITTEE SUBSTITUTE WHICH WAS ADOPTED BY THE HOUSE.

BONAFIDE WETLANDS ARE A RESOURCE THAT SHOULD BE AFFORDED A DEGREE OF PROTECTION. THESE AREAS CAN PROVIDE A NUMBER OF BENEFITS TO OUR ECOLOGY SUCH AS A HABITAT FOR REARING OF FISH AND SHELL FISH, WATER PURIFICATION, GROUNDWATER RECHARGE OR FLOOD WATER ABSORPTION AND RELEASE. HOWEVER, ALASKA IS COVERED WITH PERMAFROST WETLANDS THAT PROVIDE NONE OF THESE BENEFITS.

HJR 27 REQUESTS THAT GOVERNOR COMPER WORK WITH OUR CONGRESSIONAL DELEGATION TO OBTAIN REGULATORY RECOGNITION OF ALASKA'S UNIQUE PERMAFROST WETLANDS. THIS IS NOT AN IMPOSSIBLE TASK SINCE CONGRESS

HAS ALREADY RECOGNIZED OUR PERMAFROST WETLANDS CHARACTERISTICS THROUGH THE EXEMPTION OF "PERMAFROST SOILS IN ALASKA WITH A HIGH POTENTIAL FOR AGRICULTURAL DEVELOPMENT" FROM THE "SWAMPBUSTER" PROVISIONS OF THE FOOD SECURITY ACT OF 1985.

IN ADDITION, THE CS FOR HJR 27 ALSO REQUESTS THAT THE GOVERNOR REEVALUATE A 1983 REPORT REGARDING STATE ASSUMPTION OF THE 404 WETLANDS PERMITTING PROCESS AND REPORT HIS FINDINGS TO THE SECOND SESSION OF THE FIFTEENTH ALASKA STATE LEGISLATURE. SINCE THE TIME THIS REPORT WAS COMPLETED, THE STATE OF MICHIGAN HAS IMPLEMENTED AND OPERATED ITS OWN 404 PERMIT PROGRAM FOR ROUGHLY THREE YEARS. WHILE OFFICIALS OF THE MICHIGAN DEPARTMENT OF NATURAL RESOURCES ADMIT THEY ARE STILL WORKING OUT SMALL PROBLEMS WITH THE PROGRAM, THEY ARE PLEASED WITH THE OVERALL RESULTS.

STATE OF ALASKA 1987 LEGISLATIVE SESSION
FISCAL NOTE

REQUEST: _____

Bill Version: CSHJR 27(Res)
Enactment Date: HOUSE 4/28/87

Revision Date: 4/27/87
Title: U.S.C.O.E. permitting

Agency Affected: Natural Resources
BRU: Land & Water Management

Sponsor: Miller & Frank
Requestor: House Resources Committee

Components: _____

EXPENDITURES/REVENUES: (Thousands of Dollars)

| OPERATING | FY 87 | FY 88 | FY 89 | FY 90 | FY 91 | FY 92 |
|-------------------|-------|-------|-------|-------|-------|-------|
| PERSONAL SERVICES | | | | | | |
| TRAVEL | | | | | | |
| CONTRACTUAL | | | | | | |
| SUPPLIES | | | | | | |
| EQUIPMENT | | | | | | |
| LAND & STRUCTURES | | | | | | |
| GRANTS, CLAIMS | | | | | | |
| MISCELLANEOUS | | | | | | |
| TOTAL OPERATING | | -0- | -0- | -0- | -0- | -0- |

| | | | | | | |
|---------|--|--|--|--|--|--|
| CAPITAL | | | | | | |
|---------|--|--|--|--|--|--|

| | | | | | | |
|---------|--|--|--|--|--|--|
| REVENUE | | | | | | |
|---------|--|--|--|--|--|--|

FUNDING: (Thousands of Dollars)

| | | | | | | |
|---------------|--|-----|-----|-----|-----|-----|
| GENERAL FUND | | | | | | |
| FEDERAL FUNDS | | | | | | |
| OTHER | | | | | | |
| TOTAL | | -0- | -0- | -0- | -0- | -0- |

POSITIONS:

| | | | | | | |
|-----------|--|--|--|--|--|--|
| FULL-TIME | | | | | | |
| PART-TIME | | | | | | |
| TEMPORARY | | | | | | |

ANALYSIS: (Attach a separate page if necessary)

Existing staff would be able to review the 1983 DEC report and make recommendations concerning state assumption of wetlands permitting authority. However, should the state decide to assume additional permitting responsibilities, a significant amount of increased funding would be necessary.

Prepared by: Carol Wilson Phone: 465-2400
Division: Commissioner's Office Date: 4/27/87

Approved by Commissioner: CJW for JMB Date: 4/22/87
Agency: Natural Resources

Distribution (by preparer):

- Legislative Finance
- Legislative Sponsor
- Requestor
- Office of Management and Budget
- Impacted Agencies
- Senate Secretary

STATE OF ALASKA 1987 LEGISLATIVE SESSION
FISCAL NOTE

REQUEST: _____

Bill Version: CSHJR 27(Res)
Publish Date: HOUSE 4/28/87

Revision Date: _____
Title: Relating to the U.S. Army Corps of Engineers' Permits for dredging and filling wetlands
Sponsor: Mike Miller
Requestor: House Resources

Agency Affected: Environmental Conservation
BRU: Environmental Quality
Components: n.a.

EXPENDITURES/REVENUES: (Thousands of Dollars)

| OPERATING | FY 87 | FY 88 | FY 89 | FY 90 | FY 91 | FY 92 |
|-------------------|-------|-------|-------|-------|-------|-------|
| PERSONAL SERVICES | | | | | | |
| TRAVEL | | | | | | |
| CONTRACTUAL | | | | | | |
| SUPPLIES | | | | | | |
| EQUIPMENT | | | | | | |
| LAND & STRUCTURES | | | | | | |
| GRANTS, CLAIMS | | | | | | |
| MISCELLANEOUS | | | | | | |
| TOTAL OPERATING | -0- | -0- | -0- | -0- | -0- | -0- |

| | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|
| CAPITAL | -0- | -0- | -0- | -0- | -0- | -0- |
|---------|-----|-----|-----|-----|-----|-----|

| | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|
| REVENUE | -0- | -0- | -0- | -0- | -0- | -0- |
|---------|-----|-----|-----|-----|-----|-----|

FUNDING: (Thousands of Dollars)

| | | | | | | |
|---------------|-----|-----|-----|-----|-----|-----|
| GENERAL FUND | | | | | | |
| FEDERAL FUNDS | | | | | | |
| OTHER | | | | | | |
| TOTAL | -0- | -0- | -0- | -0- | -0- | -0- |

POSITIONS:

| | | | | | | |
|-----------|-----|-----|-----|-----|-----|-----|
| FULL-TIME | -0- | -0- | -0- | -0- | -0- | -0- |
| PART-TIME | -0- | -0- | -0- | -0- | -0- | -0- |
| TEMPORARY | -0- | -0- | -0- | -0- | -0- | -0- |

ANALYSIS : (Attach a separate page if necessary)

Prepared by: Amy D. Kyle
Division: Commissioner's Office

Phone: 465-2600
Date: 4/27/87

Approved by Commissioner: [Signature]
Agency: Environmental Conservation

Date: 4/27/87

- Distribution (by preparer):
- Legislative Finance
 - Legislative Sponsor
 - Requestor
 - Office of Management and Budget
 - Impacted Agency(ies)
 - Senate Secretary

STATE OF ALASKA

DEPARTMENT OF NATURAL RESOURCES

OFFICE OF THE COMMISSIONER

STEVE COWPER, GOVERNOR

400 WILLOUGHBY AVE.
JUNEAU, ALASKA 99801-1796
PHONE: (907) 465-2400

April 22, 1987

The Honorable Mike Miller
Alaska State Legislature
P.O. Box V
Juneau, AK 99801

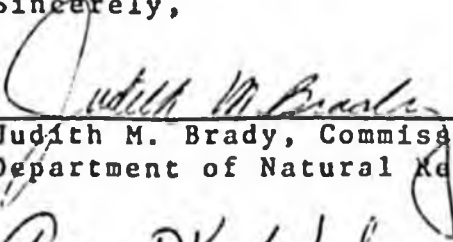
Dear Representative Miller:

The Cowper Administration has no objection to reviewing the 1983 Department of Environmental Conservation report regarding state assumption of the United States Corps of Engineers Section 404 wetlands permitting process, as described in HJR 27. However, we suggest the following amendment to provide Governor Cowper with additional flexibility for reviewing the report. If this amendment is adopted HJR 27 would have minimal fiscal impact on our agencies.

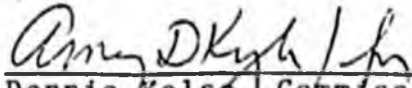
On page three, replace lines 11-16 with the following:

Further resolved that the Governor is respectfully requested to review the 1983 Department of Environmental Conservation report regarding state assumption and make recommendations regarding state assumption of the United States Army Corps of Engineers Section 404 wetlands permitting process.

Sincerely,



Judith M. Brady, Commissioner
Department of Natural Resources



Dennis Kelsø, Commissioner
Department of Environmental Conservation

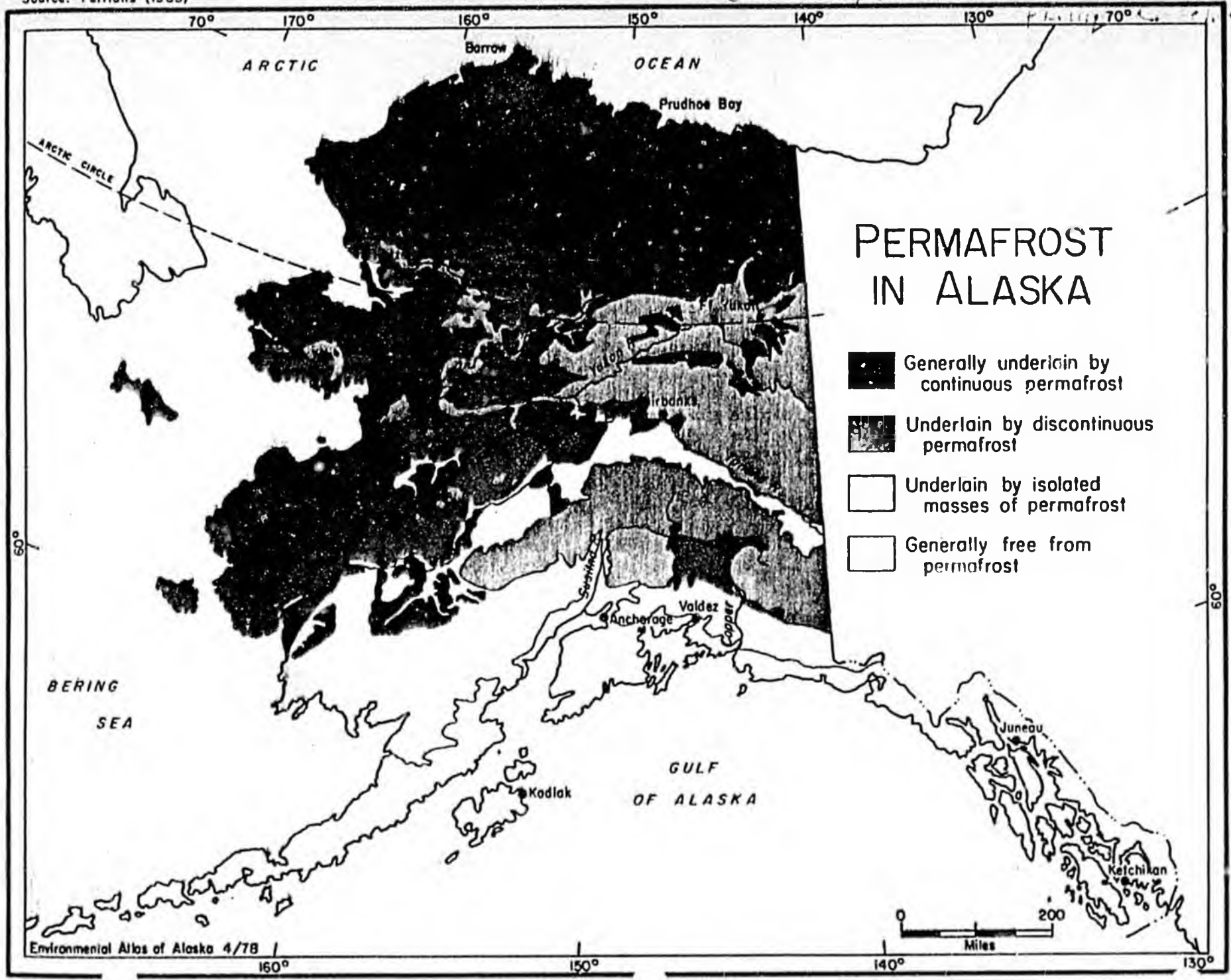


Don Collinsworth, Commissioner
Department of Fish and Game

cc: George Sullivan
Rod Swope
Rep. Steve Frank

Environmental Atlas of Alaska
University of Alaska, Fairbanks

Source: Ferrions (1965)



Environmental Atlas of Alaska 4/78

DIATE 9



United States
Department of
Agriculture

Soil
Conservation
Service

201 E. 9th Ave., Suite 300
Anchorage, AK 99501-3687
Telephone (907) 261-2424

February 13, 1986

* * * * *

The following material is a letter developed, at the request of Alaska Soil and Water Conservation Districts, to Senator Frank H. Murkowski, relative to the "Swampbuster" provision of the 1985 Farm Bill. The Conservation Districts surfaced the concern because of the impact on permafrost soils with agricultural potential. This information is being used to issue the concern raised by the Conservation Districts.

* * * * *

The following is provided in response to your request concerning the impacts on Alaska, of what has commonly become known as the "Swampbuster" and "Sodbuster" provisions of the 1985 Farm Bill.

The "Swampbuster" and "Sodbuster" provisions are designed to encourage landowners to stop the development of wetlands, and the plowing out of potential highly erodible lands for cropland use. The 1985 Farm Bill provides the stipulation that landowners in violation of either or both of these provisions will not be eligible for Federal assistance such as cost share, price support, or loans.

The Soil and Water Conservation Districts in Alaska are concerned with the limitations that these provisions will have on the use of Alaska's soils and have, as we discussed, raised some specific questions about Alaska soils that are somewhat wet in their natural state but when developed have high agricultural potential.

The State of Alaska has developed and probably will continue to develop lands that have a high level of agricultural potential. The native peoples of Alaska also may, at some future date, develop some of their lands for agriculture; they have shown quite a bit of interest in agricultural development. We estimate that there is in the neighborhood of 5 million acres in State and Native ownership that have agricultural possibilities. Many acres of this potential ag land with high to moderately high agriculture value, could be impacted by the "Swampbuster" provision. These lands, through strict interpretation, could be classified as wetlands and if developed as mentioned, would be eligible for future federal assistance. The problem for lands the districts are concerned about results because of the presence of permafrost (permanently frozen layer of soil).



Soils with permafrost due to their environment, thaw down each year during the summer growing season. This thawed zone (active layer) varies in depth from less than 1 inch to several feet, depending on factors such as shade from trees, thickness of an organic insulation layer on the surface of the soil, latitude, exposure, snowcover, etc. When this active layer is shallow, normal precipitation enters the soil, accumulates and perches on the impermeable permafrost, thus maintaining a saturated soil condition, resulting in an environment that is favorable for growth of a hydrophytic plant community (wetland). However, in many Alaskan soils when the shading effect of trees and/or the insulation effect of the organic surface layer is removed through natural fire or mechanical clearing, the soil warms, the permafrost lowers or completely disappears, and natural drainage of the soil occurs. The soil becomes well or moderately well drained, and will no longer support hydrophytic vegetation.

Over a period of many years in a natural state, trees and shrubs become reestablished and provide shade. The insulating organic surface layer will redevelop from plant leaves and residues, soil temperatures decline, and the impermeable permafrost level rises or returns. Precipitation accumulates and perches on the permafrost and the saturated soil condition is recreated. Hydrophytic vegetation can result, and the cycle is complete until the next major disturbance, allowing the soil to thaw. If those soils are managed to produce cultivated crops or hay, the soil will remain well or moderately well drained permanently.

Although most permafrost soils fall under the definition of wetlands as described in the Department of Interior publication: "Classification of Wetlands and Deepwater Habitats of the United States," December 1979, most permafrost soils do not contain the beneficial characteristics of traditional wetlands that past legislation has been designed to protect. Permafrost soils in Black Spruce forests, for example, (a very common vegetation cover type on permafrost soils in Interior Alaska) do not provide valuable waterfowl breeding, nesting and feeding habitat, and do not act as a natural cleansing system by filtering out nutrients and capturing toxic materials. These soils also do not reduce flood hazards by temporarily storing moisture and they do not recharge groundwater aquifers when in the frozen state. These benefits of filtration, flood prevention and groundwater recharge, normally received from wetlands, are better realized from Alaska permafrost soils after they have been thawed.

The Alaska Soil Conservation Districts fully endorse and support the protection of true wetlands that provide these benefits. The Soil Conservation Service (SCS) and Districts from across the nation routinely provide assistance to landowners for the protection and enhancement of wetlands for wildlife benefits as part of our overall program, and we in SCS carry out an information and education program designed to promote this management ethic. Wildlife habitat and true wetlands are natural resources of great concern to Conservation Districts in Alaska--but as you can see, lands classified as wetlands because of their permafrost condition do not all fit into this category.


The apparent solution to this problem of classification and management of permafrost soils in Alaska, is to provide a special provision in the Swampbuster regulations for those permafrost soils that will thaw and naturally dry when cleared. This special provision should allow the State Conservationist of the Soil Conservation Service in Alaska to determine eligibility for Federal assistance for the development of lands that have agricultural potential and are a part of the State of Alaska and potentially Native peoples Agricultural Development Programs. Such a provision would allow the State Conservationist with his technical staff of Soil Scientists, Biologists, and Conservationists to make the eligibility determination after consultation with other agencies.

In summary:

Alaska lands which have been or will be classified as wetlands, using the definitions contained in the 1985 Farm Bill, occur in, or are adjacent to many of the areas that have a potential for agriculture development or have already been developed. The presence and impact of permafrost on plant communities in Alaska make the intelligent identification and classification of wetlands very difficult. In the absence of permafrost, these soils do not exhibit hydric conditions. Under the "Swampbuster" provision of the 1985 Farm Bill, Alaska landowners developing "permafrost soil wetlands" will be ineligible for Federal assistance which include price support or payments made available under the Agricultural Act of 1949, the Commodity Credit Corporation Act, or any other act, farm storage facility loans made under Section 4(h) of the Commodity Credit Corporation Charter Act, crop insurance under the Federal Crop Insurance Act, disaster payments, loans made insured or granted under the Consolidated Farm and Rural Development Act, or any other provision of the law administered by the Farmers Home Administration.

The issue of "permafrost soil wetlands" is one that I am sure can be properly addressed by way of a special provision in the Farm Bill regulations, through the cooperation of the local Soil and Water Conservation Districts and other agencies involved in wetland management. My staff and I will gladly work with you to help develop this concept.

I hope this will give you a better understanding of the concern over wetland classification in Alaska. Please remember the information provided in this letter is general in nature. Because we are dealing with a natural system, there are a variety of conditions that affect the wetland characteristics of our Alaskan soils. For more specific information concerning this or other issues, please contact my office at any time.


BURTON L. CLIFFORD
State Conservationist

CAN NATIONAL WETLAND/MITIGATION LEGISLATION
APPLY TO ALASKA? IF NOT, WHY NOT?

BY

ALAN C. EPPS, PROFESSOR OF NATURAL RESOURCES
UNIVERSITY OF ALASKA-FAIRBANKS

Alaska, a state one fifth the size of the contiguous states lying between 52° North latitude and 72° North Latitude. Alaska, a state with two thirds of this nations coast line and one third of the nations fresh water stream flow. Alaska, a state with less than five hundred thousand people and over one half of those living in the Anchorage area. A state with only three thousand miles of roads and daily jet traffic to villages of two to three thousand people. Alaska, a state with millions upon millions of waterfowl, shore birds, and large ungulates during three to four months of the year, and relatively devoid of wildlife the other eight to nine months. Alaska, a state with nearly half of this nations total wetlands.

Lets examine this latter fact, so that we can more fully understand the significance of wetlands in Alaska and their inherent role in the state. According to Dr. Robert Brooks of Pennsylvania State University, wetlands occupy 5 to 10 percent of the contiguous states. This equates to an area of 95 to 190 million acres of wetlands in the contiguous states. Based upon the U.S. Department of Agriculture's Soil Conservation Service, "Hydric Soils

of the State of Alaska, 1985 and SCS "Exploratory Soil Survey of Alaska," 1979, Alaska has some 164 million acres of wetlands. For perspective, this is an area larger than California and Oregon combined (Public Lands Law Review Commission, 1970). For midwesterners, this an area larger than Illinois, Indiana, Ohio, Michigan and Iowa combined (Public Lands Law Review Commission, 1970). For southeasterners, this is an area larger than Florida, Georgia, Alabama, North and South Carolina combined (Public Lands Law Review Commission, 1970). Or one could say it is an area nearly the size of the state of Texas (Public Lands Law Review Commission, 1970).

Percentage wise, 164 million acres in Alaska is 45% of Alaska's land mass. If one looks at specific areas such as the area north of the Brooks range, 43 millions acres in area, or nearly the size of Oklahoma (Public Lands Law Review Commission, 1970), 72% of this area is classified wetlands. These vast wetlands create major problems for regulatory agencies and user groups when applying laws and regulations designed to protect five to ten percent of the contiguous states land area. In contrast, Pennsylvania's largest freshwater tidal wetland is Tinicum March, a 340 acre National Wildlife Refuge near Philadelphia.

Let's now look at some of the unique characteristics of the Alaskan environment and the associated impacts wetlands and user group activities have on one another. Soils with permafrost due to their environment, thaw down each year during the summer growing season. This thawed zone (active layer) varies in depth from less than 1 inch to several feet, depending on factors such as shade from trees, thickness of an organic insulation layer on the surface of the soil, latitude, exposure, snowcover, etc.. When this active layer is shallow, normal precipitation enters the soil, accumulates and

perches on the impermeable permafrost, thus maintaining a saturated soil condition, resulting in an environment that is favorable for growth of a hydrophylic plant community (wetland). However, in many Alaskan soils when the shading effect of trees and/or the insulation effect of the organic surface layer is removed through natural fire or mechanical clearing, the soil warms, the permafrost lowers or completely disappears, and natural drainage of the soil occurs. The soil becomes well or moderately well drained, and will no longer support hydrophylic vegetation (Clifford, 1986).

Over a period of many years in a natural state, trees and shrubs become reestablished and provide shade. The insulating organic surface layer will redevelop from plant leaves and residues, soil temperatures decline, and the impermeable permafrost level rises or returns. Precipitation accumulates and perches on the permafrost and the saturated soil condition is recreated. Hydrophylic vegetation can result, and the cycle is complete until the next major disturbance, allowing the soil to thaw. If the soils are managed to produce cultivated crops-- (or prevent reestablishment of natural vegetative cover) the soil will remain well or moderately well drained permanently (Clifford, 1986). Alaska is the only state where permafrost occurs in association with agricultural soils (Drew, 1986).

The majority of permafrost soils fit the definition of wetlands as described in "Classification of Wetlands and Deepwater Habitats of the United States, 1979 (U.S. Department of Interior)." Wetlands must have one or more of the following attributes: 1) at least periodically, the land supports predominantly hydrophytes; 2) the substrate is predominantly undrained hydric soil; and 3) the substrate is non-soil and is saturated with water or covered by shallow water at sometime during the growing season of each year. As the

previous discussion shows, Alaska's permafrost soils fit the national criteria. The result is that since the majority of Alaska is underlain with permafrost or discontinuous permafrost, soil temperature, a transitory condition and non-applicable from a contiguous state's perspective, creates nearly half of this nations wetlands.

Although the majority of permafrost soils fall under the definitions of wetlands, many "permafrost soils do not contain the beneficial characteristics" (Clifford, 1986) of traditional wetlands that past legislation has been designed to protect (ie. fish, shellfish, and waterfowl habitat; water quality maintenance pollution filter, sediment removal; flood control; groundwater recharge and water supply) (Drew, 1986).

Let's briefly address each of these beneficial characteristics as applicable to Alaska. The vast majority of Alaska's wetlands contain only perched water and freeze solid for half of each year or longer which eliminates their value from a fish and shellfish standpoint. As for waterfowl habitat, flooded tundra (Moss-Lichen Wetland) which, "may make up as much as 50% of the total surface area of all wetlands on the Arctic Coastal Plain -- seemed to be the least important to all water birds despite their tremendous surface area (Derkesen, 1981)." Alaska's other major wetland type, Forested Wetland, "Black Spruce Forests of Interior Alaska do not provide valuable waterfowl breeding, nesting and feeding habitat (Clifford, 1986)."

In regard to water quality maintenance and ground water recharge the majority of Alaska's wetlands have perched water tables above permafrost and primarily subject to evaporation during the thaw period and are non-functional during spring run-off because they are frozen.

With regard to flood control the majority of Alaska's wetlands are above

flood plains and because they are either frozen or saturated down to the permafrost level in fact may compound flooding.

From a drinking water standpoint, the majority of Alaska's drinking water comes from ground water (see above) and all major drainage basins are headwatered in glacial influenced streams and therefore carry silt loads of glacial flour unacceptable for drinking purposes.

Coupled to the lack of "real benefits" from the majority of Alaska's permafrost created wetlands are applications of regulations and court ruling from non-permafrost areas which create hardship for both regulator and user. A case in point is the United States Court of Appeals, fifth circuit court decision of September 26, 1983 in Avoqelles Sportsman's League Vs. Marsh which held that certain agricultural land clearing activities previously held exempt from Section 404 permit requirements were subject to regulation by the Army Corp of Engineers under Section 404 of the Clean Water Act (Edgar, 1985).

The soils being developed for agriculture in Alaska are the Forested Wetlands Black Spruce, which as pointed out earlier, have few values and following either natural or mechanical disturbance thaw and no longer have the characteristics of wetlands. In fact the "benefits of filtration, flood prevention, groundwater recharge and waterfowl habitats (when grain crops are grown) normally received from wetlands, are better realized from Alaska's permafrost soils after they have been thawed (Clifford, 1985).

The above came to an enlightened conclusion this past spring when, according to the Congressional Record, Alaska's Senator Stevens introduced an amendment to the "swampbuster" provisions of the 1987 Farm Bill - "For purposes of this act, and any other Act, this term shall not include lands in Alaska identified as having high potential for agricultural development which

have a predominance of permafrost soils." The senate concurred.

CONCLUSIONS

What does this all mean for wetland regulators and users in Alaska, as well as for national policy?

The key is to recognize that permafrost soils are something which do not fit nicely into the existing national classification system and certainly most "Alaska permafrost wetlands" do not provide the beneficial characteristics envisioned by formulators of previous laws and regulations.

Secondly, there is a crying need to identify those permafrost wetland ecosystems which do provide beneficial wetland attributes and declassify those transitory wetlands, so that both regulators as well as users may recognize and protect real wetland values.

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