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UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

ENERGY AND MINERALS
DIVISION

APRIL 8, 1981

B-202090


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The Honorable James D. Watt
The Secretary of the Interior

Dear Mr. Secretary:

Subject: Environmental and Other Problems along the Alaska Pipeline Corridor (EMD-81-69)

This report discusses the results of our review of environmental impacts on Federal lands which contain the State of Alaska haul road, parts of the Trans-Alaska Pipeline System (TAPS), and a portion of the proposed route of the Alaska Natural Gas Transportation System.

It supplements our report entitled "Trans-Alaska Oil Pipeline Operations: More Federal Monitoring Needed" (EMD-81-11, January 6, 1981) which identified the need for additional monitoring of TAPS activities. It addresses the need for additional Department of the Interior action to assure that the State of Alaska complies with haul road right-of-way provisions. The letter also discusses the probability that the Department will not, unless additional action is taken, be able to control adverse impacts when the haul road is subjected to increased industrial use and opened to the public--which may occur as early as this summer.

The objectives of our review were twofold--to determine what negative environmental impacts, if any, have occurred on Federal lands traversed by the State of Alaska's haul road; and to assess the adequacy of Federal and State efforts to mitigate present environmental damage and prevent unnecessary environmental degradation in the future. We analyzed documents and interviewed officials from the Bureau of Land Management (BLM), the State of Alaska, the Fish and Wildlife Service, and the Office of the Federal Inspector for the Alaska Natural Gas Transportation System. An environmental group and a transportation expert were also contacted. Additionally, we drew upon information provided by our consultant, an expert in Arctic environmental issues, who assisted us in evaluating environmental impacts in the area crossed by the haul road.

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BACKGROUND

The Department of the Interior is responsible for enforcing the provisions of the right-of-way permit issued to the State of Alaska for the haul road. The 424-mile haul road (see map on page 3), completed in 1975 to serve TAPS construction, traverses previously inaccessible Federal lands. Stipulations incorporated in the grant of the right-of-way to the State were designed to protect the environment, including animal and fish populations important to area residents as subsistence food sources. Interior is also responsible for minimizing adverse impacts related to increased public usage of Federal lands adjacent to the haul road.

After discovery of the Prudhoe Bay oil field in 1968, the State of Alaska passed a law authorizing the construction of a public highway to Prudhoe Bay. In 1971 the State contracted with Alyeska Pipeline Service Company (Alyeska) for construction of this highway. The agreement provided that the State would secure rights-of-way across Federal and State lands and that it would, upon accepting the completed road from Alyeska, maintain the highway. This highway (the haul road) was completed in 1975. The State of Alaska assumed maintenance responsibility for the road from Alyeska in 1978.

The Trans-Alaska Pipeline Authorization Act of 1973 (P.L. 93-153) authorized the Secretary of the Interior to issue and enforce rights-of-way and permits necessary for or related to the construction, operation, and maintenance of the pipeline system, including roads and airstrips. Pursuant to the act, on May 2, 1974, BLM's Acting Alaska State Director issued a "Grant of Right-of-Way for Public Road" to the State of Alaska. The right-of-way requires that the State assure compliance with specified general, technical, and environmental stipulations. The Secretary has delegated monitoring authority for the right-of-way grant to BLM's Alaska State Office.

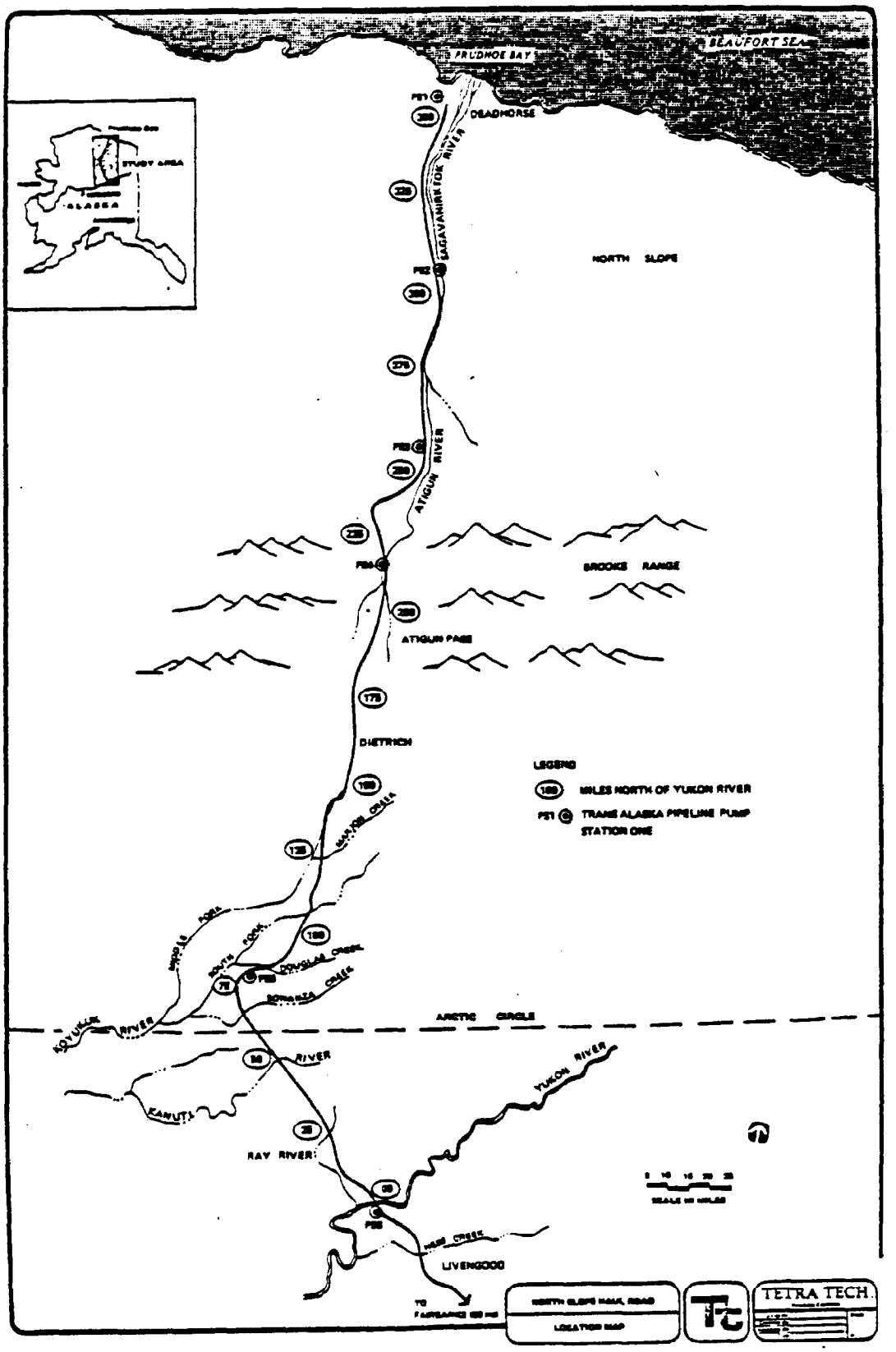
NONCOMPLIANCE WITH HAUL ROAD GRANT OF RIGHT-OF-WAY PROVISIONS

Stipulations incorporated in the grant of the right-of-way issued to the State of Alaska for the haul road require that all operations be conducted to minimize environmental damage and to protect wildlife and human beings. In fact, however,

--fish passage has been blocked;

--erosion has threatened haul road integrity; and

--the road is sinking as underlying permafrost melts.


PRUDHOE BAY
BEAUFORT SEA
DEADHORSE
SAGAVANIRKTOK RIVER
NORTH SLOPE
ATIGUN RIVER
BROOKS RANGE
ATIGUN PASS
DIETRICH
LEGEND
MILES NORTH OF YUKON RIVER
TRANS ALASKA PIPELINE PUMP STATION ONE
HAMMER CREEK
DOUGLAS CREEK
ARCTIC CIRCLE
KANUTI
RAY RIVER
YUKON RIVER
LIVENGOOD
TETRA TECH

Improper road maintenance and inadequate culverts have contributed to these problems, some of which have gone unresolved for more than 6 years.

BLM is responsible for monitoring adherence to the haul road right-of-way grant and has worked with the State of Alaska to resolve some of the environmental problems noted in this report. For example, the Alaska Department of Fish and Game and the Alaska Department of Transportation and Public Facilities jointly developed a remedial action plan in 1979. However, the plan does not address all haul road deficiencies, and action on those which it does address has not been taken in a timely manner.

Blocked Fish Passage

The grant provides for the uninterrupted movement and safe passage of fish. It requires that any artificial structure or any stream channel change that would block fish movement be rectified with a fish passage structure that meets all Federal and State requirements. Federal and State biologists, however, have identified fish passage problems in over 40 streams or lakes crossed by the haul road. Undersized culverts have increased stream velocity and prevented smaller fish from passing. Misaligned culverts have altered stream channels, while culverts located too high above or too far below the stream bed structurally block fish migration. Also, gravel pit excavation has disrupted surface flow in several streams.

Stream blockage and surface flow disruptions kill fish. For example, during the period August 27 to September 11, 1980, a fishery biologist for the U.S. Fish and Wildlife Service found several species of fish dead or stranded in Spike Camp Creek, a tributary of the Atigun River. A gravel pit used for the haul road parallels the northern edge of the stream's active floodplain. The biologist concluded that the gravel pit withdrew groundwater from the Spike Camp Creek floodplain, thereby disrupting the creek's surface flow and trapping or killing fish during the peak of their migration.

At Milke Creek, part of the Sagavanirktok River system, an Alaska Department of Fish and Game biologist in 1978 observed several thousand grayling fry unable to swim downstream through a barrier of outwash gravels. An undersized and improperly aligned haul road culvert had increased stream velocities, thereby redirecting water out of the main channel and depositing outwash gravel in the natural channel. Although some of the gravel barrier was removed, some of the fish may have been adversely affected. In August 1979, the State recognized the seriousness and ongoing nature of the Milke Creek problem by

ranking culvert replacement there second out of 44 planned remedial actions--but to date the State has taken little action to correct these problems.

Serious Erosion

The stipulations provide for the construction of erosion control facilities to prevent or minimize erosion at streams and river crossings. Yet, from 1976 through 1980, Federal and State officials identified over 20 eroded stream crossings along the haul road.

The U.S. Army Corps of Engineers' Cold Region Research and Engineering Laboratory, as contractor for the U.S. Department of Transportation Federal Highway Administration, published a study in September 1980 entitled "Environmental Engineering and Ecological Baseline Investigations Along the Yukon River-Prudhoe Bay Haul Road." According to this study:

> "The most striking problems associated with cross drainage were combined thermal and hydraulic erosion downslope from the roadway. Most occurrences of this problem were located south of Dietrich Camp on the alluvial slopes along the Koyakuk River where gully erosion was apparently induced by concentration flow through culverts and onto ice-rich soils where nonconcentrated flow previously occurred. Based on this experience, detailed terrain interpretation should result in better placement of culverts in order to avoid such downslope ice conditions."

Misplaced culverts are not the only cause of haul road erosion problems. Inadequate maintenance practices were also cited in the Corps of Engineers' report:

> "The major roadway surface drainage problem is the creation of small longitudinal dikes on one or both sides of the road due to regrading. These dikes inhibit lateral runoff except at locations where the dikes are breached. Severe sideslope erosion sometimes results where the breaches occur. Dikes can generally be eliminated by skillful equipment operators during regrading."

Besides contributing to the fish passage problems already mentioned, severe erosion problems threaten haul road integrity. For example, at Spike Camp Creek, in a floodplain area, the

erosion of the haul road embankment during high flows could damage the haul road itself. At Stout Creek, located about 20 miles south of Pump Station Two, the haul road was washed out because of an undersized culvert.

Permafrost Degradation

The grant stipulates that all preconstruction, construction and post-construction operations be conducted to minimize permafrost degradation and damage to the environment, and to provide maximum protection to wildlife and human beings. Based on his July 1980 evaluation, our consultant observed that the haul road near Wiseman, 20 miles south of Dietrich, is sinking badly because the underlying permafrost is melting. He attributed this problem to poor maintenance and said that without sufficient fill to insulate the permafrost, driving along this section of the road will be hazardous.

In September 1980, Tetra Tech, Incorporated, consultants for Atlantic Richfield Corporation, published a study entitled "North Slope Haul Road--Status of Road Conditions, 1980." According to this study:

> "The northern section of the Haul Road, from pump Station Four north to Deadhorse, is built, for the most part, on tundra which overlays ice-rich permafrost. The road was originally designed for a minimum fill depth of five feet, to prevent thaw degradation of the permafrost, but it was found during the September 1980 investigation, that the actual average depth of fill is approximately four feet above the tundra. Four feet of gravel covering the tundra is a commonly accepted minimum depth of fill for roadways or construction pads required to prevent permafrost thaw, but it does not include a factor of safety to account for settlement or sinking of material into the tundra, removal of surface material by grading, or possible thin spots in the fill. If the permafrost below the roadway is allowed to thaw, severe frost heaves will develop, the fill will settle, and eventually the roadway will sink into the tundra."

In the Corps of Engineers' September 1980 report, the following conclusions were made:

> "Seasonal thaw penetration probably exceeds the roadway embankment thickness in most"

> "locations * * * The roadway has subsided to some degree over nearly all of its length. Some of the 'apparent subsidence' may be due to regrading of the road during maintenance operations, but at all 11 of our 27 observation sites, the subsidence has been in excess of 10 cm and at five of these sites subsidence exceeded 20 cm."

To ameliorate this widespread problem, the State laid additional surface gravel on the haul road in the summer of 1980. An Alaska Department of Transportation and Public Facilities official admitted that this was an interim measure which would not solve the degradation or sinking problem. He said the northern portion of the haul road needs a new base. Funding for the new base has been proposed, but not yet been acted upon by the State legislature.

More Haul Road Improvements Needed

The State developed a plan in 1979 to correct some of the haul road problems noted in this report. The plan prioritizes 44 haul road streams needing remedial action. Those actions include replacing culverts with timber bridges.

While the State's plan appears to address many haul road problems, the plan does not include the steps needed to correct all serious fish passage, erosion, and permafrost degradation problems. For example, while the plan proposes to alleviate fish passage deficiencies by replacing culverts with bridges for Spike Camp, Trevor, and Holden creeks (tributaries of the Atigun River), fish may still be trapped and die in these streams unless something is done to prevent gravel pits from disrupting surface stream flows.

The State originally estimated that its 44 planned remedial actions would cost $8,061,600. Based on an annual inflation rate of 10 percent, we estimated that those remedial actions would now cost about $9,754,000. In 1980, the State legislature provided $2.3 million for part of this work, while Alaskan voters approved a bond issuance for an additional $2.6 million. In 1981, the State plans to begin construction work on nine stream crossings, and to finish replacement of bridges at Marion and Douglas creeks. At this rate, roughly 25 percent of the State's plan will be implemented in 1981, and all planned road improvements may not be completed by the time the road is opened to the public--which may be as early as this summer--or by the time natural gas pipeline construction begins.

OUT-OF-DATE LAND USE PLAN

In developing and revising land use plans, the Federal Land Policy and Management Act (P.L. 84-579) requires the Secretary of the Interior to consider the long term, as well as the short term, in its usage decisions. BLM's land use plan for Federal lands adjacent to the haul road is based on the short-term assumption that the haul road north of the Yukon River will not be open to the general public until completion of gas pipeline construction. In July 1980, the Governor of Alaska announced that the road from the Yukon River to Dietrich (approximately 160 miles) would be opened to the public by June 1983. A recent court decision, however, may result in the haul road opening up as early as this summer. Under BLM's present land use plan, few haul road facilities or services will be available when the road is opened, with consequent environmental damage.

The North Slope Borough (which is traversed by the haul road) and environmental groups contend that opening the road to the general public will negatively affect wildlife important to area residents' subsistence. An oil company environmental consultant reported that public haul road travel would have a greater impact on Alaska's wildlife than construction and operation of the pipeline itself.

Generally, no sanitation facilities, rest stops, campgrounds, and refuse disposal services exist along the haul road. The only facility between Fairbanks and Prudhoe Bay, a distance of over 500 miles, is a tire repair and fuel station located just north of the Yukon River Bridge. BLM's land use plan found that public use of the haul road south of the Yukon River is already causing soil erosion, littering, and pollution. Similar problems can be expected if the road's northern portion is open before adequate facilities and services are available.

Although BLM planned to provide some of the necessary facilities and services on Federal lands south of the Yukon River, an agency official said that staff and fund shortages prevented implementation. In addition, BLM's land use plan stated that the agency would enter into a cooperative agreement with the State by March 1980 for the construction, operation, and maintenance of roadside rest stops. As of February 1981, no such agreement was completed.

Currently, BLM is soliciting comments on a proposal to provide lodging, food, road, and support services in the vicinity of Yukon Crossing at the Yukon River and at Coldfoot about 30 miles south of Dietrich. However, BLM officials said that if development is restricted to these two locations, facilities and services will not be adequate to handle expected increases in recreational haul road usage.

While public access to the haul road north of the Yukon River is restricted, the Alaska National Interest Lands Conservation Act (P.L. 96-487) requires consultation between Federal and State officials in regulating the number and seasonality of industrial vehicles and high occupancy buses. We believe that such cooperation and consultation between Federal and State officials should extend to all aspects of haul road and utility corridor planning, including decisions regarding the extent and timing of public usage.

RECOMMENDATIONS

We recommend that the Secretary of the Interior direct BLM to work with the State in developing a plan which provides for the correction of haul road deficiencies. This plan should prioritize the improvements needed with preferred start and completion dates for each. In addition, we recommend that the Secretary of the Interior direct BLM to revise its land use plan for Federal lands adjacent to the haul road, and to take into consideration State plans for public travel in the near future.

AGENCY COMMENTS

Department of the Interior officials concurred with the above recommendations and stated that the Department was taking action on them. Specifically, BLM's land use plan is being amended to provide for public use of the haul road. Interior also stated that it is starting to insure that the environmental problems cited in this report are not aggravated by public and gas pipeline activities.

We plan to provide copies of this report to several House and Senate Committees. Section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions taken on our recommendations to the House Committee on Government Operations and the Senate Committee on Governmental Affairs not later than 60 days after the date of the report; a like statement to the House and Senate committees on appropriations should accompany the agency's first request for appropriations made more than 60 days after the date of the report.

Sincerely yours,

J. Dexter Peach
Director