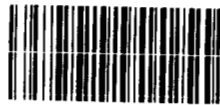




Government of Canada
DEPARTMENT OF INDIAN AFFAIRS
and
NORTHERN DEVELOPMENT

Mackenzie Valley Granular Materials Inventory
Proposed Pipeline and Highway Routes

July / 72 . . .



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Prepared by
PEMCAN SERVICES
July 15, 1972



INTRODUCTION

The Department of Indian Affairs and Northern Development retained PEMCAN Services to gather and compile the available route information on the pipelines proposed by the four pipeline consortia to transport oil and gas from the Arctic through the Mackenzie Valley to southern markets. These consortia comprise:

- Gas Arctic Systems Study Group
- Mackenzie Valley Pipe Line Research Limited
- Mountain Pacific Pipelines Limited
- Northwest Project Study Group.

The information, to the extent made available by the consortia, has been presented on three topographic sheets to a scale of 1:250,000, and includes the following:

- a) Pipeline routes including possible alternatives
- b) Pump and compressor stations locations
- c) Stockpile and construction campsite locations
- d) Estimates of granular material requirements, ⁽¹⁾

All consortia emphasized that design and location of the pipelines were still in the feasibility study stage and that all information released was only tentative and subject to extensive revision and relocation.

MACKENZIE VALLEY PIPE LINE RESEARCH LIMITED (MVPLRL)

MVPLRL is a research organization only and is not proposing an oil pipeline but is only researching the technical feasibility and developing cost estimates. The route location and tentative design may or may not be used by a future oil pipeline consortia for the design, construction and operation of an oil pipeline.

(1) Note: In the context of this report the terms "granular material" and "gravel" are synonymous.



The information obtained from MVPLRL includes the proposed oil pipeline route locations, pumping station locations, quantities of material required and tentative quarry and gravel borrow area locations. The information is presented in two technical reports transmitted to DIAND. The reports are entitled respectively "Construction Materials Survey Along MVPLRL Pipe Line Route", dated August 20, 1971 and "Summary of Construction Material Sources Along MVPLRL Route via the Arctic Coastal Route" dated October 1, 1971. These reports present the quantity of material required on a section by section basis with the possible sources, including river bank deposits, located on topographic maps. This information is based on air photointerpretation only. Owing to the large volume of this information it has not been shown on the maps but is available in the DIAND files.

The type of granular material required is basically crushed rock and gravel of adequate quality to prevent frost heave. It is considered by MVPLRL that the gradation should be such that no more than 10 to 15 per cent passes the No. 200 sieve.

MVPLRL has not finalized logistic routes thus no barge unloading stock-pile, staging area or access road locations were made available.

The pump stations would all be provided with airstrips according to the present design. This assumption is subject to change depending on the availability of other access facilities. The quantities shown on the drawings include amounts for airstrips at the original pump station sites only. MVPLRL propose to locate construction camp sites close to pump stations.

No information was made available to indicate areas of above ground construction except to indicate that this was mainly north of Norman Wells.



Timber pile requirement was tentatively set at 47,000 piles approximately. The piles would have 16 inch butt size and 12 inch tip size and would be between 20 feet and 30 feet long.

GAS ARCTIC SYSTEMS STUDY GROUP/NORTHWEST PROJECT STUDY GROUP

These two groups are in the process of merger, and, at this stage, a combined pipeline route is not available. Thus, north and west of Sans Sault Rapids, the interior mountain route and coastal route proposed by both groups have been plotted on the maps. Between Sans Sault Rapids and Fort Simpson, the Northwest route has been shown only where it deviates substantially from the Gas Arctic route. Both routes are shown south of Fort Simpson.

The proposed Gas Arctic pipeline route to Richards Island has been plotted on the maps. However no further information has been released at this time.

The Northwest Project Study Group station and stockpile sites are shown on the maps for the area north of Sans Sault Rapids. No information was released south of Sans Sault Rapids. The compressor station requirements indicated on the maps, include material for airstrips and access roads. An estimated 40,000 cubic yards will be required at each of the stockpile sites.

Gas Arctic has not prepared a detailed material requirement estimate at this time. However, in the answers to the question sheet presented by the Department of Public Works at the May 5th meeting in Ottawa they indicate a requirement of 130,000 cubic yards at each of the compressor station sites shown along their pipeline route.

Gas Arctic have located their construction camp sites close to the compressor stations to minimize disturbance and to maximize usage of those areas that must be developed.



Neither group has made an assessment of granular material requirements for access road, camp sites, staging areas or barge unloading sites, other than those stated above. The granular requirements are based on only the top 12 inches of surface being well graded material and the remainder being of lesser quality. No details of the proposed sources of the granular material were released.

MOUNTAIN PACIFIC PIPELINE LTD.

Mountain Pacific made a route location map to a scale of 1 inch = 100 miles available which could not be used to plot on the topographic maps. A copy of this map has been included in the Appendix. No information on compressor stations, stockpile or camp site locations has been developed by this group to date.

MACKENZIE HIGHWAY

The proposed route location of the Mackenzie Highway was obtained from the Department of Public Works, Edmonton and has been plotted together with the Dempster Highway on the maps. When this information was released, it was emphasized that the highway is still in the early stages of design and that the route would be subject to revision as design and field investigations continue. In particular the length to the north of Norman Wells is very preliminary.

The winter road shown on the maps has not been revised from the location shown on the National Topographic System maps. The Liard Highway has not been plotted.



OTHER INFORMATION

Timber will be required by all pipeline consortia for general construction purposes; mainly for fabricating skids. It has been estimated that approximately 20,000 lengths of 5 inch by 8 inch by 5 foot long would be required for each pipeline spread. The number of spreads proposed by each consortium in the Northwest Territories are:

Gas Arctic: 6

Mackenzie Valley: 6

Northwest: Not available

Mountain Pacific: Not available

Well sites in the Mackenzie Delta have been plotted on Sheet C (Drawing No. X-501-00-03) from Carter Mapping sheets (latest revision July 4, 1971).



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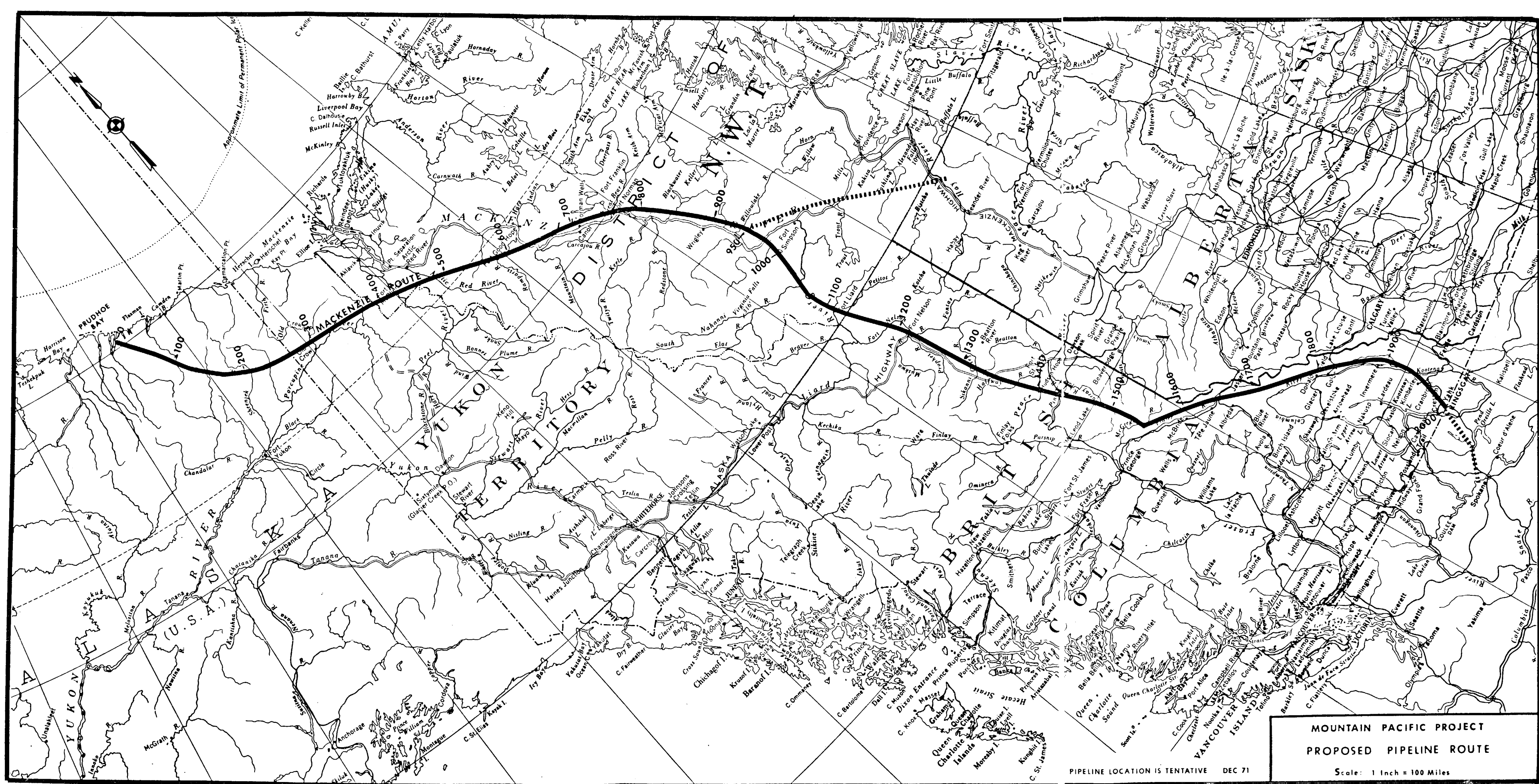
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APPENDIX A - MAPS



The following drawings are part of Appendix A but have not been bound into the report:

<u>Pemcan Drawing No.</u>	<u>Title</u>
X-501-00-01	Proposed Pipeline and Highway Routes Sheet A
X-501-00-02	Proposed Pipeline and Highway Routes Sheet B
X-501-00-03	Proposed Pipeline and Highway Routes Sheet C



MOUNTAIN PACIFIC PROJECT
PROPOSED PIPELINE ROUTE
 Scale: 1 Inch = 100 Miles

PIPELINE LOCATION IS TENTATIVE DEC 71