

Gas Pipeline Corridor Geologic Hazards - Phase 4 of 5

FY2011 Request: \$300,000

Reference No: 41415

AP/AL: Appropriation

Project Type: Research / Studies / Planning

Category: Natural Resources

Location: Statewide

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Estimated Project Dates: 07/01/2010 - 06/30/2012

Brief Summary and Statement of Need:

In anticipation of construction of a natural gas pipeline, DNR initiated a multi-year program to evaluate the geology, geologic hazards and resources of the corridor from Delta Junction to the Canadian border. The maps and reports already published have generated much interest by the pipeline companies and state/federal regulatory agencies. The requested CIP funding is necessary to finish the geologic mapping, hazard assessment and resource evaluation for the project corridor, including follow-up fieldwork to re-examine important issues; synthesis of the data for the entire project, to be completed in FY2012; and for reconnaissance of potential hazard issues in other corridors.

Funding:	<u>FY2011</u>	<u>FY2012</u>	<u>FY2013</u>	<u>FY2014</u>	<u>FY2015</u>	<u>FY2016</u>	<u>Total</u>
Gen Fund	\$300,000						\$300,000
Total:	\$300,000	\$0	\$0	\$0	\$0	\$0	\$300,000

<input type="checkbox"/> State Match Required	<input type="checkbox"/> One-Time Project	<input type="checkbox"/> Phased - new	<input checked="" type="checkbox"/> Phased - underway	<input type="checkbox"/> On-Going
0% = Minimum State Match % Required		<input type="checkbox"/> Amendment	<input type="checkbox"/> Mental Health Bill	

Operating & Maintenance Costs:

	<u>Amount</u>	<u>Staff</u>
Project Development:	0	0
Ongoing Operating:	0	0
One-Time Startup:	0	0
Totals:	0	0

Additional Information / Prior Funding History:

SLA2008/CH29	\$600,000	Completed field work Tetlin Jct to Canadian border
SLA2007/CH30	\$600,000	Completed Dot Lake to Tetlin Jct
SLA2006/CH82	\$350,000	Completed Delta Jct to Dot Lake
SLA2005/CH03	\$2,000,000	Completed Geophysics and geologic mapping

Project Description/Justification:

The Alaska Highway corridor between Delta Junction and the Canadian border is the locus of intense interest as the construction of a natural gas pipeline becomes imminent and contractors are conducting fieldwork in preparation for this project, which will be the largest construction project in the history of North America. The highly detailed geotechnical work required for proper design of a natural gas pipeline, which will be buried along most of its length, relies heavily on a background of geologic information at a broader scale than that likely to be collected by the contractors. The Division of Geological & Geophysical Surveys' (DGGs), multi-year program to evaluate the geology, geologic hazards and resources of the proposed natural gas pipeline corridor from Delta Junction to the Canadian border is providing valuable information to ensure that the more detailed geotechnical data collection by the companies will address areas critical to the safe and viable development of the planned infrastructure.

With FY2005 supplemental funding, DGGs initiated geologic hazards and resources evaluations along this route by conducting airborne geophysical surveys of a 16-mile-wide corridor between Delta Junction and the Canadian border. This geophysical survey data serves as a starting point for the ground-based 1:63,360-scale geologic mapping. The mapping provides the basis for evaluation of geologic hazard risks, material sources and potential mineral resources that may provide additional economic benefit along the corridor.

Prior to this project, existing publicly available geologic map coverage along this corridor was discontinuous, at different scales, and inconsistent in terminology, approach and content. This project makes use of existing data in planning and analysis, but combines all viable existing data with new data in a single, seamless geographic information system (GIS) database using state-of-the-art methodology and standardized terminology. Planners and designers will be able to layer the resulting GIS maps of geology, geophysics, hazards, and resources with proposed alignments of the gas pipeline, railroad extension, and other infrastructure to facilitate efficient engineering, construction, and risk management.

At DGGs's recommendation in 2000, in anticipation of the proposed natural gas pipeline and Alaska Railroad extension, the National Aeronautics and Space Administration (NASA) flew airborne Synthetic Aperture Radar (SAR) imaging surveys along the entire corridor between Fairbanks and the Canadian border. These surveys produced digital elevation data for the corridor at 5-meter resolution. These data, together with airborne geophysics and new high-resolution orthorectified satellite panchromatic and multispectral imagery, provide new tools for detailed geologic mapping and terrain analysis that are being used to the greatest extent possible in conducting this project and generating products. These tools were not available to the engineers and scientists who surveyed this route in the 1970s and 1980s.

The project makes extensive use of contract geologists from the private sector, along with University of Alaska Fairbanks faculty from the Department of Geology and Geophysics and existing DGGs staff and student interns.

Products of this project to date have been preliminary reports and maps. Upon completion of fieldwork for the third and final map segment between Tetlin Junction and the Canadian border in 2009, the entire project is being reviewed as a whole in preparation for final synthesis and formal publication. Follow-up fieldwork will take place in 2010 to re-examine important issues. Additionally, we will examine potential hazard issues along other portions of the gas pipeline corridor outside this project area, and proposed spurs and bullet lines. A comprehensive final map series will be prepared for the Alaska Highway corridor, incorporating consistently interpreted data from all three-map segments. This is an indispensable step in order to revise preliminary interpretations, which may have changed because of the continuing data collection during this multi-year project. This final product will be a milestone contribution to the geologic knowledge base, and will address DGGs's mandate in Alaskan statutes to advance understanding of the geology and potential geohazards of our state. All map data will be made available in digital GIS formats in conformance with national standards.

The proposed cost and duration of this project are based on our historic costs of field-geologic mapping projects and our experience on this project to date, which has confirmed that our estimates were accurate. CIP funding to date, not including the cost of the geophysical survey, has allowed us

to map the length of the corridor at a preliminary level. In order to finalize the project, there are areas that need to be augmented with additional field observations, and additional analytical results that are needed to answer remaining uncertainties in our interpretations. The proposed FY2011 CIP will fund the necessary follow-up fieldwork and map synthesis, final geologic interpretive work, report writing and publication efforts, and potential reconnaissance of hazards issues in other corridors. In FY2012, our final requested funding would support preparation of final reports that will consolidate and summarize our interpretations of geologic hazards and resources in the corridor.

Why is this Project Needed Now?

A large-capacity natural gas pipeline is important to the economic future of Alaska, and it is critical that the project moves forward without delay. As plans unfold to move the construction of this important natural gas pipeline forward, the pipeline designers, builders, and regulators need objective and timely geologic hazards and resource information. The maps and reports being produced by this project between Delta Junction and the Canadian border will be used to guide pipeline design and on-site modification planning, locate prospective sources for construction materials, and guide site-specific hazards and engineering studies. Consequently, potential risks can be identified prior to construction, problems can be avoided, delays will be reduced and future operation will be safer. The same kind of geologic analysis and resultant engineering that prevented catastrophic failure of the TAPS during the 2002 Denali fault earthquake will help prevent future interruption of service of the natural gas pipeline. If this request is not funded, the project will only be partially completed; pipeline companies and regulatory agencies will not have all the data needed to permit and safely construct the pipeline.

Specific Spending Detail:

<u>LINE ITEM</u>	<u>DOLLAR AMOUNT</u>	<u>DESCRIPTION</u>
Personal Services	\$ 75,000	Partial funding for existing geologists and student interns
Travel	\$ 20,000	Travel/per diem for field work, monitoring of contracts
Services	\$ 195,000	Contract geologists, laboratory analysis, helicopters
Commodities	\$ 10,000	Field supplies, office supplies

Project Support:

State Pipeline Coordinator’s Office, Department of Transportation & Public Facilities, Division of Mining, Land and Water, pipeline companies, oil & gas industry, engineering community, geological consulting community, sand and gravel companies, the Alaska Railroad, University of Alaska, Alaska Miners' Association, local communities, and native corporations in the project area

Project Opposition:

No opposition anticipated.