

**Gas Pipeline Corridor Geologic Hazards and Resources - Phase 4 of 5**      **FY2010 Request: \$300,000**  
**Reference No: 41415**

**AP/AL:** Appropriation      **Project Type:** Gasline  
**Category:** Natural Resources  
**Location:** Statewide      **Contact:** Leta Simons  
**House District:** Statewide (HD 1-40)      **Contact Phone:** (907)465-3379  
**Estimated Project Dates:** 07/01/2009 - 06/30/2011

**Brief Summary and Statement of Need:**

In anticipation of construction of the natural gas pipeline, the Division of Geological and Geophysical Surveys (DGGs) initiated a multi-year program to evaluate the geology, geologic hazards and resources of the previously unstudied corridor from Delta Junction to the Canadian border. The maps already generated have had significant demand in 2008. The requested \$300,000 of FY2010 CIP funding is necessary to finish the geologic mapping, hazard assessment and resource evaluation for the third and final segment of the Alaska Highway corridor, from Tetlin Junction to the Canadian border. In FY2011, \$200,000 of CIP funding will be needed for the publication of a comprehensive map series for the entire route.

<b>Funding:</b>	<b>FY2010</b>	<b>FY2011</b>	<b>FY2012</b>	<b>FY2013</b>	<b>FY2014</b>	<b>FY2015</b>	<b>Total</b>
AHCC Rcpts	\$300,000						\$300,000
Gen Fund		\$200,000					\$200,000
<b>Total:</b>	<b>\$300,000</b>	<b>\$200,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$500,000</b>

<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
<b>Totals:</b>	<b>0</b>	<b>0</b>

**Additional Information / Prior Funding History:**

SLA2008/CH29      \$600,000      In progress, Tetlin Jct to Border; planning 2009 field work  
SLA2007/CH30      \$600,000      In progress, Dot Lake to Tetlin Jct; field work complete, drafting maps  
SLA2006/CH82      \$350,000      Completed Delta Jct to Dot Lake  
SLA2005/CH03      \$2,000,000      Completed geophysics, reconnaissance 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 increasingly imminent and contractors are beginning field work in preparation of the project. 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. This 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 will provide

valuable information to ensure that the more detailed work will address areas critical to the safe and viable development of the planned infrastructure.

With FY2005 supplemental funding, the Division of Geological and Geophysical Surveys (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 serves as a starting point for the proposed ground-based 1:63,360-scale geologic mapping. The mapping will provide the basis for evaluation of geologic hazard risks, material sources, and potential mineral resources that may provide additional economic benefit along the corridor.

Existing geologic map coverage along this corridor is discontinuous, at different scales, and inconsistent in terminology, approach, and content. This project will make use of existing data in planning and analysis, but will combine all viable existing data with new data in a single, seamless 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 railroad extension, NASA flew airborne Synthetic Aperture Radar 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 thematic imagery, provide new tools for detailed geologic mapping and terrain analysis that will be 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.

Products of this project to date have been preliminary interpretive reports and maps. Upon completion of field work for the third and final map segment between Tetlin Junction and the Canadian border in FY2010, the entire project will be reviewed as a whole. A comprehensive final map series will be prepared for the entire 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 as a result 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' statutory mandate 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. The area of the entire corridor is approximately 2,000 square miles, or the equivalent of about eight standard 1:63,360-scale quadrangles. Our average cost of generating a single comprehensive (bedrock and surficial) geologic quadrangle map in a year is about \$350,000, not including the cost of geophysical surveys. The cost of producing the equivalent of two adjacent maps in one year is approximately \$600,000. Our 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 which need to be augmented with additional field observations, and additional analytical results that will answer remaining uncertainties in our interpretations. The proposed FY2010 CIP will fund the necessary follow-up field work and map synthesis. As well as the final geologic interpretive work, report writing and publication efforts. In FY2011, our final requested funding will support preparation of a final report or reports that will consolidate and summarize our interpretations of geologic hazards and resources in the corridor.

**Why is this Project Needed Now?**

As plans unfold to move the construction of the natural gas pipeline forward, the need for objective and timely geologic hazards and resources data between Delta Junction and the Canadian border is crucial. The maps and reports being produced by this project will be used by pipeline designers, contractors, and regulators 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.

**Specific Spending Detail:**

LINE ITEM	DOLLAR AMOUNT	DESCRIPTION
Personal Services	\$ 100,000	Partial funding for existing geologists and student interns
Travel	\$ 20,000	Travel/per diem for field work, monitoring of geologic contracts
Services	\$ 170,000	Contract geologists, laboratory analyses, helicopters, computers
Commodities	\$ 10,000	Office supplies, field supplies

**Project Support:**

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