

Geological Mapping for Energy Development (USGS STATEMAP)

FY2023 Request: \$1,200,000
Reference No: 60937

AP/AL: Appropriation **Project Type:** Research / Studies / Planning
Category: Natural Resources
Location: Statewide **House District:** Statewide (HD 1-40)
Impact House District: Statewide (HD 1-40) **Contact:** Theresa Cross
Estimated Project Dates: 07/01/2022 - 06/30/2027 **Contact Phone:** (907)269-6398

Brief Summary and Statement of Need:

The Geological Mapping for Energy Development project will leverage federal funds from a U.S. Geological Survey (USGS) STATEMAP grant to produce a 1:63,360-scale bedrock geological map of the Rooftop Ridge area, in the southern foothills, that will cover economically important formations including the Nanushuk, Seabee, Tuluvak, and Schrader Bluff Formations. The formations are known to host billions of barrels of oil in the subsurface.

Funding:	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	Total
1002 Fed Rcpts	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000		\$3,000,000
1003 G/F Match	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000		\$3,000,000
Total:	\$1,200,000	\$1,200,000	\$1,200,000	\$1,200,000	\$1,200,000	\$0	\$6,000,000

<input checked="" type="checkbox"/> State Match Required	<input type="checkbox"/> One-Time Project	<input type="checkbox"/> Phased - new	<input type="checkbox"/> Phased - underway	<input checked="" type="checkbox"/> Ongoing
100% = 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

Prior Funding History / Additional Information:

Sec8 Ch1 SLA2021 P74 L29 HB69 \$900,000
 Sec1 Ch1 SLA2019 P5 L14 SB2002 \$300,000
 Sec1 Ch3 SLA2019 P5 L30 SB19 \$300,000
 Sec1 Ch19 SLA2018 P8 L24 SB142 \$600,000
 Sec1 Ch1 SLA2017 P6 L12 SB23 \$2,100,000
 Sec1 Ch2 SLA2016 P5 L27 SB138 \$200,000
 Sec1 Ch38 SLA2015 P5 L21 SB26 \$800,000

Prior to FY2016 (SLA2015) STATEMAP grant funds were included in the operating budget.

Project Description/Justification:

Funding from the U.S. Geological Survey (USGS) under STATEMAP is available annually to DGGS, and the Division has obtained these grants yearly since 1993. The funding allows DGGS to map portions of the state with geologic hazards or significant energy or mineral resource potential and use the information to support community planning and stimulate natural resource development. Each year geologic maps are produced and provided to the USGS as a condition of the STATEMAP grant.

There is a mandatory 1:1 State match requirement to receive the federal funds. DGGGS has received STATEMAP funds every year since 1993, receiving a total of almost \$5M in federal funds to geologically map approximately 16,000 square miles of Alaska, resulting in the production of more than 150 geologic maps and reports. The requested State funding covers salaries, helicopter flights, analytical, and other expenses.

This project is composed of two parts—conducting geologic mapping in areas of geologic hazards, and compilation of new and existing geological data into digital datasets available online.

Part 1. New geological mapping (\$300.0 UGF and \$300.0 FED)

There are numerous targets for geologic/hazard mapping throughout the state, and DGGGS is working closely with the Alaska Geologic Mapping Advisory Board (GMAB) to determine the greatest need. The Board has narrowed the decision to two possible options for FY23: Geologic Mapping of Alaska’s Rivers—Lower Kuskokwim River Flooding and Erosion or Geologic Mapping for Landslide Hazard Assessment—Haines.

Option 1: Geologic Mapping of Alaska’s Rivers—Lower Kuskokwim River Flooding and Erosion This is the most threatened river region in Alaska that has historically not received much research focus and thus has the least amount of actionable data for planning and decision making. The project will rely on the recently completed Interferometric synthetic aperture radar (IfSAR) digital elevation models (DEM) and satellite/aerial imagery, as well as targeted new lidar surveys, as the foundation for a major field campaign to collect ground data and complete mapping at the high spatial resolution necessary for community decision making. Deliverables include a surficial-geologic map of river terraces, report on Quaternary reconstruction/fluvial history (tectonics, eustasy, climate change), and community outreach through technical assistance and guidance for community leaders and engineers working on solutions to erosion hazards in the region. Seven communities would gain access to geologic mapping to inform long-term community planning and relocation decision making, and the project would set the example and standards for other rivers to be assessed in future studies.

Option 2: Geologic Mapping for Landslide Hazard Assessment—Haines

Informed decision-making, mitigation, emergency response, and landslide resilience of Alaska communities require detailed geologic mapping to support science-based hazard assessments. This project focuses on the December 2, 2020 landslide, in the community of Haines, that destroyed four houses and took the lives of two residents. Project deliverables include a report and detailed surficial and bedrock mapping over approximately 100 mi² at 1:24,000 scale, targeting at-risk infrastructure and community development areas. Data generated would include bedrock lithology, structure, and engineering properties, and surficial materials distribution, character, thickness, and engineering properties. Mapping and field data will inform and improve a FEMA-funded landslide inventory that Division of Geological & Geophysical Surveys (DGGGS) will be conducting in FY23-24.

The GMAB will make its final decision prior to issuance of the FY23 STATEMAP Request for Proposals; proposals are anticipated to be due November 2021.

Part 2. Geological Data Compilation (\$300.0 UGF and \$300.0 FED)

Alaska is roughly 20% mapped for geology at a scale of 1 inch = 1 mile. Most of this data is only available as older, paper maps. The USGS received additional funding beginning in federal fiscal year (FFY) 2020 for states to compile existing mapping into digital data, which can then be compiled into

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state, and then national digital geology datasets and maps. DNR will compile all of Alaska’s existing and new mapping data into digital formats over a period of years, beginning with areas of highest mineral and petroleum potential. The current proposal focuses on the Yukon-Tanana Uplands, Seward Peninsula, and North Slope that are respectively of interest for mineral and petroleum exploration and production. As part of the proposed effort, DNR will also continue to stitch digital maps together for eventual statewide coverage at a scale optimized for industry use. State matching funds are required for this work as the operating budget for the DGGS does not cover salary for the project.

Full-time GIS Analyst 2, range 17, located in Fairbanks Full-time Geologist 1, range 15, located in Fairbanks Full-time Geologist 1, range 15, located in Fairbanks

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Line Item Detail

Line Item	Amount (use whole dollars)
1000 Personal Services	\$840,000
2000 Travel	\$33,000
3000 Services	\$307,000
4000 Commodities	\$20,000
5000 Capital Outlay	
7000 Grants	
Total Request	\$1,200,000