National Mineral Security Program - 3DEEP **FY2019 Request: $16,000,000**
Reference No: 61849

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: Fabienne Peter-Contesse
Estimated Project Dates: 07/01/2018 - 06/30/2023
Contact Phone: (907)465-2422

Brief Summary and Statement of Need:
This ten-year project will geologically map the state at 1:100,000 scale, create new geophysical survey data, digitally upgrade historical geophysical surveys, publish the resulting data and associated reports, bring many new jobs to Alaska, and spur private sector investment.

Funding:	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	Total
1002 Fed Rcpts	$15,000,000	$15,000,000	$15,000,000	$15,000,000	$15,000,000	$15,000,000	$90,000,000
1003 G/F Match	$1,000,000	$2,000,000	$2,000,000	$2,000,000	$2,000,000	$2,000,000	$11,000,000
Total:	$16,000,000	$17,000,000	$17,000,000	$17,000,000	$17,000,000	$17,000,000	$101,000,000

☑ State Match Required ☐ One-Time Project ☐ Phased - new ☐ Phased - underway ☑ On-Going
25% = Minimum State Match % Required ☐ Amendment ☐ Mental Health Bill

Operating & Maintenance Costs:

	Amount	Staff
Project Development:	0	0
Ongoing Operating:	0	0
One-Time Startup:	0	
Totals:	0	0

Prior Funding History / Additional Information:

Project Description/Justification:
Critical Minerals
Mineral commodities are critical and strategic to national security and the economy, but the U.S. is 100% dependent on imports for 20 critical minerals and 50% import dependent for another 30. China is the major supplier for 25 of these commodities including the rare earth elements, which underpin both national defense and the consumer economy. Recent trade restrictions on rare earth minerals from China highlight U.S. dependence on foreign suppliers.

Critical minerals and rare earth elements (REE) are used in many industrial processes and products that underpin modern life. They are used in computers, computer monitors, smart phones, batteries, LED lights, digital cameras and camera lenses, automobile catalytic converters, and petroleum refining to name only a few of the products and processes that rely on them.

Sources for these minerals could be developed in the U.S., but private sector exploration is hampered by the lack of modern geological and geophysical data. Competitor countries provide such data sets to the private sector. Geologic maps at a suitable scale for minerals exploration are available for less

than 15% of Alaska. These maps are also critical for land-use planning and assessments of natural hazards, water resources, and sand and gravel deposits.

The mineral deposits required to meet domestic needs can only be found through comprehensive geophysical and geologic mapping:

- Geologic maps provide information on rocks and geologic structures such as faults at the Earth's surface. Geologic maps are also essential for natural hazard avoidance and water resources management.
- Geophysical surveys for mineral exploration include techniques that discriminate different types of rocks and minerals in the subsurface and on the Earth's surface, as well as techniques that measure the density of rocks. Some of these same techniques are also useful for delineating groundwater resources, mapping permafrost, and assessing potential geological hazards.
- Topographic maps portray surface elevation data, ensuring that geological and geophysical surveys are accurate. It is essential that surface geology be mapped on accurate, up-to-date topographic base maps. The USGS is the nation's principal agency for their creation. Their 3D Elevation Program (3DEP) is currently creating modern, highly accurate topographic maps, also essential for all industrial sectors, and particularly for construction activities requiring detailed elevation data for surveying.

3DEEP Program
The 3DEEP program will leverage the above program elements by building on the successful 3DEP and National Cooperative Geological Mapping Programs (NCGMP), currently in progress within the USGS, to create an integrated 3DEEP Geological and Geophysical Mapping Program to accelerate geological and geophysical mapping. Federal funding is anticipated to be $50 million per year for 10 years, of which $15 million per year is estimated to come to Alaska. This integrated program would initially focus on priority areas and would direct the USGS to:

- Continue the 3DEP topographic mapping program for the United States and Alaska with data collection conducted by private sector contractors, prioritizing federal lands.
- Expand funding to state geological surveys and academic institutions for geologic mapping to increase national geologic map coverage at a scale useful for mineral exploration, groundwater resource studies, and hazard mapping prioritizing Alaska and western states.
- Conduct airborne geophysical surveys of the continental United States and Alaska with data collection by private sector contractors. USGS would ensure data quality and analyze the data, prioritizing the mid-continent.

All data generated by the 3DEEP will be available to the public. The vast majority of the funds would go to the private sector, states, and academia to conduct the surveys with the USGS ensuring data quality and standardization as well as providing analysis.

This project significantly and directly addresses the DGGS statutory mission to: "Determine the potential of Alaskan land for production of metals, minerals, fuels, and geothermal resources…" (AS § 41.08.020).

States receiving 3DEEP funding will likely be required to provide a 25% match. If the 3DEEP program is approved and funded, it is estimated DGGS will receive $15 million per year for 10 years, resulting

in a state match requirement of $3.75 million per year. DGGS won't likely know until early CY2018 if the program is going to be funded. Due to the magnitude of this project and its implications for DGGS and the State of Alaska, an FY2019 appropriation is needed to help meet the estimated 25% state match for the first year. The balance of the state match for the first year ($2.75 million) would come from existing capital projects and in-kind general fund activities in the operating budget.

Line Items	Amount
71000 - Personal Services (position detail below)	$4,600,000
72000 - Travel (field work, meetings)	$4,200,000
73000 - Contractual (geophysical survey, helicopter, analyses)	$6,400,000
74000 - Commodities	$800,000
Total	**$16,000,000**

Position Detail:
Newly hired positions would be located in Fairbanks and Anchorage, Alaska.

Status Quo (what happens if request not approved?)**:**
Alaska contains critical and strategic minerals important to national security and the economy, and failure to fund this request will continue to hamper private sector exploration due to the lack of modern geological and geophysical data.

This will reduce Alaska's worldwide competitiveness, and inhibit industry exploration, mineral discovery, and development, thereby reducing future state revenues.

Failure to fund this capital request will prevent Alaska from being geologically mapped at scales useful for mineral exploration, and groundwater and hazard mapping. With current funding levels and personnel, DGGS will complete mapping the state at useful scales in approximately 400 years.

Failure to fund this unique capital request will cause the state to forgo $150M in federal funds over ten years; an extraordinary 4-to-1 federal- to state-funded project. The state's anticipated fiscal responsibility is 25%.

Prior Funding

From FY1993-FY2015, the State's Airborne Geophysical/Geological Mineral Inventory (AGGMI) program annually produced geophysical surveys, geologic maps, and datasets to facilitate resource development. The annual UGF $800.0 AGGMI program and associated geophysicist position were eliminated in the Governor's FY2016 budget.

What was accomplished?

Through FY2015, the DGGS completed new geophysical mapping for 15,771 square miles of Alaska. This program made significant contributions towards the goal of creating comprehensive geophysical

and geological map coverage of Alaska, where current mapping is limited or nonexistent. The AGGMI products have attracted millions of dollars in industry investment.

Future Funding FY2020-2028

$15,000.0 FED
$2,000.0 GFM ($1,750.0 match will come from in-kind operating activities)