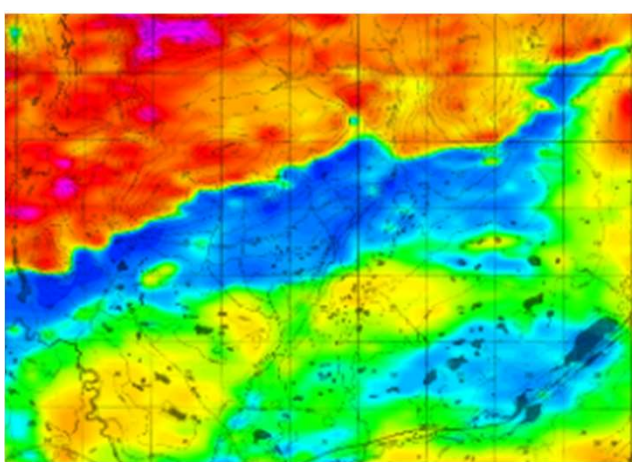




Division of Geological & Geophysical Surveys

Steven Masterman, Alaska State Geologist
Theresa Cross, Director DNR Support Services
January 31, 2022



FY2023 GOVERNOR BUDGET CHANGES

Maintain Occupancy at the Geological Material Center: \$125.0 UGF

This \$125.0 increment is to the facilities component. The GMC is a State-owned property and currently, the Division of Geological & Geophysical Surveys is the main occupant of this building.

FY2021 Decrement:

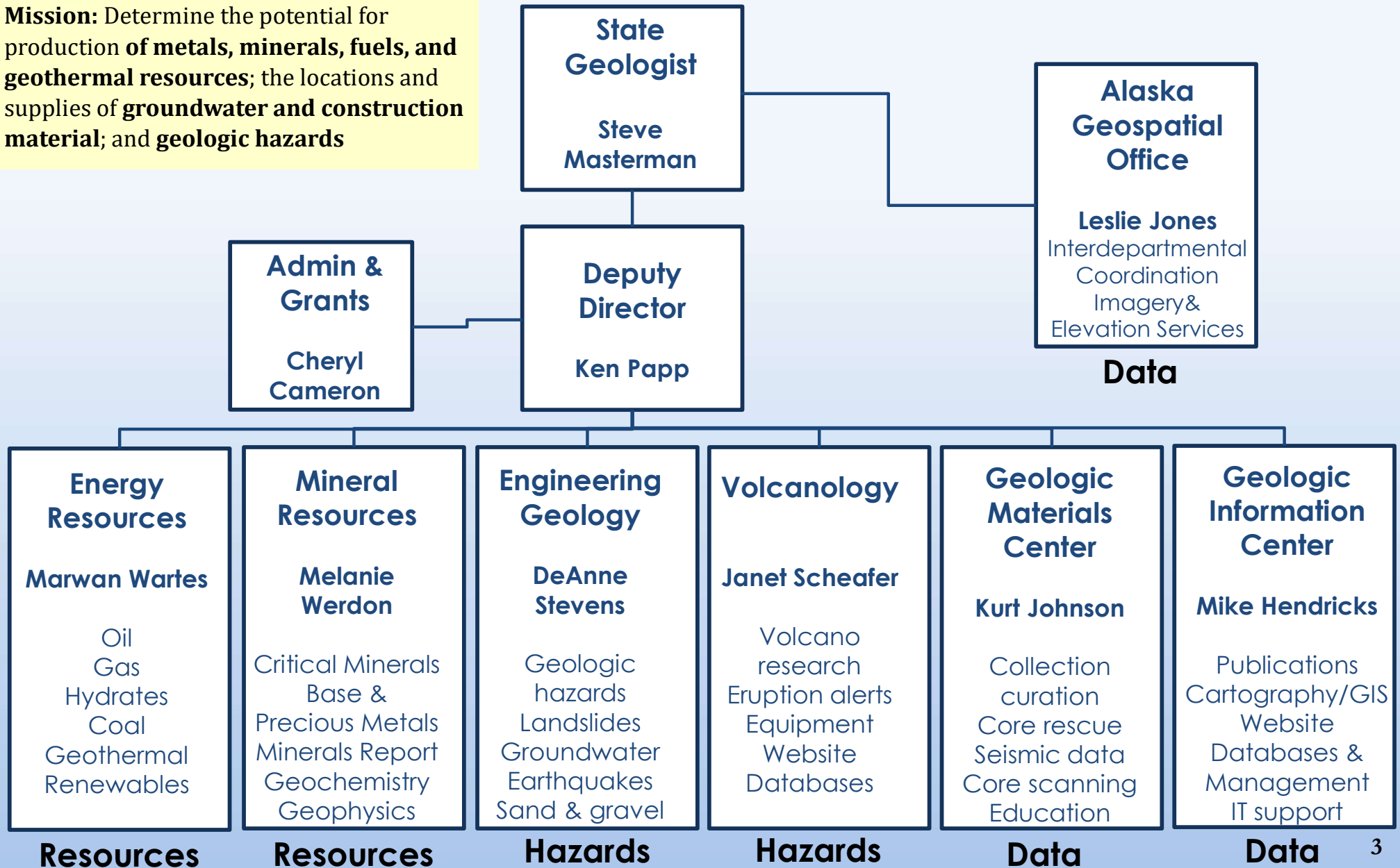
Historically, the State Pipeline Coordinator's Section (SPCS) shared the GMC with DGGS, which allowed for the cost to be split between the two divisions. The FY21 budget had a \$218.0 decrement consolidating SPCS into the Division of Oil and Gas's space in the Atwood Building.

FY2021 GF/PR Revenue Total:

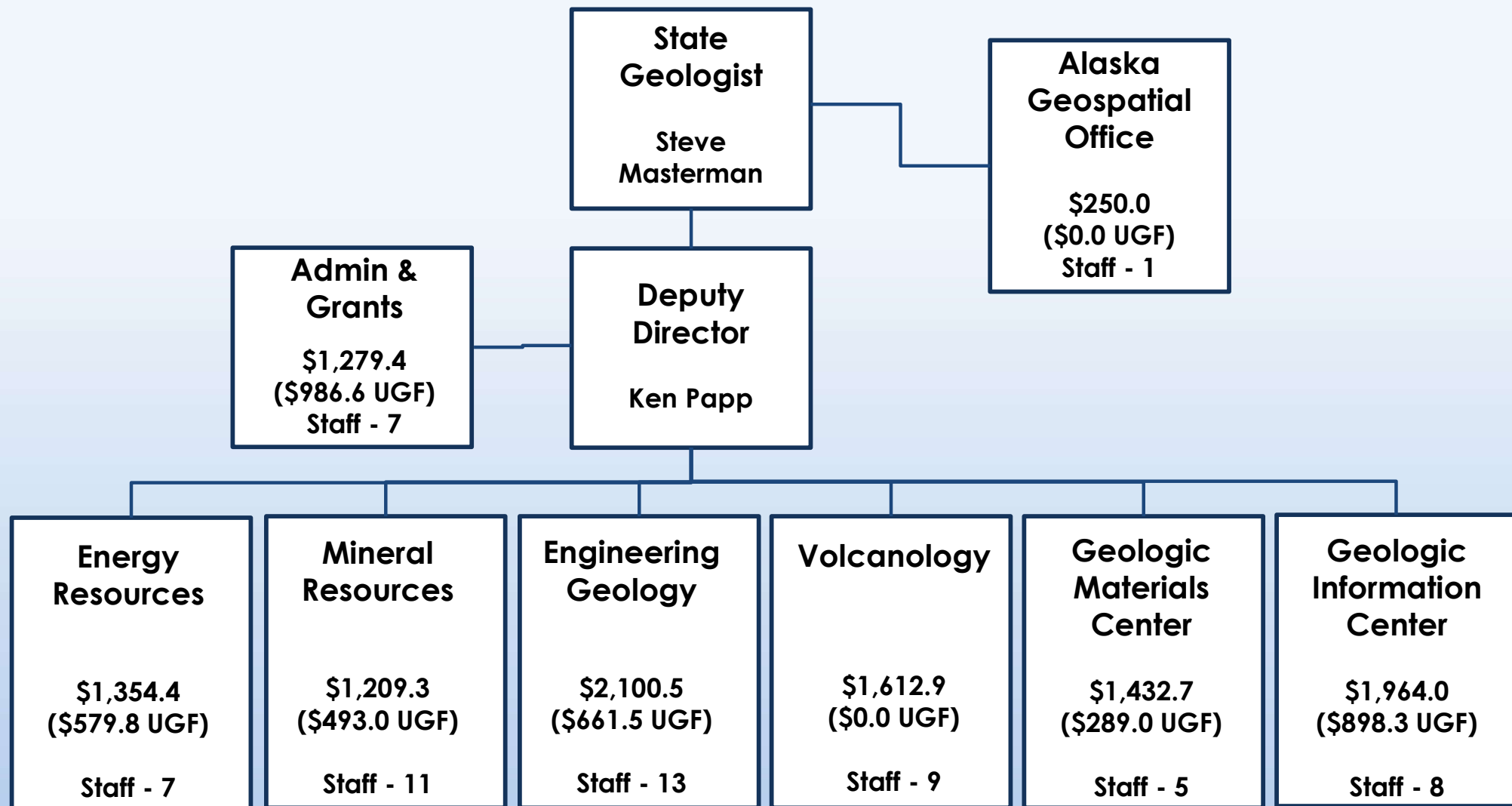
\$125.0

DIVISION ORG CHART

Mission: Determine the potential for production of **metals, minerals, fuels, and geothermal resources**; the locations and supplies of **groundwater and construction material**; and **geologic hazards**



FY2022 MANAGEMENT PLAN



FY2022 Management Plan Budget					
PCNs	UGF	DGF	Fed	Other	Total
61	3,908.2	1,521.3	2,721.1	3,052.4	11,203.0

GENERAL FUND ALLOCATION

FY2022 Management Plan Budget					
PCNs	UGF	DGF	Fed	Other	Total
61	3,908.2	1,521.3	2,721.1	3,052.4	11,203.0

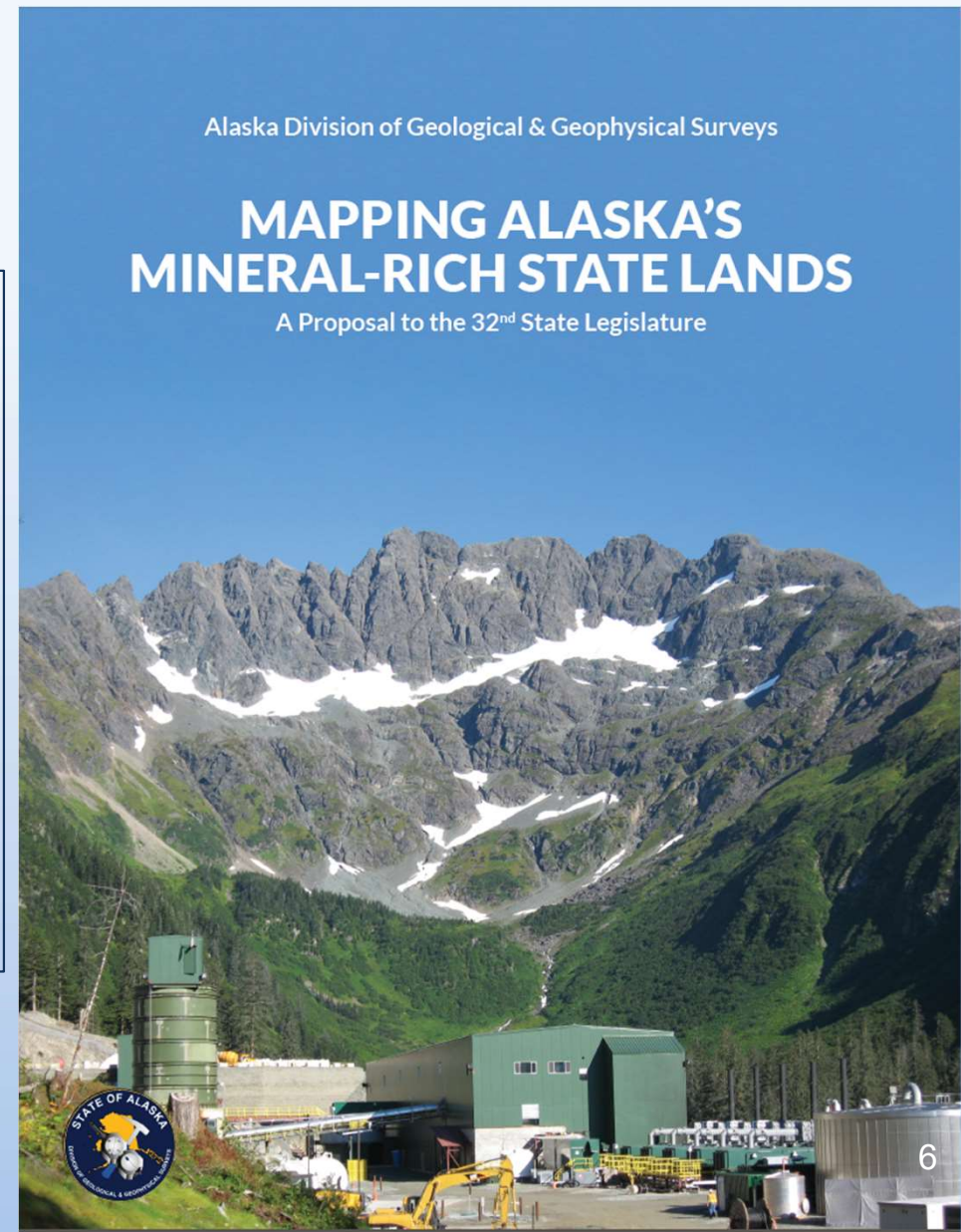
- FY2022 UGF budget (\$3,908.2):

	Pers Svcs	Travel	Contractual	Supplies	Equip	Grants	Total
	1000	2000	3000	4000	5000	7000	
UGF Allocation	3,577.0	31.5	230.0	69.7	0.0	0.0	3,908.2
Percent	92%	1%	6%	2%	0%	0%	100%

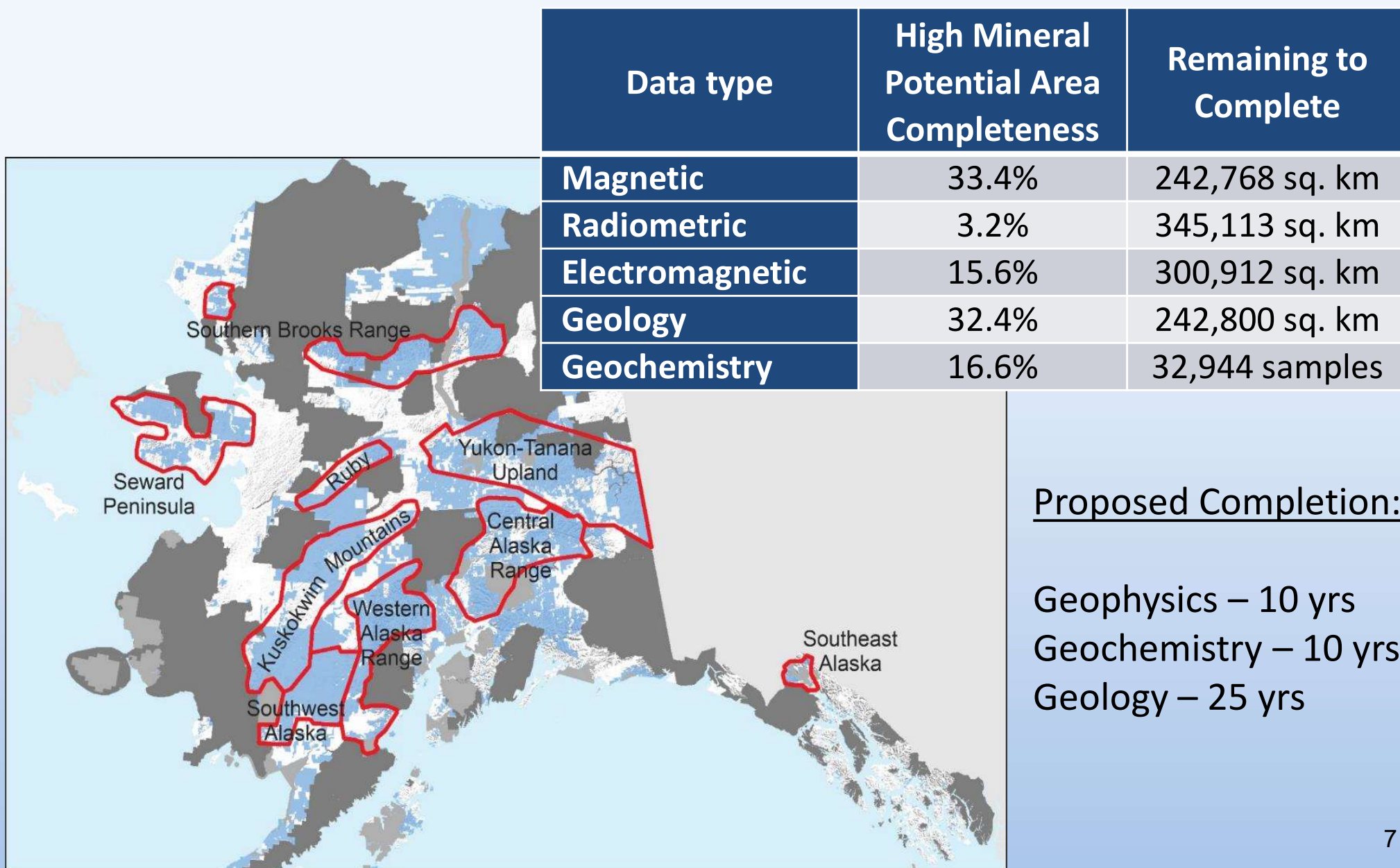
- FY2022 Personal Services \$7,618.1
- UGF funds 46.9% of salaries
- Remaining salaries and all field expenses supported by soft funding

FY2022 BUDGET LANGUAGE

It is the intent of the legislature that the Department of Natural Resources Division of Geological & Geophysical Surveys submit to the Finance Co-Chairs and Legislative Finance Division by December 1, 2021, a proposal to conduct large geophysical, geochemical, and geological data collections over mineral-rich portions of the state, and to develop fee schedules to charge for the raw data, once collected, while publishing low-cost hardcopy maps, and providing free access to visual representations of the data through the division's website.



WORK PROGRAM



ENERGY RESOURCES SECTION

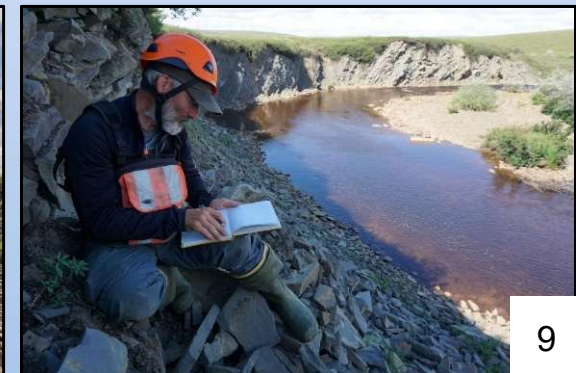
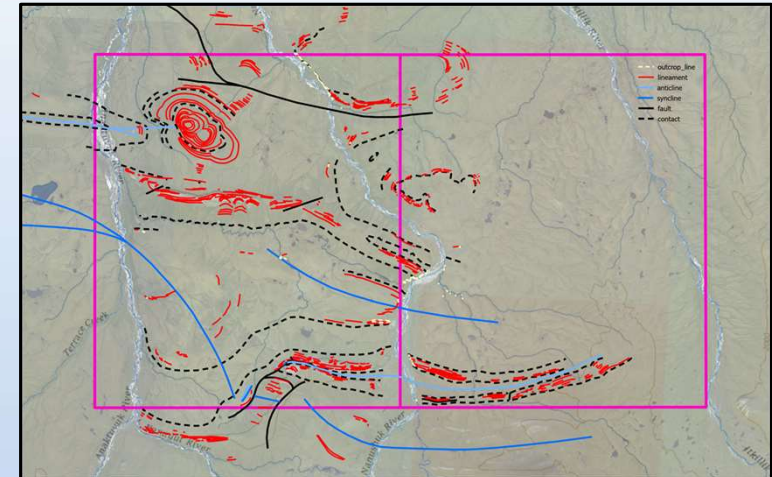
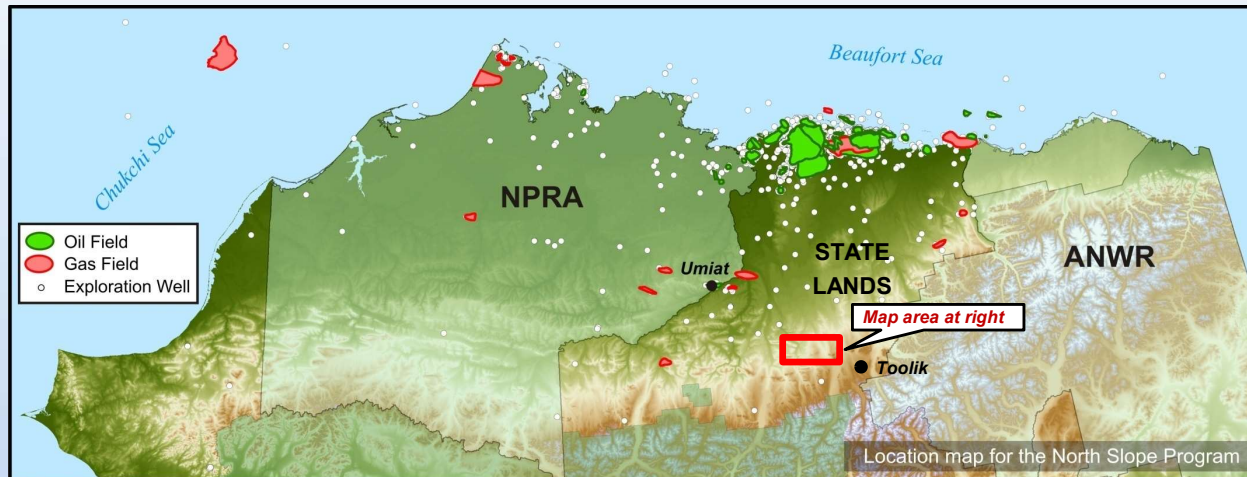
- **Oil and Gas Resources**
- **Geothermal Resources**
- **Coal Resources**
- **Renewable Energy Resources**



STATEMAP

Geologic Mapping

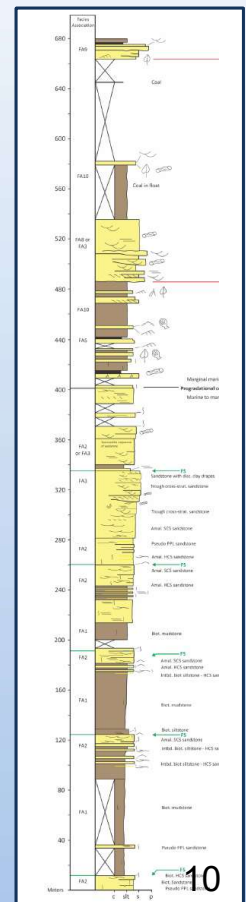
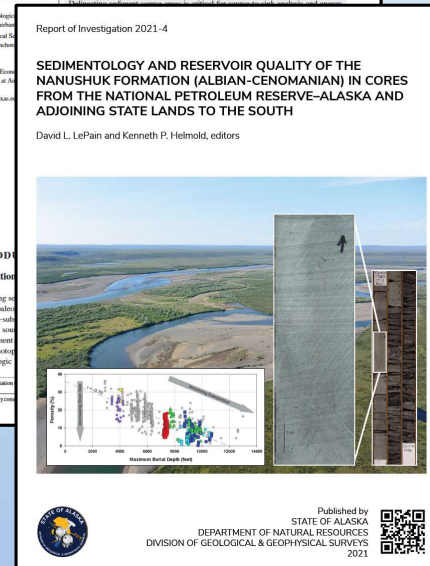
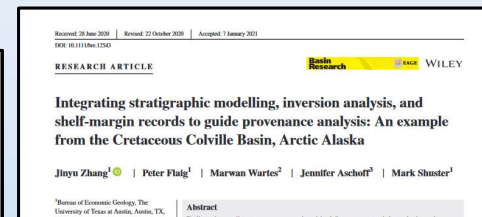
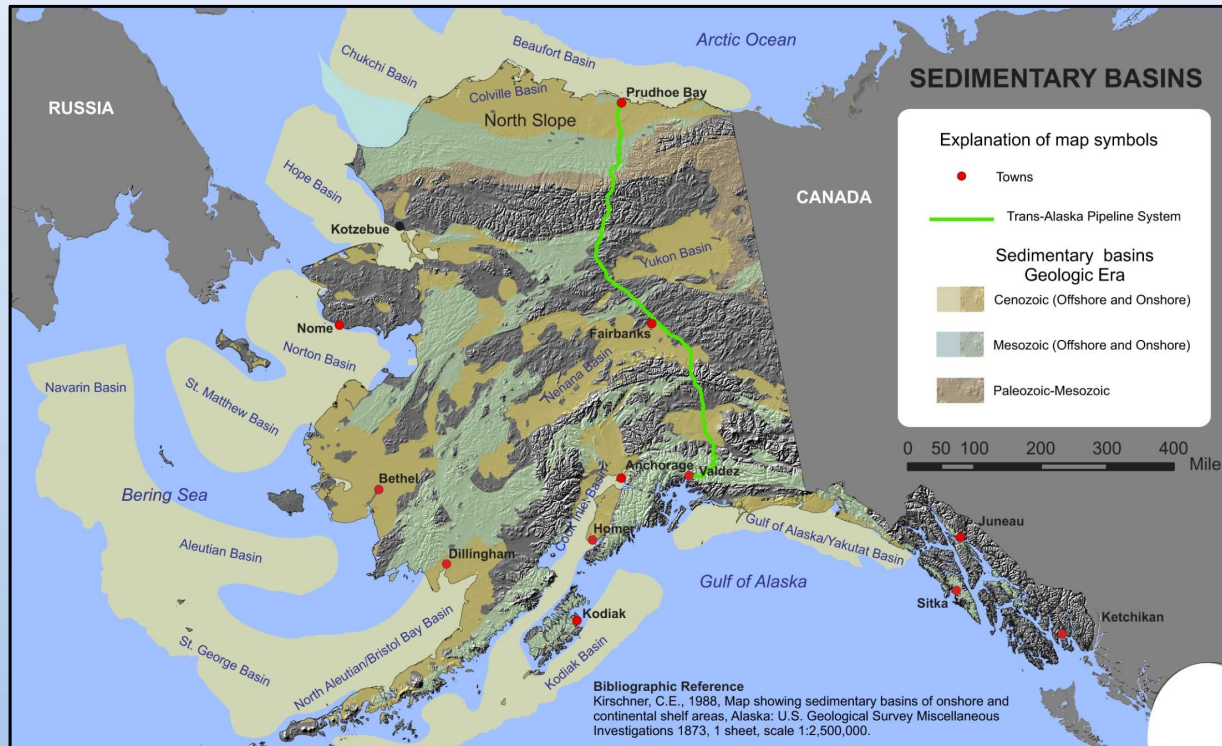
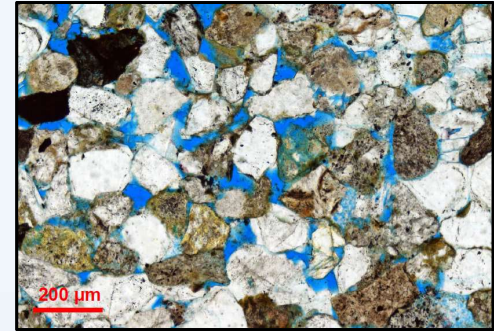
- Completed 1,280 km² of new geologic mapping on the central North Slope
- Discovered previously unknown oil-stained horizons of Nanushuk Formation in map area
- Completed drone-based Structure-from-Motion photogrammetric survey to better delineate potential reservoir geometry and stacking patterns



PUBLICATIONS

New Reports

- Released multiple publications on the Nanushuk Formation
 - Detailed measured sections from key outcrops
 - Sedimentology and reservoir quality of subsurface core
 - Major compilation of thin section composition and reservoir quality
- Co-authored stratigraphic modeling paper in international journal to assist predictions of reservoir characteristics during exploration on the North Slope
- Published synthesis of pollen age data and thermal maturity of Cenozoic strata that serve as oil and gas reservoirs in Cook Inlet



DEPT. OF ENERGY CORE-CM

Rare Earth Elements (REE's) and Critical Minerals (CM's)

- Awarded \$1.5 M from US Department of Energy to assess REE's and CM's in carbon-based ores in Alaska
- Project is collaboration with UAF, UAA, private industry and Native organizations



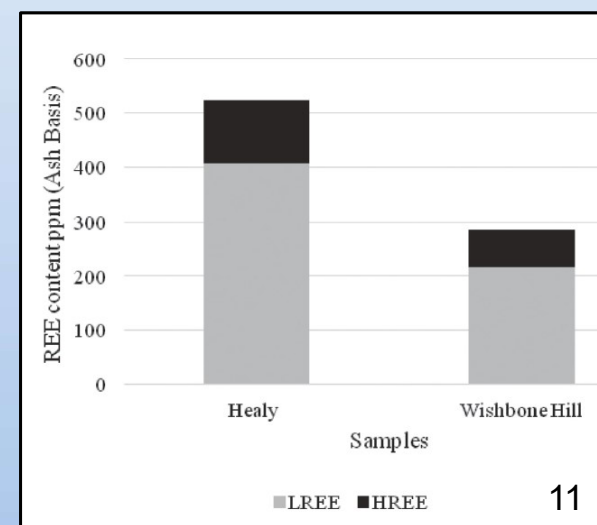
Geologic Materials Center

Principal Data Sources

- Existing published and unpublished data
- New data from archived legacy samples
- New data from newly acquired field samples



Handheld XRF



MINERAL RESOURCES SECTION



Melanie Werdon
Section Chief



Evan
Twelker



Alicja
Wypych



Travis
Naibert



Michelle
Gavel

- Geological Mapping
- Geophysical Surveys
- Geochemistry
- Mineral assessments
- Critical Minerals
- Precious & Base metals
- Minerals Report
- Mineral Hazards



Jen Athey



Sam
Knapp



Chris
Wyatt



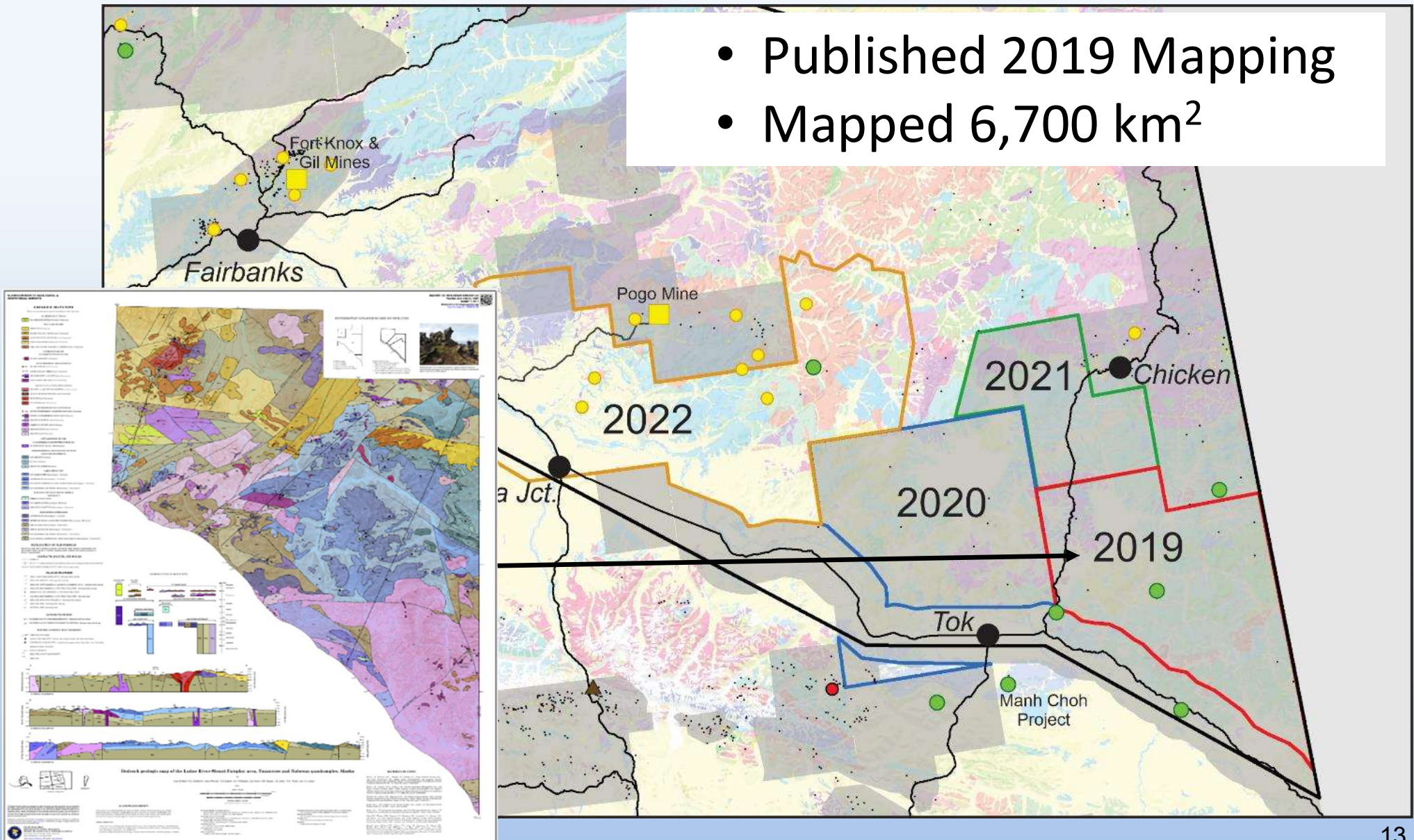
Alec
Wildland



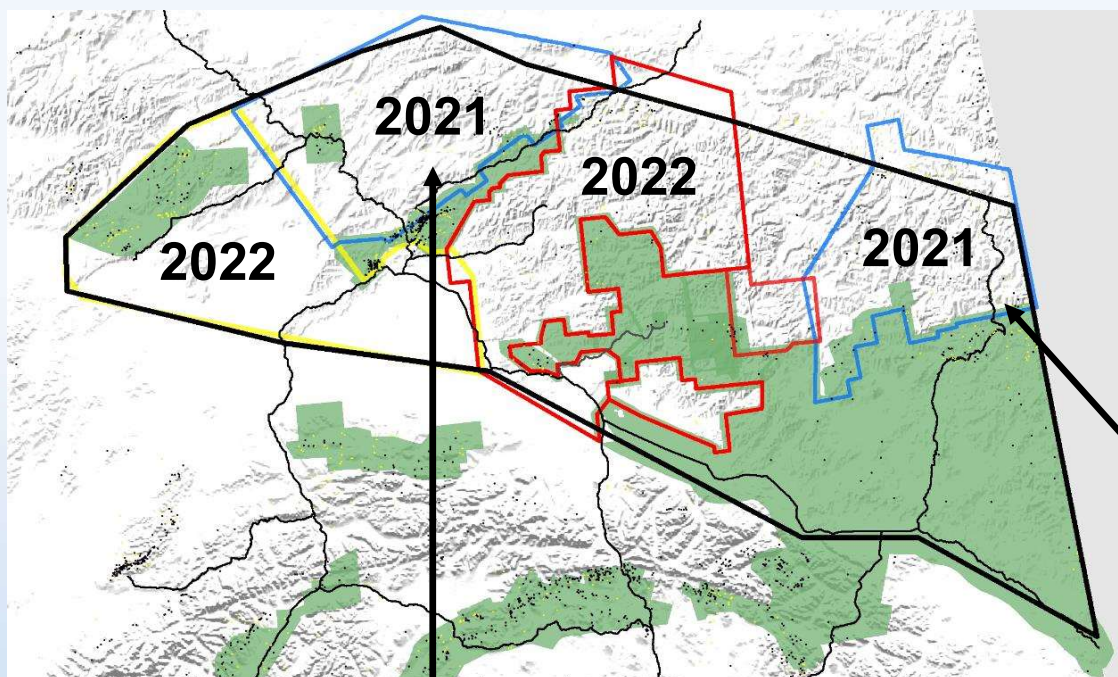
Abraham
Emond

EARTH MRI – GEOLOGY

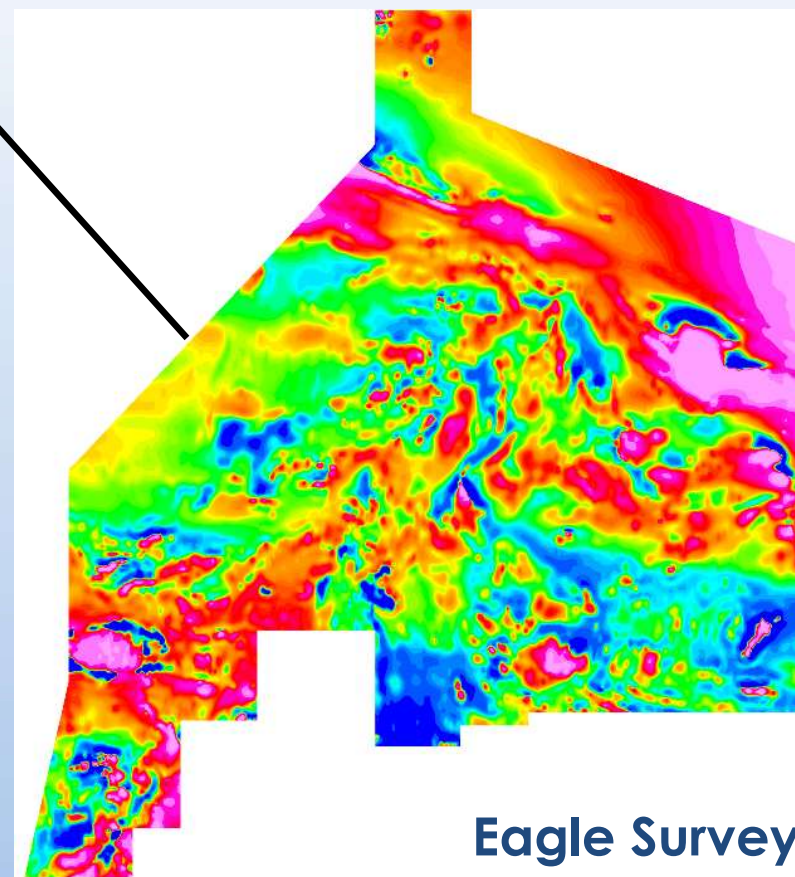
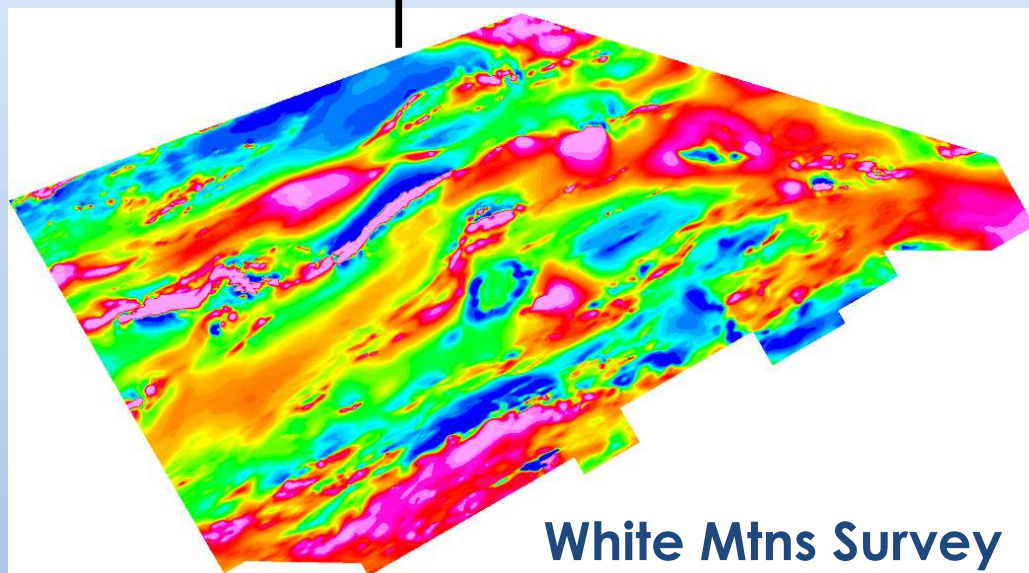
- Published 2019 Mapping
- Mapped 6,700 km²



EARTH MRI – GEOPHYSICS 2021

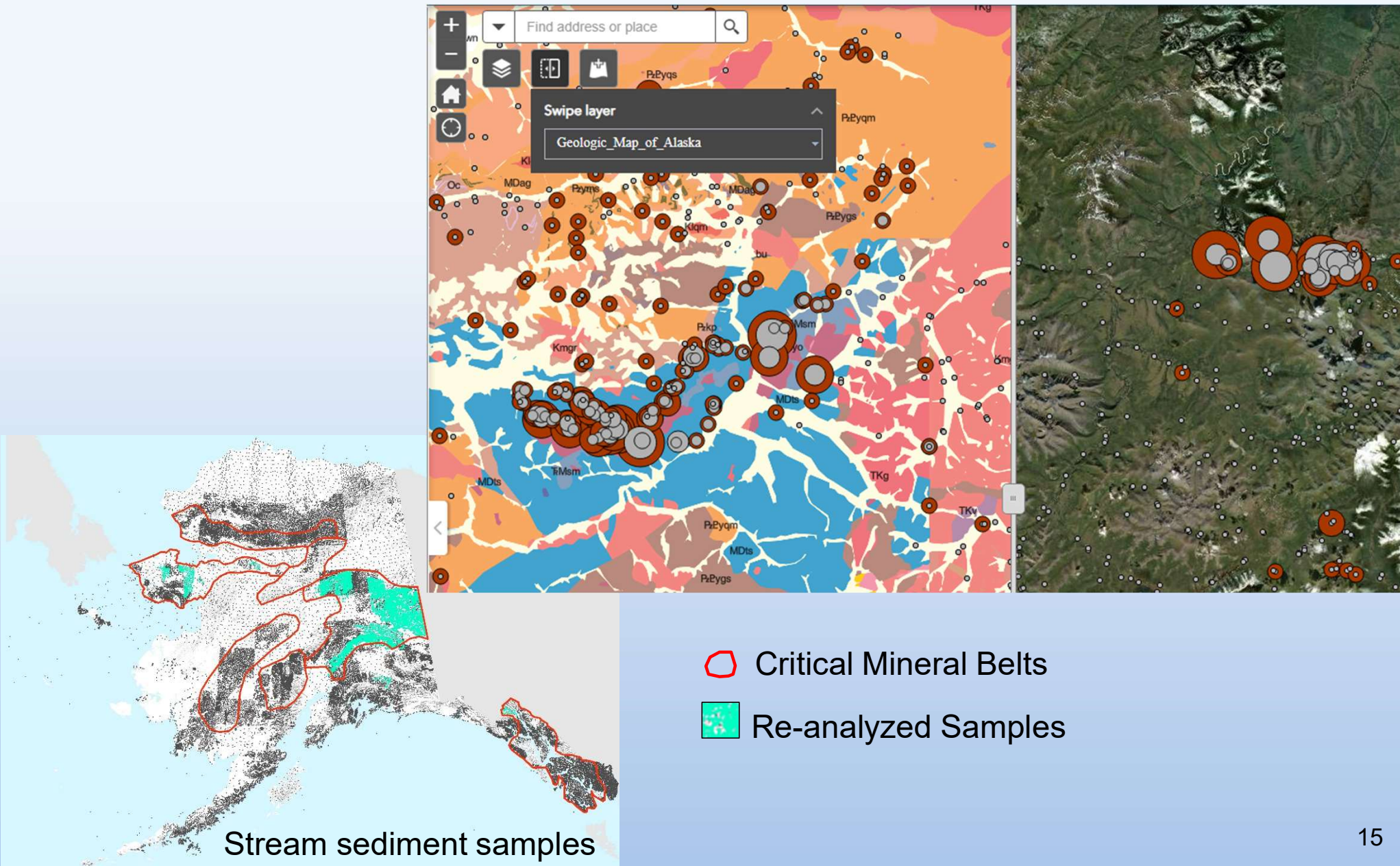


Collected and published 23,154 km² of new data in 2021
Contracted for 35,600 km² for 2022



Residual magnetic field

EARTH MRI – GEOCHEMISTRY 2021



ENGINEERING GEOLOGY SECTION

*Our mission: Determine the locations and supplies of groundwater and construction material, and the potential geologic hazards to buildings, roads, bridges, and other installations and structures
(AS 41.08.020)*

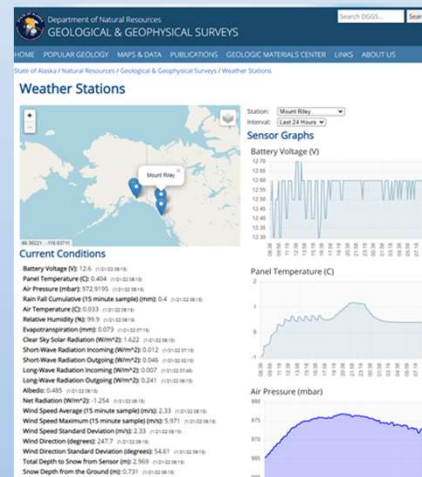
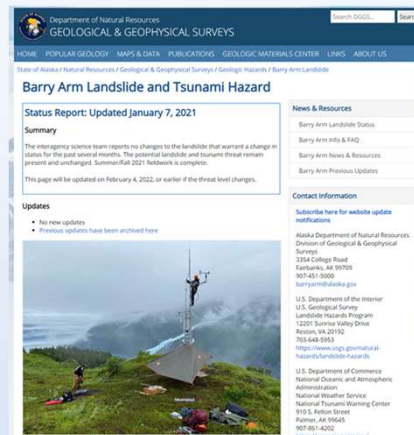


Landslide Hazards
Coastal Hazards
Earthquake & Tsunami Hazards
Climate & Cryosphere Hazards
Permafrost Hazards
Hydrogeology
Surficial-Geologic Mapping

LANDSLIDES PROGRAM

Established the Alaska Landslide Hazard Program

- Identify, characterize, assess, and monitor unstable slopes
- USGS Cooperative Agreement (\$2.15M):
 - Barry Arm, Prince William Sound
- SOA Capital Improvement Project (\$750k):
 - PWS fieldwork, training, Haines lidar, Wrangell lidar
- FEMA Cooperating Technical Partners Program (\$240k):
 - Haines and Cordova landslide hazards assessment
- STATEMAP:
 - Haines geologic mapping (proposed)



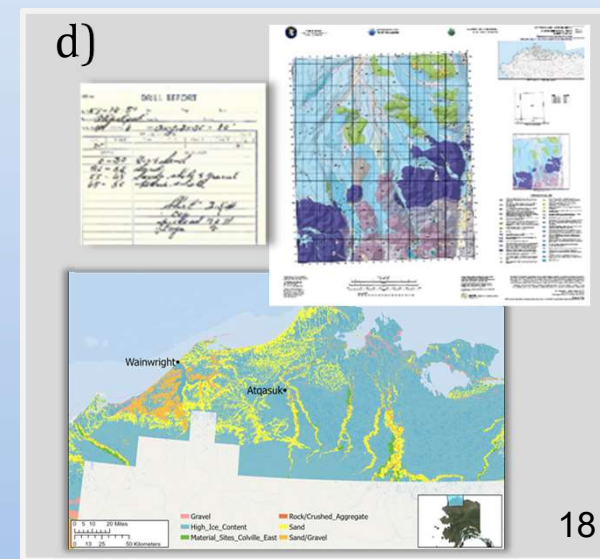
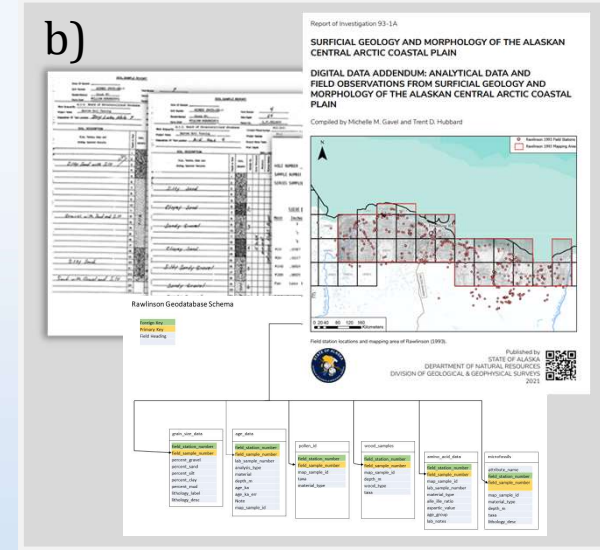
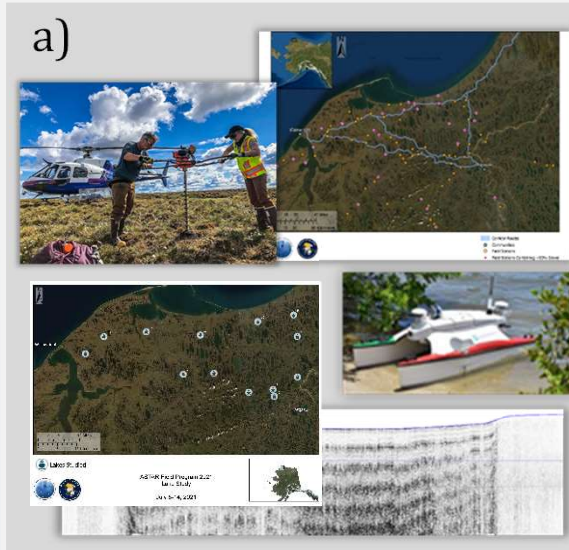
ASTAR



ASTAR Project – Sand and Gravel Resources

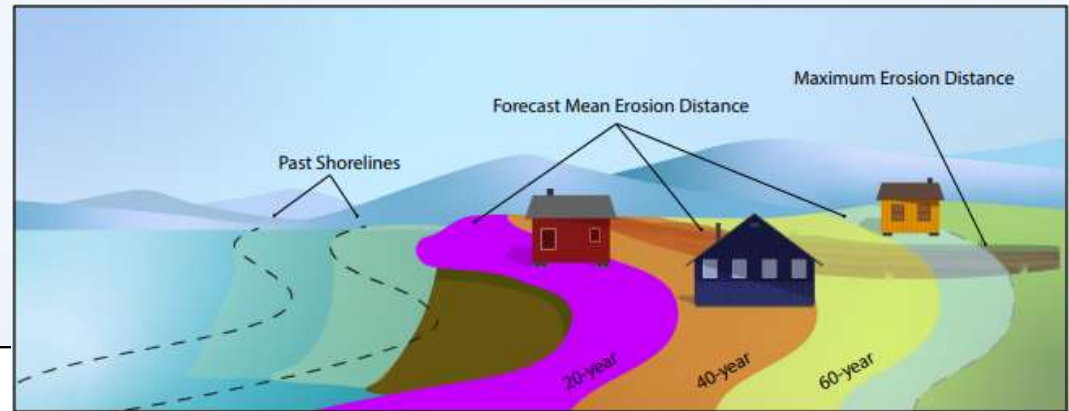
North Slope construction materials investigation

- a) Field work in the Wainwright-Atkasuk region
- b) Published historical data
- c) Compiled seismic shothole data
- d) Developed North Slope sand and gravel resource maps
- e) Coastal Hazards

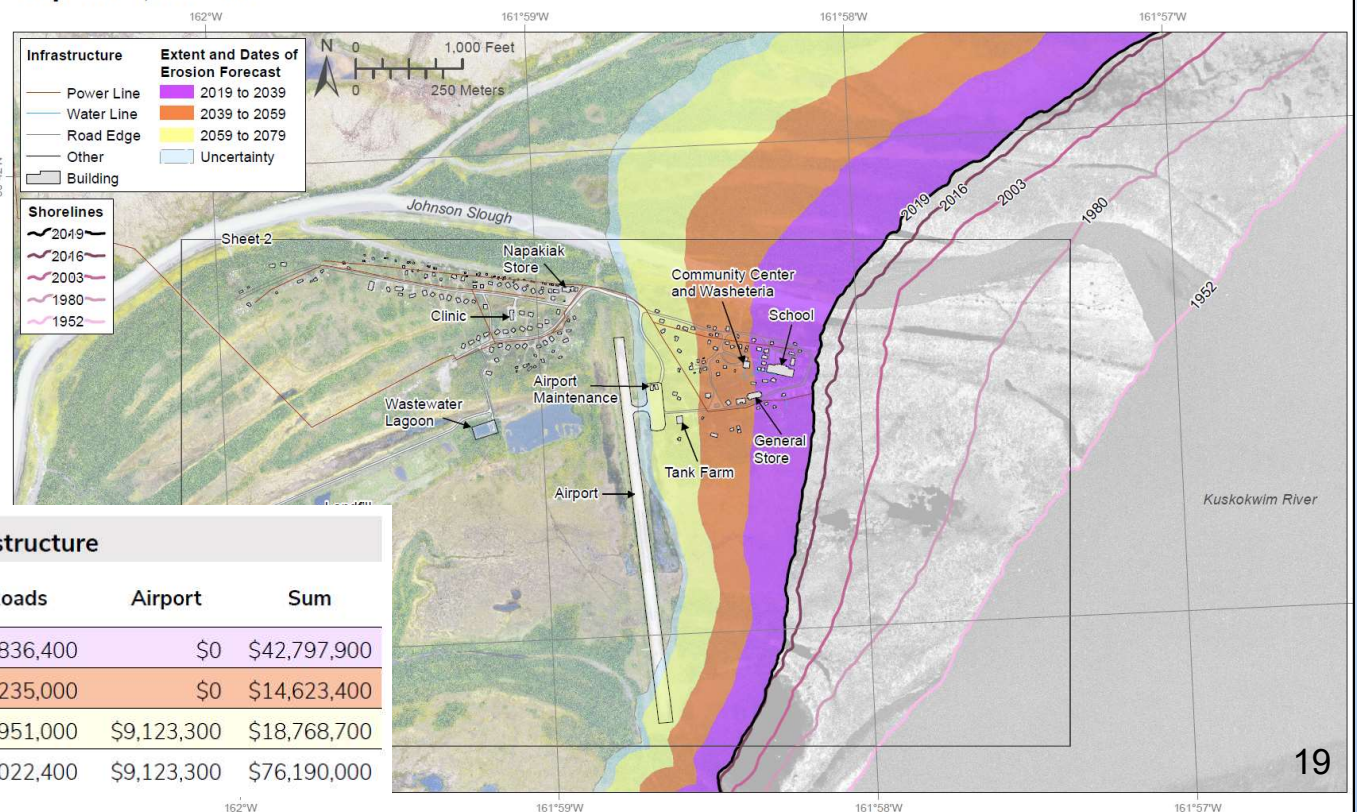


COASTAL HAZARDS

Completed infrastructure erosion exposure forecast maps for 48 Alaska Native Villages



Erosion Forecast Napakiak, Alaska



Cost to Replace Exposed Infrastructure

Erosion Forecast Date Range	Buildings & Tank Facilities	Power Lines	Water Lines	Roads	Airport	Sum
2019 to 2039	\$41,525,900	\$196,500	\$239,100	\$836,400	\$0	\$42,797,900
2039 to 2059	\$13,050,000	\$223,400	\$115,000	\$1,235,000	\$0	\$14,623,400
2059 to 2079	\$8,450,000	\$244,400	\$0	\$951,000	\$9,123,300	\$18,768,700
Combined Total	\$63,025,900	\$664,300	\$354,100	\$3,022,400	\$9,123,300	\$76,190,000

VOLCANOLOGY SECTION



Janet Schaefer
Geologist, Volcanology
Section Chief



Malcolm Herstand
Field Technician



Wyatt Mayo
Field Technician



Cora Siebert
Field Technician



Hannah Rosenkrans
Geologist, Alaska
Tephra Laboratory



Cheryl Cameron
Geologist, GeoDIVA



Scott Crass
Analyst/Programmer,
Web/Database



John Perreault
Geologist, GIS, social
media

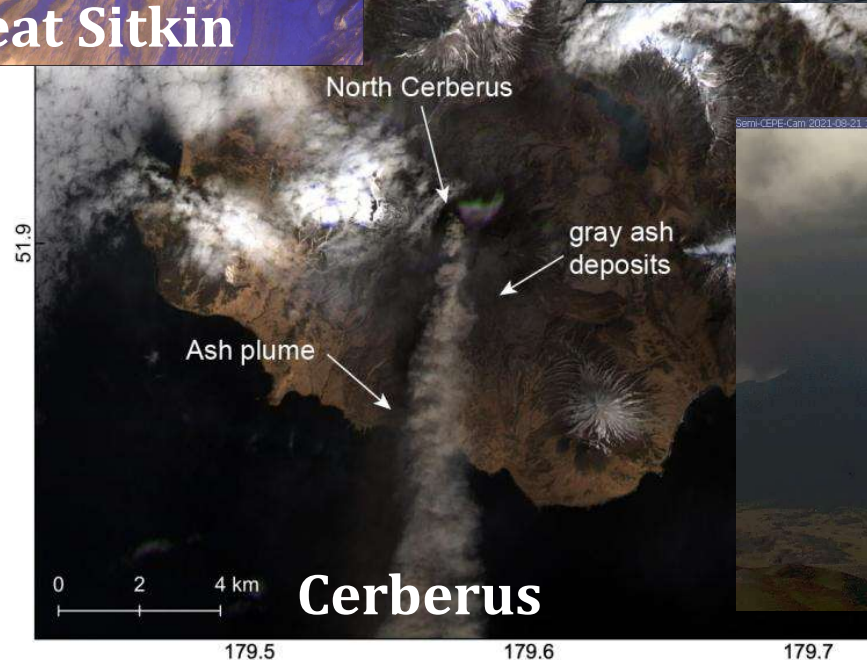
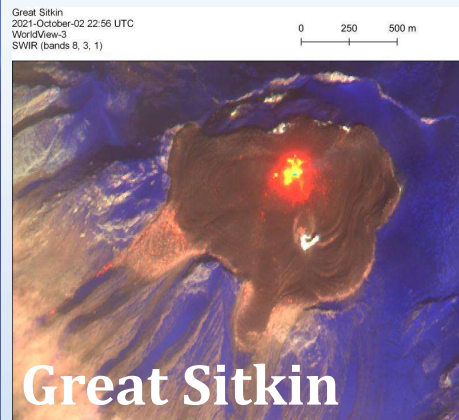


Kate Bull
Geologist, Field
Logistics



VOLCANOLOGY

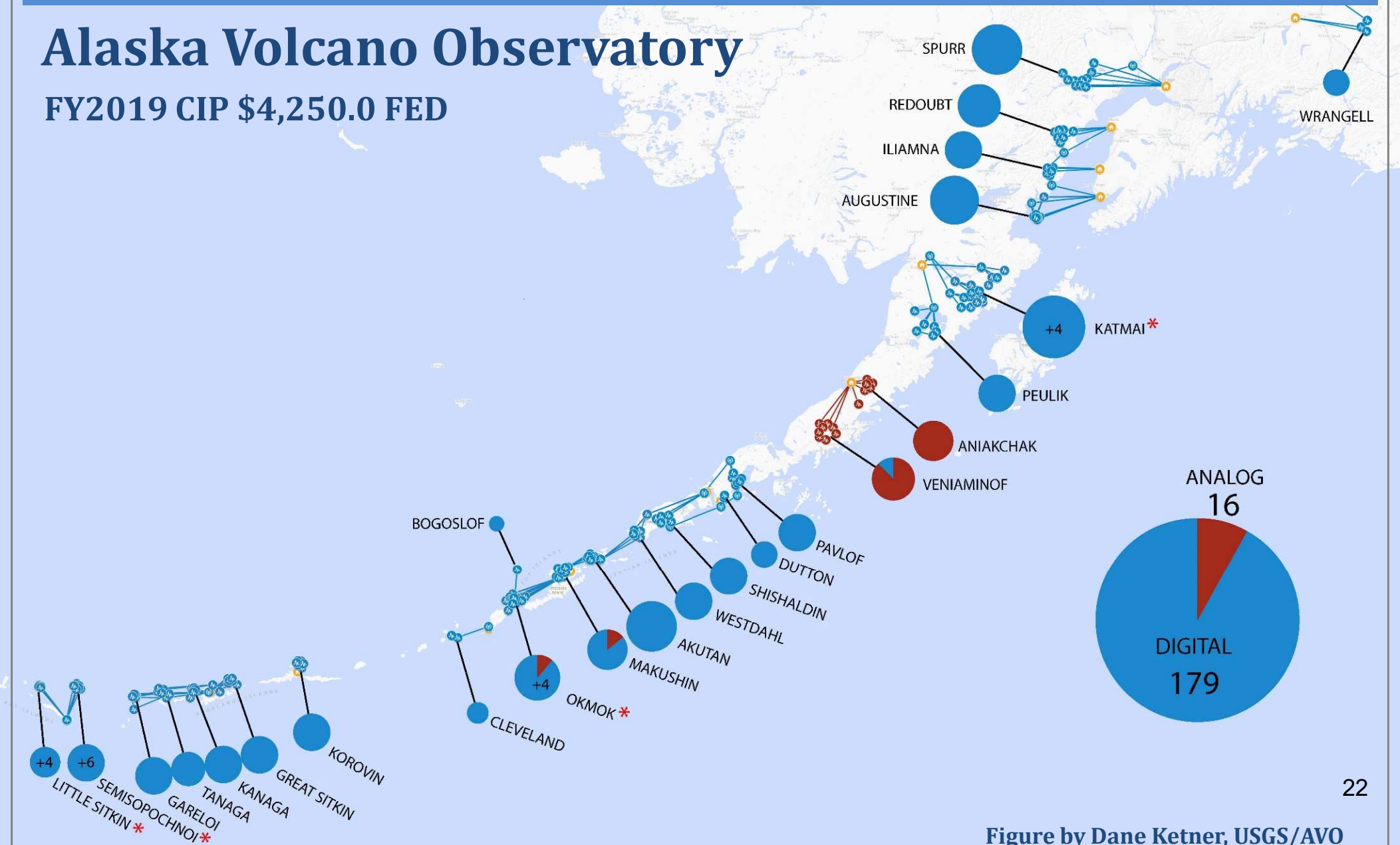
- Operating budget \$1,500.0/year FED
- 397 notifications of volcanic activity at 7 volcanoes



ANALOG TO DIGITAL CONVERSION

Alaska Volcano Observatory

FY2019 CIP \$4,250.0 FED



GEOLOGIC INFORMATION CENTER



Michael Hendricks
GIC Section Chief
GIS Analyst IV



Chris Romcy
Analyst/Prog V



Kristen Janssen
Pub Specialist II



Orzlee Nucson
Systems Programmer II



Simone Montayne
Geologist IV



Thomas Cerny
Microcomputer Network
Tech II



Sue Seitz
Analyst/Prog IV



Amy MacPherson
GIS Analyst II



Andrew Herbst
GIS Analyst I



Pedro Rivera
GIS Analyst III

- **Publications**
- **GIS support**
- **Network management**
- **Database construction**
- **Website development**
- **IT support**

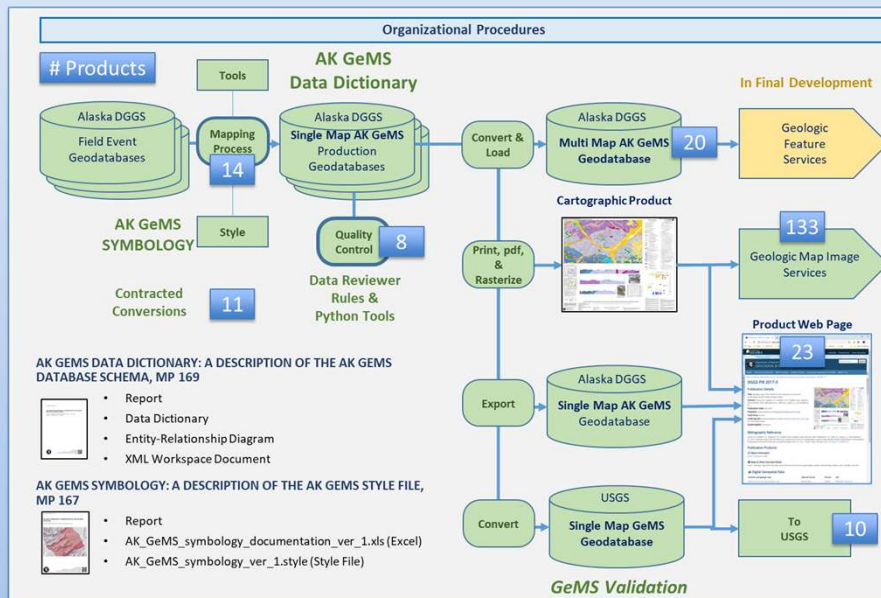
Alaska's geological database was rated **number one in the Nation** by the Fraser Institute's 2020 Annual Survey of Mining Companies.

GEOLOGIC INFORMATION CENTER

Published 60 new geologic maps and reports, including 12,226 square km of new geologic mapping

Distributed ~30 Terabytes of digital geologic data & information via our DGGS website and/or geoportals.

AK GeMS Geologic Database Standard

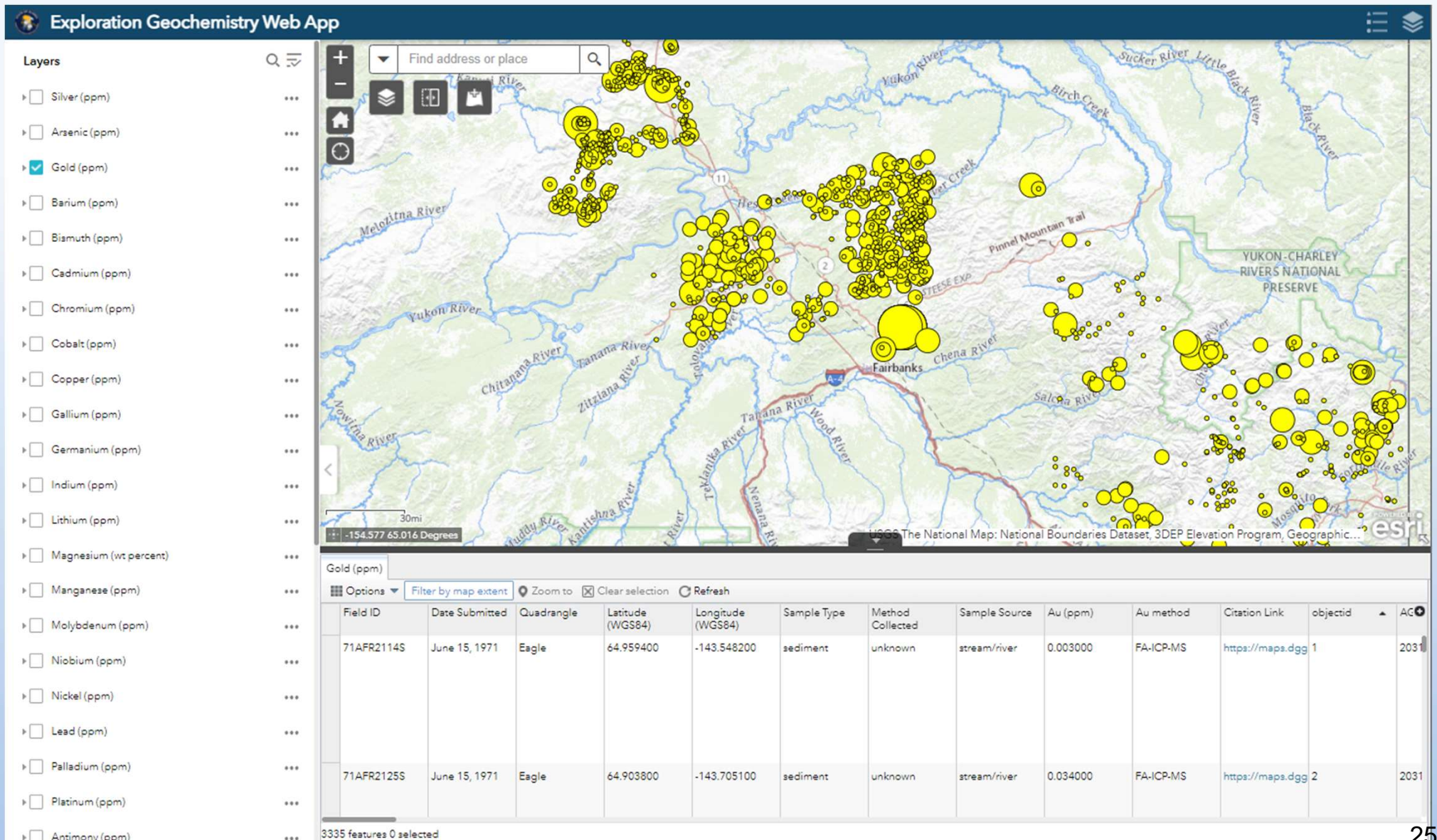


Map Index Web App

The Map Index Web App interface displays a map of Alaska with various geologic features. The left sidebar contains filters for Text Values, Date Range, Scale Range, and Extent Size. The main map area shows a detailed view of a specific region. Below the map, a table lists geologic data with columns for publication number, title, publication date, url, map scale, area sq. mi., and citation id.

publication number	title	publication date	url	map scale	area sq. mi.	citation id
RI 2021-SA	Bedrock geologic map of the Ladue River-Mount Fairplay area, Tanacross and Nelchina quadrangles, Alaska	7/31/2021	https://dggs.alaska.gov/1:500000	1:500,000	1864.660	30735
PR 124	Surficial geology and geohazards in the Alaska Highway corridor, Alaska	2/28/2021	https://dggs.alaska.gov/1:63360	1:63,360	371.240	29701
PR 124	Surficial geology and geohazards in the Alaska Highway corridor, Alaska	2/28/2021	https://dggs.alaska.gov/1:63360	1:63,360	450.990	29701
PR 124	Surficial geology and geohazards in the Alaska Highway corridor, Alaska	2/28/2021	https://dggs.alaska.gov/1:63360	1:63,360	389.290	29701
PR 124	Surficial geology and geohazards in the Alaska Highway corridor, Alaska	2/28/2021	https://dggs.alaska.gov/1:63360	1:63,360	433.510	29701
PR 124	Surficial geology and geohazards in the Alaska Highway corridor, Alaska	2/28/2021	https://dggs.alaska.gov/1:63360	1:63,360	320.850	29701
PR 124	Surficial geology and geohazards in the Alaska Highway corridor, Alaska	2/28/2021	https://dggs.alaska.gov/1:63360	1:63,360	391.060	29701
RI 2020-R6	Northeast Tanacross geologic map and map units and descriptions	7/31/2021	https://dggs.alaska.gov/1:63360	1:63,360	524.530	30539

NEW WEB SERVICES



GEOLOGIC MATERIALS CENTER

Staff

Kurt Johnson
Jean Riordan
Chris Ramey
Genevieve Llewellyn
Kaleb Smith

Interns

Harrison Helton
Dylan Avirett
Tommy Folan

Volunteers

Robert Ravn
Gabi Efrid



GEOLOGIC MATERIALS CENTER

Geologic Materials

Visitation to center increased 22% over CY2020

Hosted three Non-destructive Scanning Tech seminars with Haliburton and Core Labs

Hosted conference on DOE-funded CORE-CM (Alaska Critical Minerals)



Alaska Carbon Ore - Rare Earth and Critical Minerals (CORE-CM) Conference at GMC

CORE PRESERVATION

Received 40,000' of rescue core from two platinum-chrome-nickel prospects in southeast Alaska

Federal grants in FY2022 & 2023 will assist costs to curate the core

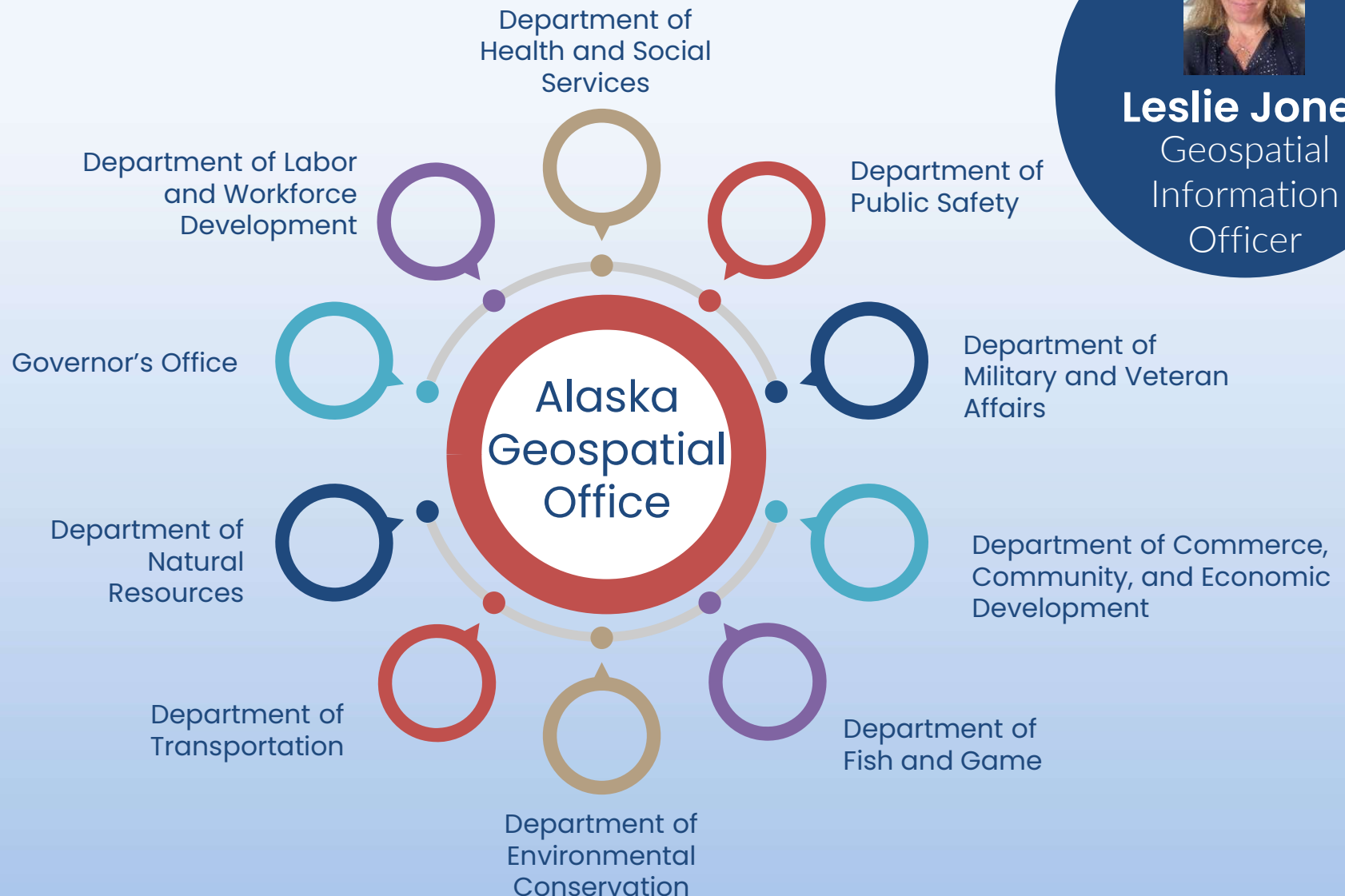
Non-destructive scanning of GMC materials will digitally archive the materials and provide globally available data on critical mineral prospects, and oil and gas fields



Partial view of rescue core

ALASKA GEOSPATIAL OFFICE

State Agency Engagement



Leslie Jones
Geospatial
Information
Officer

DATA PORTAL

Contributing Organizations

We collaborate with government agencies and geospatial professionals throughout the state to consolidate their data and applications in a shared site, reducing redundant data and repeated requests for data. The SOA Geoportal contains authoritative data from the following organizations.

Local



Metanuska-Sustine Borough



Kenai Peninsula Borough

Wrangell

City and Borough Of Wrangell



Kodiak Island Borough



Municipality of Anchorage



City of Unalaska



Alaska Railroad

ALASKA GIS

Southeast Alaska GIS Library



City & Borough of Juneau



Denali Borough Lands



North Slope Borough



Fairbanks North Star Borough



Haines Borough



Ketchikan Gateway Borough

State



Department of Fish and Game



Department of Natural Resources



Department of Environmental Conservation



Department of Transportation & Public Facilities



Alaska Interagency Coordination Center



Division of Community and Regional Affairs

Federal



USDA Forest Service, Alaska Region



BLM Alaska



NOAA GeoPlatform



National Park Service



US Fish & Wildlife Service



State of Alaska Open Data Geoportal

Home

Imagery Program

Organizations

Alaska Geospatial Council

Get Involved

Terms



Alaska
Geospatial
Council

This is a cooperative project coordinated by the Alaska Geospatial Council. The data and services available are hosted by public agencies.

Access to the data would not exist without coordination from contributing members. The Geoportal is hosted by the Alaska Geospatial Office.



Featured Maps and Apps

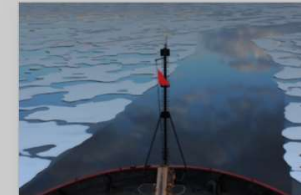
Local, State, and Federal organizations are creating new ways to visualize data. Explore some of the most popular maps and apps across Alaska.



Alaska High Resolution Imagery (50cm)
Alaska High Resolution Imagery served by Alaska Geospatial Office as a basemap.



State of Alaska Open Data
Explore data that is not location-based



The Snows of Alaska
Office of Sustainability and Climate, USFS



Tagging Data for the Alaska Geoportal
Best practices for tagging data in an Enterprise GIS.

STATEWIDE IMAGERY SERVICE

ALASKA GEOSPATIAL OFFICE NEW IMAGERY PORTAL

[GIS.DATA.ALASKA.GOV](https://gis.data.alaska.gov)



State of Alaska
Open Data Geoportal

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[Get Involved](#)

[Terms](#)

**PUTTING IMAGERY IN
THE HANDS OF
ALASKANS TO
SUPPORT DECISION
MAKING**

SPOT-5 Statewide Imagery



New AHRI Statewide Imagery



Comparison of 2013 SPOT-5 imagery and the State's improved 2020 AHRI imagery.

THANK YOU AND QUESTIONS ?

