

MINERALS DATA AND INFORMATION RESCUE
IN ALASKA (MDIRA)

2006 ANNUAL REPORT



Participating organizations:

U.S. Geological Survey (USGS)

U.S. Bureau of Land Management (BLM)

U.S. Forest Service (USFS)

Alaska Division of Geological & Geophysical Surveys (DGGS)

Alaska Land Records Information Section (LRIS)

University of Alaska (UA)

Alaska Miners Association (AMA)

And numerous other individuals, companies, professional organizations,
and government agencies

Prepared for Congress by
MDIRA Liaison Committee

March 2006

EXECUTIVE SUMMARY

The goal of the Minerals Data and Information Rescue in Alaska (MDIRA) program is to recover and make easily available the full body of Alaska mineral information through a coordinated system that provides efficient access or indices to all minerals-related files, documents, and physical samples held in the public domain. This body of information includes geologic data now out of print as well as data collections from agency and private-sector geologists that were never published, geophysical data, state and federal mining claim information, geochemical datasets, and M.S. and Ph.D. dissertations on Alaska geology that exist in the obscurity of university libraries across the nation.

Congress initiated the MDIRA program in response to recognition of the importance of Alaska's mineral resources to the nation and a concern that decades of important Alaska minerals information were being lost, or were in imminent danger of being lost. Much information has become unavailable to the public, industry, and even the government agencies that generated it. Recent downsizing of both federal and state geological agencies has left large volumes of minerals data stranded in unorganized files that, in the absence of a recovery program like MDIRA, were in danger of being disposed of as institutional memory of their significance is lost through continued personnel attrition.

The FY 1997 U.S. Geological Survey's appropriation bill stated:

"The [Senate Appropriations] Committee expects the [U.S. Geological] Survey to report to the Committee no later than March 31, 1997, on the full scope of the geophysical, geologic, and natural resource data collection and storage issues in Alaska. The Survey should work with the University of Alaska, the State of Alaska, the Alaska Federation of Natives, and other interested parties."

Subsequently the U.S. Geological Survey, in cooperation with a multiagency Alaska liaison committee, prepared a report to Congress in March 1997 identifying five major issues regarding Alaska mineral data. That report provided specific objectives toward the goal of making all Alaska minerals information accessible to the public via computer technology as well as in traditional formats in state and federal repositories in Anchorage, Fairbanks, and Juneau.

The five issues identified during a thorough canvass of Alaska's geologic mineral resource private-sector, state and federal agency, and academic communities were:

1. *Library resources:* Network the existing libraries; prepare a guide to geologic and minerals information; and catalog all the major collections of geology and minerals information.
2. *Databases:* Develop up-to-date digital databases of Alaska mineral deposits, geologic literature, and geochemistry data.
3. *Physical Samples:* Provide for the physical preservation of core and other physical samples collected in the field; in particular, ensure the continued existence of the Geologic Materials Center.

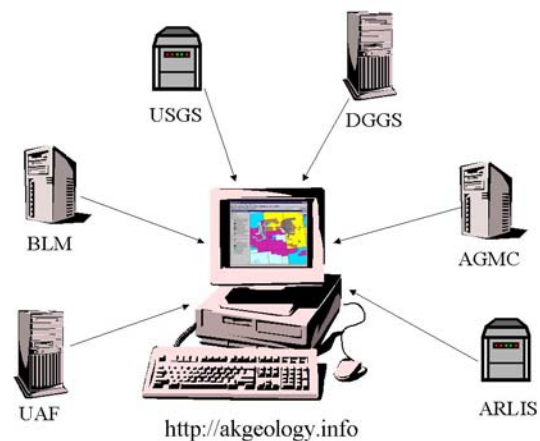
4. *Mining claim information:* Develop an authoritative, digital, claim information system to include both State and Federal claims, including a business process that would keep it up to date.
5. *New Information:* Provide for development, archiving, management, and dissemination of new geologic maps and minerals information. This proposed component of the program was not funded.

Pervading all of these issues was the recognition that if the data and information recovered were to be kept safe from again slipping into obscurity and loss, they would have to be made more accessible to the public. Data that are used are data that are valued and protected. Therefore, all five of the above issues embody a commitment to convert as much of the information as appropriate to digital form accessible via the World Wide Web. In those instances where that is impossible, for example, physical mineral samples, indices of the archival holdings will be made available online.

Congress provided annual appropriations for MDIRA through the U.S. Geological Survey and U.S. Bureau of Land Management for fiscal years 1997 through 2004. A liaison committee consisting of representatives from stakeholder organizations in state government, the University of Alaska, Native organizations, and the private sector continues to provide guidance for program planning, budgeting, and reporting until the program is completed and all funds are expended.

Under MDIRA, since 1997 a tremendous volume of information has been recovered and converted to digital data files. Many of these files are now accessible via the World Wide Web through links to the participating organizations that are assembled on a single Web site, <http://akgeology.info/>.

The liaison committee projects that development and loading of the large organizational databases and linkages to the MDIRA akgeology.info Web site will be completed by the end of 2007. By that time, the last of the original data and information files identified as being at risk will be recovered in physical or digital form and an interagency database management protocol will be in place that will allow for maintaining the historical data and updating the databases as new information becomes available.



Staff members of the participating agencies have presented papers on MDIRA in various public forums and continue to conduct training sessions and workshops on the use of the MDIRA Web site to retrieve mining-related information and geologic data. These workshops have been very well received. One trainee wrote in an evaluation, “...*I can’t believe all this information is available online, for free! What a service to the industry and the public. You deserve a lot of credit for designing and implementing this system. It’s by far the best I’ve seen.*”

PROGRAM STATUS

In compliance with the original Congressional mandate that established the MDIRA program, the liaison committee meets regularly to review the progress being made by the funded agencies. These meetings are attended by staff from the Alaska Department of Natural Resources, the University of Alaska, the Alaska Resource Library Information System and other state libraries, the Alaska Miners Association, and at various times, other interested members of Alaska's mining community. U.S. Geological Survey and U.S. Bureau of Land Management representatives are invited to these meetings to provide progress reports on the many tasks the MDIRA program comprises and to listen to Alaska stakeholder comments and concerns relevant to the ongoing and scheduled work.

The following is a brief summary of major milestones and accomplishments achieved by MDIRA in each of the five program areas since its inception in 1997:

Library resources

- Guide to Information: Originally published the *Guide to Alaska Geologic and Mineral Information* in 1998. The updated version of the guide was published and made available to the public in printed form and online in November 2004.
- Digital conversion of DGGs publications: Completed conversion of all Alaska Division of Geological & Geophysical Surveys (DGGs) publications to digital files and made them available via the DGGs Web site (<http://www.dggs.dnr.state.ak.us>).
- Digital conversion of USGS and other publications on Alaska geology: Finished scanning all U.S. Geological Survey (USGS) Bulletins and Professional Papers on Alaska geology. Report texts and maps are viewable in Adobe PDF format and archived in TIF format on DGGs servers. Bibliographic indexing, including links to text, is searchable on the DGGs Web site and the MDIRA interagency bibliography on <http://akgeology.info>. Completed acquisition and bibliographic indexing of USGS Alaska Open-File Reports, folio maps, other miscellaneous USGS short-series publications and Alaska Mineral Industry Research Lab (MIRL) non-thesis publications. Scanning of these items is 25 percent complete; items are being added to the DGGs Web site and the MDIRA interagency bibliography on <http://akgeology.info> as they become available. Expected full completion date is December 2007.
- Metadata for legacy DGGs geospatial data: Initiated recovery, reconstruction, and documentation of legacy DGGs geospatial data files that have been unavailable to the public. This 14-month project is in its eighth month of completion and, as of February 2006, more than 60 percent of legacy data have been recovered and the associated metadata files have been written. This project will be completed and data will be available on the DGGs Web site by September 30, 2006.
- DGGs legacy field project data index: Initiated indexing of unpublished DGGs project information, including manuscripts, maps, field notes, and other products from numerous historic projects. A spreadsheet index of more than 8,800 historic thin sections has been compiled. DGGs maps are being sorted and filed prior to coding. Index data will be accessible online by September 2007.
- Index of unpublished USGS data: Indexed and made accessible online (<http://akgeology.info>) Project History files (geologic notebooks, field map files, paleontology files, and

petrographic collection) and Geologic Subject files (notes, unpublished reports, speeches and lectures, correspondence, reprints, and historical materials) in the USGS Alaska Technical Data Unit research collection. Nearly 400 of about 500 notebooks have been cataloged and microfilmed. Completion of microfilming and online posting of digital files is expected by June 2006.

- Library catalogs of minerals information: Cataloged library materials and produced Internet catalogs for minerals libraries in Anchorage, Fairbanks, and Juneau. The materials circulate to the public.
- Anaconda data index: Indexed and made accessible the private Anaconda minerals data collection (a \$30 million exploration project throughout Alaska never before in public domain).
- Topographic map index: Completed indexing of historical Alaska topographic maps available at libraries.
- Index of theses and dissertations: Collected and indexed approximately 1,500 university theses and dissertations about Alaska geology and mining. Geographic indexing of historic theses by quadrangle has been completed. Entries for 2005 theses will be completed by September 2006.
- Alaska Minerals Industry Data Index: Completed the Alaska Minerals Industry Data Index (AKMIDI), a Bureau of Land Management (BLM) inventory of minerals data held by industry. The inventory is available to the public via the internet at <http://akmidi.akgeology.info>.

Databases

- Alaska Resource Data File: Completed Alaska Resource Data File (ARDF) compilations of information on mines, prospects, and mineral occurrences for 115 of the 153 quadrangles in Alaska (1:250,000 scale). Of the remaining 38, three quadrangles are now in progress and 35 have no known mineral occurrences.
- DGGS enterprise database: Established an enterprise database management system for DGGS and began populating it with existing Alaska minerals and geologic data.
- Upgraded DGGS publications bibliography: Completed upgrade of DGGS publications bibliography with inclusion of digital map and report image files for all publications and loaded the bibliography into the central database system.
- Web-based distribution of DGGS publications: Developed and made continued improvements to a Web-based system utilizing the central DGGS database management system for online public distribution of publications in digital form. The system was posted online in April 2004, and now includes scanned Alaska-related USGS Professional Reports, Bulletins, Circulars, Geologic Quadrangle maps, Miscellaneous Investigations, Miscellaneous Field Studies, and Open-File Reports.
- Alaska geology map index: Released the first version of an application that portrays the locations of Alaska geologic maps from all state and federal agencies in a single, interactive, Internet-accessible location. The site, accessible online at <http://maps.akgeology.info>, currently contains about 300 citations and outlines for nearly all DGGS-authored geologic maps. Geophysical maps and USGS geologic maps will be added to the map index by December 2006.
- FGDC-compliant metadata for DGGS geospatial data: Established a process and new software tools for regular and consistent documentation and archiving of DGGS geospatial data,

bringing the data into compliance with the Federal Geospatial Digital Committee (FGDC) Content Standard for Digital Geospatial Metadata (CSDGM). All documentation for DGGs's digital geospatial data is being managed within the National Spatial Data Infrastructure (NSDI) to promote information flow among national and state entities.

- Web-based DGGs geochemical data system: Developed and released a Web-based system for searching and displaying DGGs geochemical sample analysis data by geographical area. Available now via this system are published and nonpublished DGGs rock chemistry data for Alaska and associated resource datasets, which currently contain more than 15,000 geochemical sample analyses.
- Alaska state agency lithochemical data: Initiated the incorporation of DGGs lithochemical data into the DGGs division-wide database. Data will be accessible via the MDIRA Web site, <http://akgeology.info>. The lithochemical data will include more than 5,000 individual rock analyses including major and minor oxides. The project is scheduled for completion and posting on the AKgeology.info Web site by December 31, 2006.
- Compilation of existing resource-assessment geochemical datasets: This new dataset will incorporate more than 3,400 geochemical analyses compiled during investigations of tin granites, plutonic gold systems, and mafic and ultramafic plutonic rocks from Alaska. The result will be a cohesive dataset with a mineral-related purpose and will be made available to the public via the MDIRA program's Web site, <http://akgeology.info>. Compilation is currently underway and will be completed and available to the public by December 2006.
- Alaska geochronology database: Modified DGGs's database-management system to incorporate complete sample and analytical documentation for radiometric-age data, including uranium-lead, argon-argon, potassium-argon, and rubidium-strontium. Literature compilation and data entry are in progress.
- Web-based delivery of DGGs geospatial digital data: Commenced development of a Web-based system utilizing the central DGGs database-management system for distribution of current and legacy DGGs digital GIS data. Delivery of this system is expected in mid 2006.
- Upgrade and digital release of mineral-access corridor maps: Converted 376 legacy GIS-based geologic, geologic-materials, hazards, and data-quality maps of proposed access corridors in 78 quadrangles to modern GIS format, completed metadata, and made the maps available to the public in hard-copy. Georeferenced map image files will be made accessible online in 2006 via the DGGs Web site.
- USGS geochemistry database: Compiled USGS geochemical data for 390,784 rock, stream-sediment, soil, organic material, and water samples from Alaska in searchable database format. A DVD-ROM of the final compilation was released at the 2004 Alaska Miners Association Annual Convention.
- USGS fossil database: Completed database design and began data entry of georeferenced Alaska macrofossil information that is important for constraining the ages of mineral deposits. Approximately 7,500 of an estimated 14,000 fossil localities have been entered to date. The database is accessible at <http://www.akgeology.info>.
- Multi-agency geologic bibliography: Completed development of a multi-agency bibliography system for Alaska that will allow users to select a geographic area of the state and access all agency geologic research papers and maps related to that area. The application includes online tools for agencies to maintain their bibliographic index information.
- Bibliography and electronic conversion of USFS geological publications: Completed a bibliography of all published and unpublished Alaska geological and geotechnical reports in

the U.S. Forest Service (USFS) Forest Sciences Library in Juneau, Alaska. All recovered documents and data were digitally scanned and georeferenced according to established MDIRA criteria and are available through <http://www.akgeology.info>.

- Alaska Minerals Information System (AMIS): Developed the Alaska Minerals Information System to make the former U.S. Bureau of Mines (USBM) minerals data available to the public. Database was converted to Informix and is actively updated. Efforts are currently underway to make the information available to the public via the Internet as soon as Department of Interior computer security issues are addressed.
- Conversion of USBM files and maps to electronic format: Scanning of files was completed in 2002, and the scanning of maps was completed in 2005. The combined imagery exceeds 300 gigabytes, so options are currently being considered how to best make this information available to the public.
- Conversion of BLM and USBM analytical data to digital: Digitized sample locations, sample cards, and analytical geochemistry data from BLM and USBM mineral assessment investigations. Remaining work resolving sample location problems and data gaps will be completed by BLM as agency funding permits.
- Digital release of BLM and USFS minerals reports: Converted BLM and U.S. Forest Service (USFS) minerals reports to digital format and scanned unpublished or out-of-print reports. Previously published BLM, USFS, and USBM reports are available at <http://akgeology.info>. Unpublished reports will go through BLM review process and be released as open file reports.
- Multi-agency digital minerals-data integration: Development continues on a multi-agency digital-data integration system to be delivered in a single Web-based interface. The system includes a map-based search facility to display datasets rescued through the MDIRA program. The MDIRA Mapper was configured to create searchable indexes from “harvested” metadata, a standard method for participating agencies to describe minerals data holdings. A preliminary MDIRA Metadata Index search page (<http://mapper.landrecords.info/Mapper/sui>) is available for testing. Many rescued datasets are currently available; others are pending additional preparation. The map-based search facility was launched in late 2005; final completion and public release will be in December 2006.

Physical samples

- Indexing of BLM minerals samples: Developed a database system for the BLM mineral pulp-sample and surface/near-surface rock-sample collections at the DGGs Geologic Materials Center (GMC). Indexing of the entire hard-rock minerals collection was completed in 2005 and will be made available online.
- GMC mineral sample storage and retrieval database system: Overhaul and expansion of the mineral-sample database system and indexing of the entire remaining hard-rock minerals collection will be initiated in mid-2006 and will be made available online by mid 2008.

Mining claim information

- Minerals-property database and update system: Developed a joint federal–state geospatial minerals-property Oracle database with streamlined updating processes to ensure current information. The system is designed to allow a user to determine if a particular area in the state is open or closed to mineral claim staking.

- *Mining claims online:* The updated mining-claims records system is now available online at <http://akmining.info>. Platted claims (pre-made maps) are available at <http://plats.land-records.info>. The mining claims site now allows users to extract selected GIS data; this feature has proven popular with the mining community; more than 3 gigabytes of data per month are being downloaded. These Web sites generate 2,000+ visits per month. Progress continues toward the goal of simplifying land status interpretation, accessing geophysical-survey data to view with claims, and portraying ownership blocks by common customer.
- *Recorded mining documents online:* Recorded mining documents from January 1, 2000 are now available online for the public at <http://dnr.alaska.gov/recorders>. Work is in progress to add mining documents all the way back through the 1980s. All recorded surveys are now available online, including all mineral surveys recorded by the title recipients.
- *Multi-agency minerals resources and land records web site:* The initial mining and minerals data portal at <http://akgeology.info> Web site (see next page) undergoes continual improvement. Training on the use of the many features available through this site was provided at the annual Alaska Miners Association 2005 conference in Anchorage, and is planned for the March 2006 conference in Fairbanks. This site provides a high-level location for accessing a wide variety of the information resources produced by MDIRA and other related programs in recent years. Advanced searches span agencies' databases based on criteria of geography, subject area, and author.

New information

This proposed component of MDIRA was not funded by Congress. However, MDIRA tasks are undertaken and completed with a view toward preserving both existing and future minerals information. As participating organizations develop methodologies for recovering, managing, and making available the legacy Alaska minerals information, they are building many of these methodologies into their ongoing business processes. This approach ensures that, following termination of this program, the large body of recovered information is preserved and maintained in a dynamic fashion whereby newly generated information is continually added and made available to the public. For example, all mining property record updates are made available to end users through new streamlined procedures made possible through the MDIRA funding. These public-record update processes have been incorporated as permanent changes in the business practices and public notice practices of the Alaska Department of Natural Resources and U.S. Bureau of Land Management. Similarly, all new reports and datasets developed by the Division of Geological & Geophysical Surveys are immediately made available online through the enterprise database developed with MDIRA funding. This is a permanent improvement to DGGS business practices resulting from this federally funded program.

ALASKA MINERALS & GEOLOGIC INFORMATION ONLINE

Alaska minerals data and information that have been made publicly available as a result of the MDIRA program are accessible through a single Web site, <http://akgeology.info> (see below). Currently this page consists of links to the various agency sites where these data are maintained.



Welcome to MDIRA Portal Home page. This new site will evolve from a collection of links pertaining to geology, minerals, and land records in Alaska into an integrated system which allows the user to combine this information in ways which promote minerals exploration in Alaska. Additional information about this project can be obtained from the Interagency Minerals Coordinating Group website. Please note that not all of the links on this page are part of the MDIRA program, but are directly related and thus are included here.

Land Records

- [plats.LandRecords.info](#)
BLM and DNR Plats & Surveys
- [las.LandRecords.info](#)
Live DNR Case-file information
- <http://www.ak.blm.gov/>
BLM Alaska Land Information System
- www.glorerecords.blm.gov
BLM General Land Office
- Recorder's Office
State Recorder's Office documents
- [akmining.info](#)
Federal and State mining claims via an interactive map

Payments/Compliance

- [dnrpayment.LandRecords.info](#)
Make a State mining claim payment
- <http://www.dnr.state.ak.us/mlw/mining>
DNR DML&W Mining Section
- <http://www.dnr.state.ak.us/mlw/forms/>
State Mining claim-related forms
- <http://www.ak.blm.gov/ak940/index.html>
BLM Division of Energy & Solid Minerals
- <http://www.ak.blm.gov/ak940/forms/forms.html>
BLM Mining-Related Forms

Maps/Publications

- Guide to Alaska
Geologic and Mineral Information
All known sources
geologic and minerals
information. 13MB
download.
- Alaska Geology Map
Indexer
Downloadable maps
- Alaska Interagency
Bibliography
Downloadable
publications
- DGGs Publications
On-Line
Downloadable
publications
- DNR Map Library
More downloadable maps
- IMCG Digital Index of
Geologic Information
Bibliography of many
agency publications
- Alaska Resource Data
Files
Summary descriptions of
known mineral
occurrences
- USGS Publications

Geology/Data

- RASS, PLUTO Geochemistry
Summary of non-rock USGS
geo-chemistry
- NURE Data
National Uranium Resource data
- Alaska Minerals Locations DB
Locations of Alaska Minerals
Data (MAS/MILS)
- DGGs Geochemical Data
WebGeochem: DGGs
geochemical sample analysis
search

Libraries/Archives

- AKMIDI
Alaska Mineral Industry Data
Index
- ARLIS Minerals Library Catalog
Print copies of minerals
information
- UAF Library Catalog
Print copies of minerals
information
- Alaska Historical Collections
They have donations of mining
materials
- John Rishel Mineral Information
Center
BLM Minerals Collection Catalog
- USGS Alaska Tech Data Unit
Index of unpublished USGS
materials on Alaska

Minerals Data and Information Rescue in Alaska
Spending History and Milestones FY 2002–2004
Dollar amounts in thousands

Tasks	Project Lead ¹	FFY02 USGS Actual	FFY02 USBLM Actual	FFY02 Status	FFY03 USGS Actual	FFY03 Status	FFY04 USGS Actual	FFY04 Status
LIBRARIES								
a) Interlibrary communication	ARLIS	10			5		5	*
b) Guide to minerals information and update	DGGS	20			40	Update *		
c) ARLIS, USGS, AKTDU, BLM/Juneau, collection catalog		90			100		25	*
ARLIS USGS Collection	ARLIS			*				
USGS Alaska TDU	USGS					*		
Juneau BLM minerals information	ARLIS					*		
Alaska geologic thesis acquisition	UAF							*
d) Internet accessible indexes for private mineral property files, legacy public property files			475					*
USDA-FS & BLM file indexing	USFS BLM					*		
Inventory private-sector minerals data—AKMIDI	ARLIS							*
Archive unpublished agency and private-sector field data	DGGS USGS							*
Index of bedrock and surficial geologic maps	DGGS							*
Index of geophysical maps	DGGS							*
e) Convert priority maps and reports to digital files		300	400		160	*		
Scan DGGS maps and reports	DGGS					*		
Mineral access corridor map conversion	DGGS					*		
Scan BLM mineral information files	BLM							*
Archive unpublished agency and private-sector field data	DGGS USGS							*
Release unpublished digital geologic maps and metadata	DGGS							*

* Completed or scheduled for completion with funding through the indicated fiscal year

Continued

Tasks	Project Lead ¹	FFY02 USGS Actual	FFY02 USBLM Actual	FFY02 Status	FFY03 USGS Actual	FFY03 Status	FFY04 USGS Actual	FFY04 Status
DATABASES								
a) Geochemistry Data		175	400		100	*		
Non-rock geochemistry sample data	USGS					*		
Major/Minor oxides	USGS DGGS					*		
USBLM geochemistry	BLM					*		
Geochemistry reference dataset	DGGS					*		
b) Mineral deposits and occurrences	USGS BLM	50	100		270		120	*
Alaska Resource Data Files (ARDF)	USGS DGGS							*
Alaska Mineral Information System (AMIS)	BLM					*		
INTERAGENCY MINERAL INFORMATION DELIVERY SYSTEM								
a) USGS/BLM Alaska Minerals Information Delivery System (MIDS)	USGS BLM	300					400	*
b) DGGS Alaska Minerals Information Delivery System		400			350		330	*
Analysis, design, core system	DGGS							*
DGGS/USGS coordination	DGGS							*
Data loading, applications	DGGS							*
Interagency database applications	DGGS							*

* Completed or scheduled for completion with funding through the indicated fiscal year

Continued

¹ **Project lead agencies**

ARLIS – Alaska Resources Library and Information Services

BLM – U.S. Bureau of Land Management

DGGS – Alaska Division of Geological & Geophysical Surveys

LRIS – Land Records Information Section, Alaska Department of Natural Resources

USFS – U.S. Forest Service

USGS – U.S. Geological Survey

Tasks	Project Lead ¹	FFY02 USGS Actual	FFY02 USBLM Actual	FFY02 Status	FFY03 USGS Actual	FFY03 Status	FFY04 USGS Actual	FFY04 Status
c) Alaska minerals information Web interface and public applications	LRIS		300		475		300	*
d) USGS-USBLM-DGGS bibliography	ALL	50	40					*
e) Geochronology database for mineral terranes	DGGS	55						*
f) Macrofossil database for mineral terranes	DGGS	75						*
g) Interagency Alaska mineral district data update, final report, and operations plan	ALL						120	*
PRESERVATION OF PHYSICAL MATERIALS								
a) Geologic Materials Center - compliance upgrade of facilities	DGGS							*
b) Geologic Materials Center-database conversion to access & update	DGGS							*
c) Geologic Materials Center-mineral sample inventory	DGGS		60					*
d) Catalog USGS rock samples moved to Alaska from Menlo Park, CA	USGS							*
e) GMC interagency mineral sample storage and retrieval database system	DGGS						200	*
TOTAL APPROPRIATION		1,525	1,775		1,500		1,500	

* Completed or scheduled for completion with funding through the indicated fiscal year

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ARLIS – Alaska Resources Library and Information Services

BLM – U.S. Bureau of Land Management

DGGS – Alaska Division of Geological & Geophysical Surveys

LRIS – Land Records Information Section, Alaska Department of Natural Resources

USFS – U.S. Forest Service

USGS – U.S. Geological Survey

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Cover photo: Gold pour at Fort Knox Mine, about 15 miles northeast of Fairbanks. The mine produced approximately 324,000 ounces of gold in 2005 and has produced more than 3.3 million ounces of gold since production began in 1996. The mine has a proven and probable reserve of 1.95 million ounces of gold. Photo courtesy of Fairbanks Gold Mining Inc.