

**HB**

**537**



# Fairbanks Industrial Development Corporation

March 12, 1996

To: Interior Delegation  
Alaska State Legislature

## THE INTERIOR MINING PROJECT — ONE MORE TIME

In the last two years the airborne geophysical mapping program, which was completed for the Fairbanks and Richardson Mining Districts, and commenced in the Rampart-Manley area, has exceeded our expectations in terms of the mining activity stemming from publication of these maps.

This year the Governor's budget includes \$200,000 to continue this program. However, the fact is that we need at least \$400,000 more to permit the Rampart-Manley project to be completed within three years from its start — otherwise we will be looking at a four-year project, with attendant delay in exploration and development efforts by the industry. Thus, once again I ask that you amend the Capital Improvement Project budget of the Department of Natural Resources, Division of Geological and Geophysical Surveys, to increase the total earmarked for Rampart-Manley to \$600,000.

I understand that there may not be the broad support necessary to obtain approval of this request. Consequently, I suggest that consideration might be given to expanding the mapping program to include the Mat-Su region, specifically the Petersville/Chulitna area, and possibly also more mapping in the Eastern Nome area. This would presumably result in a broader base of support for the overall program by bringing legislators from those areas into the picture. Perhaps \$200,000 could be obtained for each of those two districts.

I will be pleased to supply additional information and discuss this matter further at your request.

Respectfully submitted,

Ronald L. Ricketts  
Executive Director

Addresses: Senator Mike Miller  
Senator Steve Frank  
Senator Bert Sharp  
Representative Tom Brice  
Representative John Davies  
Representative Jeannette James  
Representative Pete Kelly

RGreen  
Dp Ogan  
Rep. Kohnig  
Rep. Mosen

Representative Al Vezy

---

515 Seventh Avenue, Suite 320, Fairbanks, Alaska 99701 (907) 452-2185 Fax: (907) 451-9534

**THOMAS E. SMITH**

P.O. Box 81071  
Fairbanks, Alaska 99708  
(907) 455-6860

March 11, 1996

The Honorable Jeannette James  
Alaska House of Representatives  
Room 102, State Capitol  
Juneau, Alaska 99801-1182

Dear Representative James:

I am writing to ask your help in resolving the unfortunate confusion concerning qualifications and administrative home of the State Geologist and Division of Geological and Geophysical Surveys (DGGS). This small geology group has seen successive budget cuts since 1986 that have reduced staff size from about 150 to 24 at present, and a budget decline from about \$20 million to \$2.5 million over the same period. Clearly they are very near the limit of critical mass.

With this in mind, when I retired last year from the State Geologist's post, I suggested that the Alaska Geology Board convene a special task force to examine the whole issue of public geologic studies in Alaska--how they should be funded with shrinking revenues, who should do the studies, how various geology groups could be coordinated, etc. And after some nine or ten months of discussion and work sessions throughout the geological community, talking with professionals from industry, government and academia (some thousand or more people), they came forward with a thoughtful set of recommendations that make a lot of sense for a state like Alaska which literally lives from its geologic resources.

After considering the Geology Board's recommendations, the Knowles Administration proposed a merger between DGGS and the Division of Oil and Gas that would have answered most of the Board's priorities by placing geoscientists from both divisions together under the leadership of a Director who is himself a professional geoscientist (letter to Alaska Geological Society attached). This proposed merger might also have saved a little money, but more importantly it followed the wise course of action set forth by Alaska's geoscience community.

Well, as you know, for unrelated reasons, the legislature rejected the proposal and substituted HB 537, a merger with the Mining and Water Management regulation division--a merger that completely strips any professional requirements from both State Geologist and a separate director. Under HB 537, the state's geology division (the same group responsible for choosing

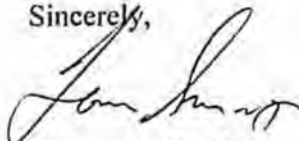
Prudhoe Bay, Valdez Creek, Fort Knox, much of our statehood entitlement, etc.) is submerged as minor bureaucratic staff in a politically-driven regulatory division. Clearly at best HB 537 is ill-conceived; at worst it is symptomatic of a "ready-fire-aim" approach to understanding and managing Alaska's resources. I ask that you give HB 537 the attention it deserves--referral to the bottom drawer of at least 20 committees.

What can be done that is wise and positive? For openers, lets ~all go back to the recommendations of the Alaska Geology Board. Within the framework of their findings, there are several possibilities for synergistic alliances between geology groups--maybe even some mergers--which will preserve Alaska's ability to understand its geological resources, and also save some money in the process. What is needed now is a little time to develop an implementation plan around their recommendations, a plan that is acceptable to all parties, i.e., the industry, the geological community, the legislature, and the administration. In the interim, while an implementation plan is being developed, I suggest that DGGS be left as it is; they are a small low-cost and high-benefit group currently operating under an acting director. There is really no benefit and very little savings to forcing an unworkable structure on them in the immediate future.

In short, Alaska's dependence on its geologic resources is far too critical for us to eliminate our only in-house source of professional information on these resources. It is worth a little more time to arrive at a correct decision on the geology issue.

I appreciate your consideration of these thoughts; please contact me if I can be of help in your deliberations.

Sincerely,



Thomas E. Smith  
Former State Geologist

Enclosures

---

## FINDINGS AND RECOMMENDATIONS ON THE ROLE AND STRUCTURE OF THE ALASKA DIVISION OF GEOLOGICAL AND GEOPHYSICAL SURVEYS

*by the Committee on Public Geology: David Hite (Chairman), Marty Rutherford, John Eichelberger, Teresa Imm, Sue Karl, Al Clough, Chuck Hawley, and Dan Young*

### Executive Summary

At the request of the Commissioner of the Department of Natural Resources (DNR), the Alaska Geologic Mapping Advisory Board established a committee to assess the role and function of the Division of Geological and Geophysical Surveys (DGGS) and the Director/State Geologist. The report would provide recommendations regarding responsibilities, staffing, and type and interaction with partners and clients.

The committee met twice a month, commencing on March 10, 1995, and continuing to May 26, 1995. These meetings served to clarify issues, develop priorities, and gather input from the scientific community. External commentary was solicited from Alaskan geoscientists and a sampling of geological survey directors from other states. The committee recessed for the summer to prepare the final report. The final draft was approved by the committee on September 15, 1995.

### The report's principal findings and recommendations are:

- The existence of a strong and committed geological survey is essential to a state as dependent on natural resources and as subject to recurring hazards as is Alaska. The mission and functions of the survey are those prescribed in the statutes which established the Alaska Division of Geological and Geophysical Surveys and the position of Director/State Geologist. To fulfill the mission of the Survey, the basin analysis and hydrogeological functions should be reassigned to the Survey.
- To maintain the activities of the Survey at a level that fulfills the charges put forth in the statutes, the state must sustain the Survey by providing adequate core funding, for which the current level is inadequate. This funding will provide for permanent staff salaries, facilities, and critical long-term programs and services. The committee recommends that the Survey be strongly encouraged to seek out external funding and support for expanded and additional high priority programs.
- The Survey should actively pursue and develop partnerships with those working toward a common goal - federal and state agencies, the Geophysical Institute, Native Corporations, etc. The Survey is encouraged to solicit clients who will provide funding for programs that are mutually beneficial and provide a specific product.
- The committee concludes that the Survey should remain within the Department of Natural Resources, where it can most effectively interact with its primary clients and be most responsive to its partners.
- The committee recommends that the Director/State Geologist should, at the discretion of the Commissioner, be located in Anchorage, with a minimum of a five year term. The committee further recommends that the position be filled through a national recruitment effort, with a screening panel, appointed by the Geologic Mapping Advisory Board, to identify the best qualified candidates for final selection by the Commissioner.
- The Staffing level of the Survey should reflect the responsibilities put forth in the statutes. Appropriate staff additions should be reinstated in the areas of basin analysis (oil and gas related function) and hydrogeology. These staffing moves can be accomplished by filling recently and soon to be vacant positions or by transfer of full-time divisions within DNR. A core staffing level should be determined, subject to change with changing needs. The Survey should have the option to employ or contract temporary personnel, when necessary for specific programs.
- The committee recommends that, at the discretion of the Commissioner, the Survey locate a second office in Anchorage, to enhance communications with key Anchorage-based client groups. These needs will be best served if the Director/State Geologist, basin analysis function, hydrogeologic function, and appropriate support are located in the Anchorage office.

These recommendations are intended to increase the Survey's efficiency, provide greater access to clients and the public, improve communication with state agencies and legislators, and broaden and strengthen the Survey's ability to meet its mission and serve the state of Alaska.

The following is reprinted from the original letter from Marty Rutherford, DNR Deputy Director, to Sue Karl, AGS President-Elect:

**STATE OF ALASKA  
DEPARTMENT OF NATURAL RESOURCES  
OFFICE OF THE COMMISSIONER**

January 31, 1996

Dear Sue Karl:

I am happy to respond to your request for information regarding the Department's implementation of the recommendations contained within the report *Findings and Recommendations on the Role and Structure of the Alaska Division of Geological and Geophysical Surveys* by the Committee on Public Geology submitted to the Commissioner by the Geologic Mapping Advisory Board. We have tried to address, in a positive way, as many of the committee's recommendations as possible, given the constraints of shrinking base funding. As you are aware, in the case of DGGGS, declining budgets have an exceptionally onerous impact because the Division's base budgets have been underfunded in personnel services for many years.

Our review of the Committee's recommendations identified the following points:

1. The continued existence of a strong and committed geological survey is important to the state.
2. The survey should remain within the Department of Natural Resources.
3. The state should maintain the mission of the survey as it is stated in AS 48.01.
4. More base-level state funding should be provided for the survey to cover staff salaries, facilities, and long-term programs and services.
5. The Division should be encouraged to seek external funding for additional high priority programs.
6. The Division should actively pursue and develop partnerships with those working towards common goals (state and federal agencies and the UA-Geophysical Institute, Native Corporations, etc.).
7. The Division should solicit clients who will provide funding for specific products.
8. A second Division office should be located in Anchorage.
9. The Director/State Geologist should be located in Anchorage.
10. The Director should have a tenured term of five years.
11. The Director's position should be filled through a national recruitment effort and applicants screened by a panel appointed by the GMAB.
12. The Department of Natural Resources should reassign [oil] basin analysis and hydrogeology functions to the survey.
13. The Department of Natural Resources should reinstate staff for oil and gas basin analysis and hydrogeology.
14. The Division's basin analysis function, hydrogeology function, and appropriate support should be located in the Anchorage office.
15. The geological survey should employ additional contract or temporary personnel, when necessary for specific programs.

Of all these recommendations, we believe that the most important factor in preserving a functional, relevant, and objective geological survey is the preservation of Alaska Statute AS 41.08. That statute clearly mandates the mission and functions of an Alaskan geological survey, and in our implementation of the Board's recommendations the statute is preserved unaltered except for a name change from Division of Geological and Geophysical Surveys to Division of Oil, Gas, and Geology (DOGG). AS 41.08 thus becomes a part of the DOGG mission and is codified in the law.

The decision to address the Board's recommendations by a consolidating DGGGS and DOG was arrived at after careful consideration of two overriding constraints: 1) the report is clear on its desire that the geological survey remain in DNR; and 2) there simply is no new money to add to the geological survey's base budget. Therefore,

*continued on page 6*

*continued from page 5*

if DGGGS were to remain in DNR as an independent division, funds would have to be generated from the dismissal and transfer of up to 6 incumbent staff members currently in Fairbanks in order to hire and support a new Director/State Geologist in Anchorage. We believe that the survey is staffed with a marginal number of geologists now, and that the concept of "critical mass" for a scientific agency is a real concern. To further reduce the number of geologists in the survey to create funds for a Director would severely damage its ability to implement geologic investigations. Our choice has been to preserve all the current staff and funds of DGGGS in Fairbanks so that the survey can continue to devote all of its existing resources to accomplish useful geologic work.

So how does the consolidation of DGGGS and DOG address the above list of recommendations? We believe that it accomplishes many of them in both letter and spirit. Consider:

16. The state's geological functions continue to be headquartered in DNR and are mandated by statute.
17. Bringing together all the oil geologists of DGGGS and DOG strengthens the ability of DNR to conduct strategic basin analysis as a stimulus to new oil and gas discovery and will provide a greater insight for sediment-hosted mineralization. Ongoing mineral and hazards studies are protected from loss of scientific staff.
18. The full spectrum of geological activities, as specified by statute, continue to be supported and implemented (water excepted, though the new division will continue to publish reports written by DNR hydrogeologists at present).
19. The State Geologist's office will be located in Anchorage at no additional expense or reallocation of geological survey resources.
20. An active geological survey office will be staffed and maintained in Anchorage as well as Fairbanks, to facilitate relationships with industry, government, and statewide interest groups.
21. The new State Geologist, Ken Boyd, is fully qualified in terms of geologic education and experience to represent Alaska in challenging and diverse geological issues on both the state and national level in keeping with the letter and spirit of AS 48.01.
22. The consolidated Division will continue to enter cooperative agreements with the University of Alaska, the U.S. Geological Survey, and other agencies to advance the knowledge of geology in Alaska.
23. The consolidated Division will continue to pursue external funding from federal, state, and private sector sources to accomplish work that is pertinent to the state and its citizens.
24. The consolidated Division will continue to use inter-agency reciprocal service agreements, contracts, student interns, volunteers, and temporary hires when necessary to meet specific project objectives.

Decisions on only who recommendations are not implemented. A decision on the screening mechanism for selecting the new Division's Director is deferred, as is the issue of a guaranteed five year tenure.

Although changes mandated by external forces are often cause for concern, we are well aware of the importance of a functional scientific geological survey, both to the process of informed resource management and to the private sector of Alaska. The strategic role that the geological survey plays in public safety and economic diversification is also clearly recognized. It is our intent that these functions not be degraded or endangered and with this in mind we [exempted] the Division of Geological and Geophysical Surveys from any FY97 budget cuts in this years Governor's proposed budget. We believe that our solution for reconciling the competing demands of a shrinking state government with the continued need for a viable and objective state geological survey are met by the DGGGS-DOG consolidation. We are committed to making it succeed.

Please feel free to call if you'd like to discuss this further.

Sincerely yours,

Marty Rutherford  
Deputy Commissioner, DNR

HOUSE BILL NO.  
IN THE LEGISLATURE OF THE STATE OF ALASKA  
NINETEENTH LEGISLATURE - SECOND SESSION

BY THE HOUSE RESOURCES COMMITTEE

Introduced:  
Referred:

A BILL  
FOR AN ACT ENTITLED

1 "An Act renaming the division of geological and geophysical surveys in the  
2 Department of Natural Resources as the department's division of mining and  
3 geology, and revising the duties of the state geologist within that division; and  
4 providing for an effective date."

5 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

6 \* Section 1. AS 39.25.110(14) is amended to read:

7 (14) petroleum engineers and petroleum geologists employed in a  
8 professional capacity by the Department of Natural Resources and by the Oil and Gas  
9 Conservation Commission, except for those employed in the division of mining and  
10 geology [GEOLOGICAL AND GEOPHYSICAL SURVEYS] in the Department of  
11 Natural Resources;

12 \* Sec. 2. AS 41.08.010 is amended to read:

13 Sec. 41.08.010. DIVISION OF MINING AND GEOLOGY [GEOLOGICAL  
14 AND GEOPHYSICAL SURVEYS]. There is established in the department a division

1 of mining and geology [GEOLOGICAL AND GEOPHYSICAL SURVEYS UNDER  
2 THE DIRECTION OF THE STATE GEOLOGIST].

3 \* Sec. 3. AS 41.08.015 is amended to read:

4 Sec. 41.08.015. STATE GEOLOGIST. The commissioner shall appoint the  
5 state geologist [, WHO MUST BE QUALIFIED BY EDUCATION AND  
6 EXPERIENCE TO DIRECT THE ACTIVITIES OF THE DIVISION].

7 \* Sec. 4. AS 41.08.020 is amended to read:

8 Sec. 41.08.020. POWERS AND DUTIES. (a) Under the supervision of the  
9 director of the division of mining and geology, the [THE] state geologist shall  
10 conduct geological and geophysical surveys to determine the potential of Alaskan land  
11 for production of metals, minerals, fuels, and geothermal resources; the locations and  
12 supplies of groundwater and construction materials; the potential geologic hazards to  
13 buildings, roads, bridges, and other installations and structures; and shall conduct such  
14 other surveys and investigations as will advance knowledge of the geology of the state.  
15 With the approval of the director of the division of mining and geology  
16 [COMMISSIONER], the state geologist may acquire, by gift or purchase, geological  
17 and geophysical reports, surveys, and similar information.

18 (b) In addition, the division of mining and geology [GEOLOGICAL AND  
19 GEOPHYSICAL SURVEYS] shall [:]

20 (1) collect, record, evaluate, and distribute data on the quantity, quality,  
21 and location of underground, surface, and coastal water of the state;

22 (2) publish or have published data on the water of the state;

23 (3) require the filing with it of the results and findings of surveys of  
24 water quality, quantity, and location;

25 (4) require of water well contractors, the filing with it of basic water  
26 and aquifer data normally obtained, including but not limited to well location,  
27 estimated elevation, well driller's logs, pumping tests and flow measurements, and  
28 water quality determinations;

29 (5) accept and spend funds for the purposes of this section,  
30 AS 41.08.017, and 41.08.035 and enter into agreements with individuals, public or  
31 private agencies, communities, private industry, state agencies, and agencies of the

1 federal government;

2 (6) collect, evaluate, and distribute geologic data on seismic events and  
3 engineering geology of the state;

4 (7) identify potential seismic hazards that might affect development in  
5 the state;

6 (8) inform public officials and industry about potential seismic hazards  
7 that might affect development in the state.

8 \* Sec. 5. AS 41.08.030 is amended to read:

9 Sec. 41.08.030. PRINTING AND DISTRIBUTION OF REPORTS. The  
10 division of mining and geology [STATE GEOLOGIST] shall print and publish an  
11 annual report and such other special and topical reports and maps as may be desirable  
12 for the benefit of the state, including the printing or reprinting of reports and maps  
13 made by other persons or agencies, where authorization to do so is obtained. Reports  
14 and maps may be sold and all money received from these sales shall be paid into the  
15 general fund.

16 \* Sec. 6. AS 41.08.040 is amended to read.

17 Sec. 41.08.040. COOPERATION WITH OTHER AGENCIES. The state  
18 geologist, with the consent of the director of the division of mining and geology  
19 [COMMISSIONER], may enter into cooperative agreements with federal, state, and  
20 local governmental agencies to perform geological and geophysical surveys, studies,  
21 investigations, and services.

22 \* Sec. 7. TRANSITION. (a) Litigation, hearings, investigations, and other proceedings  
23 pending under a law amended by this Act, or in connection with functions transferred by this  
24 Act, continue in effect and may be continued and completed notwithstanding a transfer or  
25 amendment provided for in this Act.

26 (b) Regulations adopted by the Department of Natural Resources that refer to the  
27 former division of geological and geophysical surveys in that department remain in effect and  
28 may be implemented and enforced until the department makes changes to those regulations  
29 that reflect this Act.

30 (c) Contracts, rights, liabilities, and obligations created by or under a law amended  
31 by this Act and in effect on the effective date of this Act remain in effect notwithstanding this

1 Act's taking effect. Records, equipment, appropriations, and other property of agencies of the  
2 state whose functions are transferred under this Act shall be transferred to implement the  
3 provisions of this Act.

4 \* Sec. 8. This Act takes effect only if the changes proposed by Executive Order 92 do not  
5 take effect.

6 \* Sec. 9. This Act takes effect July 1, 1996.

# Mixing oil, geology divisions offers recipe for poor service

The Alaska Legislature is trying to prove that anything Gov. Tony Knowles can do, it can do worse.

The governor issued an executive order earlier this year merging the Fairbanks-based Division of Geological and Geophysical Surveys with the Anchorage-based Division of Oil and Gas, both members of the Department of Natural Resources.

The Legislature killed that merger with its authority to disapprove executive orders by joint resolution.

This may seem to some as an obscure bureaucratic tiff over who gets put where in an organization chart. In reality it's a major change in a state office that plays a large role in the economic future of the Interior.

The DGGS staff surveys geology on state-owned lands that have a potential for interest by mining companies. The results of these surveys is quickly available for purchase by the general public, and everyone has an even chance to stake claims on land open to mineral entry.

Regular readers of this page will recall how DGGS contracts for aerial geophysical surveys in the Seward Peninsula and Interior that have brought a flood of interest and new claim staking by large and small mining companies. A new geophysical map of the Manley and Rampart areas was released Monday, and is selling like beer at Gold Kings games.

That's cheap for what DGGS costs. Its annual budget, once over \$10 million, has been relentlessly cut to less than \$5 million in recent years.

DGGS is a curious creature in state government. When created in 1972, its legal charter mandated that it be headed by a director known as the state geologist who must be qualified



Fred  
Pratt

by both education and experience for the position.

The position of state geologist is vacant, and there's not enough in the budget to advertise nationally for a solid field of applicants for the job without cutting some of the few remaining staff, which numbers less than a couple dozen.

The DGGS staff felt the only way to survive was to merge their division with the Division of Oil and Gas, which oversees oil leasing. The director of the Division of Oil and Gas would become the new state geologist as well. Knowles and DNR commissioner John Shively bought the idea.

But the merger is an odd idea itself. It would take a division of state government that is firmly committed to doing meaningful research and making the results of that research fully public at nominal cost, and place it under another division that does no research, publishes no technical data and thinks anyone who wants to find out about oil in Alaska should just buy into an oil well.

The governor would take a division that encourages economic participation by all companies and individuals, regardless of size or origin, and merge it with a division that favors only a few large companies. The geologists would be merged into a division that has broken its own laws to limit its consideration of the public interest and bar new players in the oil industry.

The governor would take a division that works quietly, competently and cheaply, and place its

employees under a division rife with corruption; a division that has cost the state millions in legal expenses defending its misdeeds.

Looking at it this way, stopping the governor's executive order would be the right thing. But then the legislators began to tailor their own solution; a proposal to divide the job of director and state geologist, and turn both into bureaucratic posts with no professional geological background.

This leaves the division on its own, as a cripple.

The Legislature could solve the problem in a much easier fashion. All it would have to do is raise the DGGS operating budget back to a level where it can do its job again.

This could be accomplished smoothly by adding \$2 million or \$2.5 million to next year's DGGS budget. Then a new state geologist could be hired who would know that his division wouldn't be strangled the following year. After he's on board, their budget could be raised another \$2 million or so.

And don't let the Legislature or the governor tell you we're in hard times and money is hard to find. The governor is proposing paying many times that in legal settlements for misdeeds by his incompetent help in other agencies. The governor proposes spending \$148 million for prisons, for crying out loud, with not a thought to an agency that creates jobs and expands the tax base.

DGGS could double its staff on the millions we waste to lobby Congress on the ANWR bill the president will veto if it ever passes. We could double the DGGS budget with the money wasted every year by the agencies that wouldn't even miss it.

Or is that too simple?

Fred Pratt, a Fairbanks freelance writer, is a long-time reporter and observer of Alaska politics.

file  
HB 537

7th March 1996

To all members of the House Finance and Resources Committees:

I should like to express concern on behalf of the Quaternary Geology community in Fairbanks about the consequences of passing HB 537. If this bill passes, it will likely lead to the elimination of the state geologist as a professional policy-maker and thus reduce the effectiveness and credibility of the unit he/she leads. Furthermore, the probable reduction of the State geological branch to a mere regulatory body would result in a considerable loss of benefits to the State, some of which may not be immediately apparent.

The current Alaska Division of Geological and Geophysical Surveys performs a valuable series of functions within the state that complement activities at the University and in industry. There is much valuable collaboration between UAF and state geologists on projects that benefit the state on one hand and offer valuable educational opportunities to graduate and undergraduate students on the other. For example, a Geology graduate currently working as an intern on a regional hydrology project has access to certain University facilities and faculty advice; working on the project with professional geologists is invaluable experience for her, and ADGGS benefits from the contact with the University. If the state were no longer to undertake research, university students would lose valuable experience, and much critical work would either not get done or would have to be done much more expensively by consultants. Furthermore, University researchers and ADGGS scientists often share the use of expensive lab equipment, thus avoiding unnecessary duplication and saving costs at both institutions.

Alaska is still largely unexplored geologically. Opportunities for resource development and potential environmental hazards both await discovery. Again, the ADGGS is ideally positioned to work in this area, which presumably is important to the State, given our dependence on extractive industry and the vulnerability of our environment. Exploration of unknown areas is hard to justify to academic research agencies and is often not possible for industry, but yet it is from such exploration that new discoveries, both in basic science and in resource development, come to be made. For example, recent collaborative work between ADGGS and UAF personnel on Seward Peninsula has revealed important new information about past glacial and climate history that are relevant to current goals in Arctic research, and which include the possible discovery of placer mineral resources.

It seems unlikely that a coherent policy of geological exploration, research, and development within the State geological branch can be maintained if direction of the unit no longer lies with a professional geologist. The productive network of geologists (State/University) will be seriously disrupted by the effective loss of ADGGS, and Alaska will be the worse for it.

Please do not support HB 537.

Yours sincerely,



Mary Edwards, Director, Alaska Quaternary Center, University of Alaska.



DEPARTMENT OF NATURAL RESOURCES  
 OFFICE OF THE COMMISSIONER  
 400 WILLOUGHBY AVENUE  
 JUNEAU, ALASKA 99801-1796  
 PHONE: (907) 465-2400  
 FAX: (907) 465-3886

Please deliver to: Jeff Logan

Location: Rep. Green's FAX: 4316

Date: 3/18/96 Time: 7:00 AM

From: Nico

Number of pages 3  
 Including cover sheet

Comments: DNR opposes HB 537.  
Attached is our sectional analysis  
The Division of Mining & Water is still  
struggling (budgetarily & organizationally)  
from its merger -  
call w/questions.

DNR'S

## SECTIONAL ANALYSIS OF HB537

Sec. 2. AS 41.08.010 is amended to read:

Sec. 41.08.010. DIVISION OF MINING AND GEOLOGY [GEOLOGICAL AND GEOPHYSICAL SURVEYS] There is established in the department a division of mining and geology [GEOLOGICAL AND GEOPHYSICAL SURVEYS UNDER THE DIRECTION OF THE STATE GEOLOGIST].

*This amendment changes the name of DGGS and strips the State Geologist of Division Director status. It thus removes the entire geological community's policy level spokesperson in state government.*

Sec. 3. AS 41.08.015 STATE GEOLOGIST. The commissioner shall appoint the state geologist [WHO MUST BE QUALIFIED BY EDUCATION AND EXPERIENCE TO DIRECT THE ACTIVITIES OF THE DIVISION].

*This amendment strips all technical expertise and professional qualification criteria from the position of State Geologist and opens the door for making a pro-forma appointment of an unqualified person to this important office. By virtue of this amendment, virtually anyone of unspecified qualification could be designated as State Geologist. This amendment also strips the geological survey of its Division status so there would no longer be a statutory requirement to have a staff of geological survey personnel--in its extreme, DNR's geological survey could consist of one single staff regulator called the "State Geologist."*

Sec. 4. AS 41.08.020 POWERS AND DUTIES. (a) Under the supervision of the director of the division of mining and geology, the [THE] state geologist shall conduct geological and geophysical surveys to determine the potential of Alaskan land for production of metals, minerals, fuels, and geothermal resources; the locations and supplies of groundwater; construction materials; the potential geologic hazards to buildings, roads, bridges, and other installations and structures; and...With the approval of the director of the division of mining and geology [COMMISSIONER], the state geologist may acquire, by gift or purchase, geological and geophysical reports, surveys, and similar information...

*This amendment strips all policy making powers and duties from the State Geologist and makes the position of State Geologist completely subservient to the Director of a regulatory agency. Neither the State Geologist nor the Director need meet any academic, professional, or experiential criteria demonstrating his/her fitness or ability to judge the geologic needs of the state or direct programs of objective unbiased scientific investigation. It also inserts at least one, and maybe two, entire bureaucratic layers between a State Geologist, of indeterminate background, and the Commissioner of the Department of Natural Resources.*

Sec. 5. AS 41.08.030 PRINTING AND DISTRIBUTION OF REPORTS. The division of mining and geology [STATE GEOLOGIST] shall print and publish an annual report and such other special and topical reports as may be desirable for the benefit of the state,...

*This amendment severs the geological expertise link to the various reports of the geological survey. As a consequence of this amendment no qualified geologist need have any part at all in producing the division's annual or other technical reports.*

Sec. 6. AS 41.08.040 COOPERATION WITH OTHER AGENCIES. The state geologist, with the consent of the director of the division of mining and geology [COMMISSIONER], may enter into cooperative agreements with federal, state, and local governmental agencies to perform geological and geophysical surveys, studies, investigations, and services.

*This amendment strips another policy level authority from the State Geologist and introduces at least one, and perhaps more, layers of bureaucratic permission that must be obtained prior to initiating cooperative programs. This amendment creates a profound disincentive to solicit or attract offers of cooperative agreements and will lead to increased costs and lost opportunities to advance the knowledge of Alaska geology. The amendment thus hampers the development of the state and adds to governmental inefficiencies. For more than two decades the authority to initiate and enter into cooperative programs has been delegated by the Commissioner to the State Geologist/Director of DGGS who, because he could act from a policy level position, has used this authority to increase the effectiveness of his division, leverage state program funds, and acquire otherwise unobtainable geologic knowledge for the citizens of Alaska.*

# Alaska State Legislature

WHILE IN SESSION  
CAPITOL BUILDING  
JUNEAU, ALASKA 99901-1182  
(907) 465-4931  
(907) 465-4316 FAX

INTERIM ADDRESS  
716 WEST 4TH AVENUE  
ANCHORAGE, ALASKA 99501  
(907) 259-4199  
(907) 259-4171 FAX



CO-CHAIR, RESOURCES COMMITTEE  
VICE CHAIR, JUDICIARY COMMITTEE  
MEMBER, STATE AFFAIRS COMMITTEE

FINANCE SUBCOMMITTEES  
DEPT. OF NATURAL RESOURCES  
DEPT. OF COMMERCE & ECONOMIC DEVELOPMENT  
DEPT. OF ENVIRONMENTAL CONSERVATION

## Representative Joe Green

District 10

### Sponsor Statement

#### HB 537 - Establishing a new Division of Mining & Geology

The Division of Geological and Geophysical Surveys collects, analyzes, interprets, and publishes data on Alaska's geologic resources. The DGGS also maintains records of volcanic activity and seismic hazards, it establishes and maintains data on quality, quantity, and location of ground waters that are in the public interest for the orderly domestic and industrial development of the state. The division responds each year to an estimated 30,000 public inquiries about geologic resources in the state and provides cartographic and technical report editing services for other state agencies.

In recent years, members of the geologic and mining community have expressed concern about the role of the survey and the level of state funding necessary to carry out that role. At the request of Commissioner John Shively the Alaska Geologic Mapping Advisory Board established a committee earlier this year to study the role and function of the survey. I agree with, and support, nearly every finding and recommendation put forth by that group.

HB 537 establishes in the Department of Natural Resources a Division of Mining and Geology. Earlier this year an attempt was made to transfer DGGS into the Division of Oil & Gas. While I concur that costs of state government can be effectively accomplished by combinations of certain agencies, combining DGGS with DOG would have been inappropriate. Use of DGGS personnel to perform DOG oil and gas pre-sale analyses, as indicated by recent testimony of the DOG, would have been an improper use of DGGS personnel. I believe such activities through that proposed combination would not only violate state statute but lead to ultimate dissolution of the DGGS functions through absorption into DOG.

Because budget reductions have reduced funding to the DGGS, combining it with another division is appropriate, but only if its functions are preserved and its personnel are appropriately confined to the functions delineated in statute AS 41.03. Combining DGGS with the Division of Mining and Water not only ensures statutory compliance of its activities but also, its survival.

# FISCAL NOTE

STATE OF ALASKA

BILL NO. HB 537

**1996 LEGISLATIVE SESSION**

Revision Date:	<u>Original</u>	Dept Affected:	<u>Natural Resources</u>
Title:	<u>An Act renaming the division of geological and geophysical surveys in the Department of Natural ...</u>	BRU:	<u>Resource Development</u>
Sponsor:	<u>House Resources</u>	Component:	<u>Mining Development</u>
Requestor:	<u>House Resources</u>	Component Serial No.:	<u>442</u>

Expenditures/Revenues	(Thousands of Dollars)					
OPERATING EXPENDITURES	FY97	FY98	FY99	FY00	FY01	FY02
PERSONAL SERVICES						
TRAVEL	5.7	5.7	5.7	5.7	5.7	5.7
CONTRACTUAL	1.0	1.0	1.0	1.0	1.0	1.0
SUPPLIES						
EQUIPMENT						
LAND & STRUCTURES						
GRANTS, CLAIMS						
MISCELLANEOUS						
<b>TOTAL OPERATING</b>	<b>6.7</b>	<b>6.7</b>	<b>6.7</b>	<b>6.7</b>	<b>6.7</b>	<b>6.7</b>
<b>CAPITAL EXPENDITURES</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>CHANGE IN REVENUES ( )</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

FUND SOURCE	(Thousands of Dollars)					
1002 Federal Receipts						
1003 GF Match						
1004 GF	6.7	6.7	6.7	6.7	6.7	6.7
1005 GF/Program Receipts						
1006 GF/MHTIA						
Other						
<b>TOTAL</b>	<b>6.7</b>	<b>6.7</b>	<b>6.7</b>	<b>6.7</b>	<b>6.7</b>	<b>6.7</b>

Estimate of any current year (FY96) cost: \$ none

POSITIONS	FY97	FY98	FY99	FY00	FY01	FY02
FULL-TIME	0	0	0	0	0	0
PART-TIME	0	0	0	0	0	0
TEMPORARY	0	0	0	0	0	0

**ANALYSIS:** (Attach a separate page if necessary)

The proposed merger will require a significant commitment of time by the management teams of DGGs and Mining and Water Management. Since the merger involves one unit in Fairbanks and one in Anchorage, travel and communications expenses will be required that were not in the Division's budget as submitted by the Administration. In addition to the identified actual fiscal cost, there will be a potential significant cost by diverting high priority goals and objectives of both units. This cost will be in the delay of priority program objectives to balance the water allocation program with expected budgets, revisions to the coal program to make it more efficient, and delays in responding to mining issues as well as potential delay to the geographical program for next Fiscal Year.

Prepared by:	Jules Tileston, Director <i>[Signature]</i>	Phone:	269-8625
Division:	Mining and Water Management	Date:	15-Mar-96
Approved by Commissioner:	<i>[Signature]</i>	Date:	15-Mar-96
Agency:	Natural Resources		

PREPARER TO PROVIDE ALL DISTRIBUTION COPIES TO GOVERNOR'S LEGISLATIVE OFFICE

# FISCAL NOTE

STATE OF ALASKA

BILL NO. HB537

1996 LEGISLATIVE SESSION

Revision Date: Original Dept Affected Natural Resources  
 Title: An Act renaming the division of geological BRU: Resource Development  
and geophysical surveys in the Department of Natural ... Component: Geological Development  
 Sponsor: House Resources  
 Requestor: House Resources Component Serial No. 1031

Expenditures/Revenues (Thousands of Dollars)

OPERATING EXPENDITURES	FY97	FY98	FY99	FY00	FY01	FY02
PERSONAL SERVICES						
TRAVEL	5.0	5.0	5.0	5.0	5.0	5.0
CONTRACTUAL	1.0	1.0	1.0	1.0	1.0	1.0
SUPPLIES						
EQUIPMENT						
LAND & STRUCTURES						
GRANTS, CLAIMS						
MISCELLANEOUS						
TOTAL OPERATING	6.0	6.0	6.0	6.0	6.0	6.0
CAPITAL EXPENDITURES	0.0	0.0	0.0	0.0	0.0	0.0
CHANGE IN REVENUES ( )	0.0	0.0	0.0	0.0	0.0	0.0

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts						
1003 GF Match						
1004 GF	6.0	6.0	6.0	6.0	6.0	6.0
1005 GF/Program Receipts						
1006 GF/MHTIA						
Other						
TOTAL	6.0	6.0	6.0	6.0	6.0	6.0

Estimate of any current year (FY96) cost: \$ none

POSITIONS

FULL-TIME	0	0	0	0	0	0
PART-TIME	0	0	0	0	0	0
TEMPORARY	0	0	0	0	0	0

ANALYSIS: (Attach a separate page if necessary)

At the time the FY97 budget was written, it was proposed that this agency be merged with the Division of Oil & Gas under Executive Order 92. EO92 was voted down with HSSC1 and House Bill 537 was introduced which proposes, among other things, to merge this division with the Division of Mining & Water Management. The merger of DMWM and DGGs would cost the state the saving that would have been realized with EO92, which would have combined the functions of State Geologist with the Director of the DOG, and eliminated the Director of DGGs.

This proposed merger will require a significant commitment of time by the management teams of DGGs and Mining and Water Management. Additional travel and communication expenses will be required that were not included in the Division's original budget submission.

Prepared by: Milt Wiltse, Acting Director Phone: 451-5005  
 Division: Geological and Geophysical Surveys Date: 15-Mar-96  
 Approved by Commissioner: [Signature] Date: 15-Mar-96  
 Agency: Natural Resources

PREPARER TO PROVIDE ALL DISTRIBUTION COPIES TO GOVERNOR'S LEGISLATIVE OFFICE

**Sec. 41.08.010. Division of geological and geophysical surveys.** There is established in the department a division of geological and geophysical surveys under the direction of the state geologist. (§ 1 ch 93 SLA 1972)

**Sec. 41.08.015. State geologist.** The commissioner shall appoint the state geologist, who must be qualified by education and experience to direct the activities of the division. (§ 1 ch 93 SLA 1972)

**Sec. 41.08.017. Hydrological and seismic hazard data declared to be of public interest.** (a) Systematic collection, recording, evaluation, and distribution of data on the quantity, location, and quality of water of the state in the ground, on the surface of the ground, or along the coasts, are in the public interest and necessary to the orderly domestic and industrial development of the state.

(b) Systematic collection, evaluation, archival, and distribution of geologic data and information on earthquakes, volcanic eruptions, and engineering geology and identification of potential seismic, volcanic, and other geological hazards throughout the state are in the public interest and necessary to orderly, safely, and cost-effective development in the state. (§ 1 ch 41 SLA 1977; am § 1 ch 101 SLA 1983; am § 3 ch 36 SLA 1987)

**Sec. 41.08.020. Powers and duties.** (a) The state geologist shall conduct geological and geophysical surveys to determine the potential of Alaskan land for production of metals, minerals, fuels, and geothermal resources; the locations and supplies of groundwater and construction materials; the potential geologic hazards to buildings, roads, bridges, and other installations and structures; and shall conduct such other surveys and investigations as will advance knowledge of the geology of the state. With the approval of the commissioner, the state geologist may acquire, by gift or purchase, geological and geophysical reports, surveys, and similar information.

(b) In addition, the division of geological and geophysical surveys shall:

(1) collect, record, evaluate, and distribute data on the quantity, quality, and location of underground, surface, and coastal water of the state;

(2) publish or have published data on the water of the state;

(3) require the filing with it of the results and findings of surveys of water quality, quantity, and location;

(4) require of water well contractors, the filing with it of basic water and aquifer data normally obtained, including but not limited to well location, estimated elevation, well driller's logs, pumping tests and flow measurements, and water quality determinations;

(5) accept and spend funds for the purposes of this section, AS 41.08.017, and 41.08.035 and enter into agreements with individuals, public or private agencies, communities, private industry, state agencies, and agencies of the federal government;

(6) collect, evaluate, and distribute geologic data on seismic events and engineering geology of the state;

(7) identify potential seismic hazards that might affect development in the state;

(8) inform public officials and industry about potential seismic hazards that might affect development in the state. (§ 1 ch 93 SLA 1972; am § 2 ch 41 SLA 1977; am § 7 ch 175 SLA 1980; am § 2 ch 101 SLA 1983; am § 4 ch 36 SLA 1987)

**Cross references.** — For declaration of sources, see § 1, ch. 175, SLA 1980, in the legislative policy on geothermal resources. Temporary and Special Acts

*Sec. 41.08.025. Accounting and disposition of receipts. [Repealed, § 28 ch 90 SLA 1991. For current law, see AS 37.05.142 — 37.05.144.]*

**Sec. 41.08.030. Printing and distribution of reports.** The state geologist shall print and publish an annual report and such other special and topical reports and maps as may be desirable for the benefit of the state, including the printing or reprinting of reports and maps made by other persons or agencies, where authorization to do so is obtained. Reports and maps may be sold and all money received from these sales shall be paid into the general fund. (§ 1 ch 93 SLA 1972)

**Sec. 41.08.035. Regulations.** The department may adopt regulations relating to and providing for the systematic collection, recording, and distribution of data on the water of the state. (§ 3 ch 41 SLA 1977)

**Sec. 41.08.040. Cooperation with other agencies.** The state geologist, with the consent of the commissioner, may enter into cooperative agreements with federal, state, and local governmental agencies to perform geological and geophysical surveys, studies, investigations, and services. (§ 1 ch 93 SLA 1972)

# FISCAL NOTE

**STATE OF ALASKA**  
**1996 LEGISLATIVE SESSION**

Revision Date: Original Dept Affected Natural Resources  
 Title: Consolidation of DNR Divisions BRU: Resource Development  
 Component: Oil & Gas Development  
 Sponsor: Rules Committee Geological Development  
 Requestor: Governor Knowles Component Serial No. 439/1031

Expenditures/Revenues (Thousands of Dollars)

	FY97	FY98	FY99	FY00	FY01	FY02
<b>OPERATING EXPENDITURES</b>						
PERSONAL SERVICES						
TRAVEL						
CONTRACTUAL						
SUPPLIES						
EQUIPMENT						
LAND & STRUCTURES						
GRANTS, CLAIMS						
MISCELLANEOUS						
<b>TOTAL OPERATING</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>CAPITAL EXPENDITURES</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>CHANGE IN REVENUES ( )</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts						
1003 GF Match						
1004 GF						
1005 GF/Program Receipts						
1006 GF/MHTIA						
Other						
<b>TOTAL</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

Estimate of any current year (FY96) cost. \$ none

POSITIONS

FULL-TIME	0	0	0	0	0	0
PART-TIME	0	0	0	0	0	0
TEMPORARY	0	0	0	0	0	0

**ANALYSIS:** (Attach a separate page if necessary)

Anticipated fiscal savings through consolidation of the Division of Oil & Gas with the Division of Geological and Geophysical Surveys has been included in the Governor's FY97 operating budget. The Oil & Gas Development component shows an anticipated savings of \$25.0 in general fund, and the Geological Development component shows an anticipated savings of \$25.0 in general fund/program receipts.

Prepared by: Nico Bus Phone: 465-2406  
 Division: Support Services Date: 4-Jan-96  
 Approved by Commissioner: Nico Bus Date: 4-Jan-96  
 Agency: Natural Resources

## THE THIRD SEASON OF DETAILED AIRBORNE GEOPHYSICAL DATA OF SELECTED MINING DISTRICTS

by  
Geophysical Survey Project Manager Laurel E. Burns  
Division of Geological & Geophysical Surveys

The Division of Geological & Geophysical Surveys has released detailed airborne geophysical data for the Rampart-Manley Hot Springs mining districts. Funded by State of Alaska Capital Improvement Project (CIP) appropriations, this will be the third season we have been able to produce geophysical data for a geological and geophysical program that concentrates on historical mining districts. During the previous two years, we released geophysical data for parts of the Nome, Circle, Valdez Creek, Nyc, Fairbanks, and Richardson districts. These geophysical data have produced a flurry of activity in the exploration and mining sector, and we anticipate similar interest in the Rampart-Manley area.

A primary objective of these airborne geophysical surveys is to catalyze mineral development investment in Alaska by providing a better understanding of the geologic framework in areas of high mineral potential. The geophysical surveys provide a third, subsurface, dimension to standard geological mapping and geochemical surveys, and often provide the only indication of "blind" ore bodies that have no surficial expression. The data are acquired by instrumentation flown at an altitude 200 feet above ground along survey lines spaced one-quarter mile apart. The surveys yield detailed information about geologic and mineral trends. The data generated by this program will continue to be useful for decades.

In 1991 the Alaska Mineral Commission recommended that the state invest about \$5 million a year each year for a decade to acquire this kind of state-of-the-art airborne geophysical data. Geologic mapping was recognized as an integral part of the geophysical program. Funding has never reached the recommended level but has been enough to begin geophysical surveys of parts of mining districts. In 1992 the legislature began appropriating money (\$450,000) to begin the joint geophysical and geological survey program. The 1992 money was combined with additional funds appropriated in 1993 (\$750,000) to begin the first state-funded detailed geophysical surveys of Alaska lands.

### CRITERIA FOR CHOOSING AN AREA

Candidate lands for this project are identified from review of existing geologic data, land ownership, and responses to solicited nominations from Alaska's mineral industry and Native Regional Corporations. Three important criteria are reasonable access, high mineral potential, and a local population that desires, or at least is truly tolerant of, mineral development. An additional factor is whether the funds available are adequate for the size and potential value of the mineral district(s) to be surveyed.

In this Capital Improvement Project program, our practice has been to have the community of Alaskans concerned with fostering mineral development guide the order in which candidate areas are surveyed. We have looked to organizations that represent a broad spectrum of Alaska's mineral industry for this kind of input. Their participation has served the objectives of the program well.

### DATA ACQUISITION AND RESULTS

Requests for proposals from qualified vendors to provide the geophysical surveys in specific areas were published by DGGs in 1993, 1994, and 1995. The work to date has been contracted to WGM Mining and Geological Consultants Inc. of Anchorage, and its subcontractor, Dighem Surveys, a division of CGG Canada Ltd. ERA Aviation Inc. of Anchorage has provided the Aerospatiale AS350B-1 helicopter that is used as the airborne survey's instrument platform.

Data and maps from these surveys are available to the public about seven months after acquisition of the data. Releasing the data in a timely manner before the next summer's field season has enabled companies and individuals to plan their next season and is a high priority performance milestone for the program.

The aeromagnetic and electromagnetic data are available in a variety of formats, ranging from very inexpensive paper maps to data on computer disks and CD-ROM. Custom processing to produce unique maps of specific areas is also available. Public release of the geophysical and geological data collected from these surveys has had a rapid and profoundly positive effect on private sector exploration investments in the Nome, Circle, and Fairbanks areas.

# Alaska Geological Society

P.O. Box 101288 Anchorage, Alaska 99510

Testimony regarding HB 537

March 13, 1996

My name is Susan Karl and I am an officer of the Alaska Geological Society. The AGS membership includes professionals from oil and gas companies, mining companies, environmental contractors, consultants, native corporations, universities, and government agencies statewide, and outside of Alaska as well.

On behalf of the AGS I would like to focus on 2 main concerns:

1. Alaska is a resource state. Its economic health depends on natural resources. It also has significant natural geologic hazards such as earthquakes and volcanoes, and environmental hazards associated with human activities and the development and transportation of resources. If any state needs and deserves a strong, dynamic and independent geological survey, it is Alaska.

2. It is essential and critical that the state's leaders have solid scientific knowledge as a basis for their constantly evolving policy decisions. The state's health and welfare depend on these decisions. HB 537 makes Alaska's state geologist a political appointee with no required scientific credentials. It is unthinkable that Alaska's leaders would be making resource and environmental policy decisions without information from a scientifically qualified state geologist.

In conclusion, Alaska needs an independent, dynamic, adequately funded geological survey, and a knowledgeable, credible, and respected state geologist to contribute to informed decisions by state policy makers.





# RYAN LODGE MINES, INC.

FAX TRANSMITTAL

3/13/96

TO:	<u>REPRESENTATIVES</u>	<u>NUMBER</u>
	Joe Green	465-4316
	Pete Kott	465-2819
	Scott Ogan	465-3265
	Bill Williams	465-3793
	John Davies	465-3519
	Irene Nicholia	465-2197
	Al Vezey	465-3258
	Pete Kelly	465-2278
	Jeannette James	465-2381
	Gene Therriault	465-3884
	Tom Brice	465-2294

RE.: HB 537, A BILL TO COMBINE THE DGGS WITH THE DIVISION OF MINES.

As a member of the mining community and as Chairman of the Fairbanks Branch of the Alaska Miners Association, I wish to go on record as opposing the combination of the two Divisions.

We are concerned that combining a research/technical division with a regulatory division would be fatal for the research/technical division. The minor fiscal savings now may lead to fiscal disaster in the future.

I recognize the need to do as much cost cutting in the State's spending as possible. However, I call your attention the awakening of Minerals Industry giant that is now occurring. The assistance provided to the industry by the DGGS is tremendous and to send this message to the industry would be discouraging and could cause some concern to the major mining companies now, finally, reexpressing interest in the State.

This is not the fix to the State's fiscal crisis; it is a treatment of a symptom, not the disease.

Thank you for your consideration.

FROM: R. A. Hughes

## High Potential Mineral Resource Areas: Access

*Division of Mining and Water Management*

Alaska Department of  
**NATURAL  
RESOURCES**

### Joint Senate/House State Affairs Committee Hearing

October 4, 1995

---

#### Overview:

Mineral resources have been an important part of Alaska's past and will continue to be an important element in a diversified economy for Alaska into the foreseeable future.

State selections made under the Alaska Statehood Act, and more recently the settlement of the Mental Health litigation, gave priority to resource development opportunities. Minerals—coal, lode and placer minerals, and oil and gas were key elements in determining which lands held the highest benefit for all Alaskans.

Historically, there were two modes of transportation in Alaska, inland rivers and streams during the summer, and overland trails during the winter. Historic access to mineral deposits are reflected in major portions of today's road system, many airfields and ports, and the Alaska Railroad. Rail was the primary means of moving copper from the Kennecott Mining District at McCarthy to Cordova, and between gold camps in the Nome area. Rail provides the present means for moving coal to Seward. The Iditarod Trail is a classic example of a historic winter access route connecting mining areas, while the Yukon, Kuskokwim, and Porcupine rivers form the backbone of river navigation throughout central Alaska.

A recent review of the mineral industry in Alaska and its potential contributions to the state's economy by the Marketing Alaska-Mining Sector Strategic Plan recommended that a comprehensive Transportation Plan include reasonable access to mineral properties using all available authorities, including RS 2477 and Title XI of ANILCA. Likewise, partnerships were encouraged as a means to help mineral development in remote areas with the partnership between the state, NANA, and COMINCO that led to the coordinated development of the Red Dog Mine and its access road and tidewater concentrate loading facility serving as a viable model.

There are approximately 51,000 state and federal mining claims and leases in Alaska:

Ownership	Number of Claims/Leases
State Land*	23,000
State Selected Land	6,000
Federal Land	22,000
	<hr/>
	51,000

\* Includes approximately 1,000 new claims in the Fairbanks area.

## High Potential Mineral Resource Areas: Access

*Division of Mining and Water Management*

Alaska Department of  
**NATURAL  
RESOURCES**

Joint Senate/House State Affairs Committee Hearing

October 4, 1995

---

### *Non-Coal Mine/Projects (Short and Medium Range)*

*A-J Mine* -- Supplemental EIS to be prepared in response to Technical Assistance Report (TAR) by EPA concluding that the mine project evaluated by an EIS in 1992 will not be authorized by the Federal government. The mine project is being redesigned to ship concentrate to a foreign smelter and to dispose of tailings in a deep disposal site in the marine environment. Principal land owners associated with the mine are the City and Borough of Juneau, Alaska Electric Light and Power, and DNR. The actual mineral deposit is owned by CBJ and AEL&P. Echo Bay is operating under a lease from CBJ. DNR will have a major decision on the final mine plan through right-of-way for a submarine tailings pipeline, tideland leases and possibly miscellaneous land use permits, and water right adjudication for both Sheep and Gold Creeks. The A-J mine project is located within the city and Borough of Juneau and consists of Au-bearing quartz veins with a estimated reserve of 96 million tonnes of 1.7 g/tonne (0.05 oz/ton). This is an existing underground mine last worked in the mid-1940's.

*Apex-El Nido Project* -- Mine is in the process of permitting through the USFS. Primary issue is road location and waste water disposal. significant lode Au-W deposits occurring in crosscutting veins. this deposit is located near the city of Sitka. This would be an underground mine.

*Fort Knox Mine* -- Mine is under construction. This deposit is located 20 miles northeast of Fairbanks on Gilmore Dome and has a drilled reserve of 4.1 million oz of Au. This is an open pit mine. The development of the mine has provided employment for more than 500 construction workers this summer.

*Golden Zone Mine* -- Permitting work is being considered to identify areas for prospective initial development, including access to the mine from the Parks Highway. Major Au-Cu-Ag with estimated reserves of 230,000 oz of Au. This deposit is located near the headwaters of the West Fork of the Chulitna River on the southern boundary of Denali Park.

*Greens Creek Mine* -- Located on the north end of Admiralty Island, this underground mine temporarily suspended operations due to low market prices. The Mine is now in the process of reopening. The Greens Creek deposit is a sediment-hosted Pb-Zn-Cu-Ag-Au volcanogenic massive sulfide.

*Kensington Mine* -- Mine is in the final process of permitting. TAR will require some fine tuning of the project, but did not require major redesign of the project. Echo Bay recently announced an agreement with the various stakeholders to resolve points of concern and potential future litigation. Principal land owner in the Forest Service. The deposit consists of stockworks of quartz veins in sheared diorite. Reserve estimates are approximately 10.4 million tonnes grading 4.9 g/tonne (0.143 oz/ton) Au. This deposit is located near Berners Bay north of Juneau. This is a former underground mine.

## High Potential Mineral Resource Areas: Access

Division of Mining and Water Management

Alaska Department of  
**NATURAL  
RESOURCES**

### Joint Senate/House State Affairs Committee Hearing

October 4, 1995

---

*Illinois Creek Project* -- Mine is beginning final permit process to open a mine. CIRI has acquired a mineral lease from DNR and has entered into an operating agreement with USMX to develop the mine. Illinois Creek is an oxidized gold system containing reserves of approximately 5.6 million tonnes of 2.4 g/tonne Au and 51.47 g/tonne Ag. This will be an open pit mine with heap leach pad. Illinois Creek is located approximately 50 miles southwest of Galena.

*Johnson River* -- WestMin Resources continues development work. An adit was constructed in 1994 to explore develop detailed information on the ore body. Epigenetic quartz-sulfide stockwork with drilled reserves of 997,542 tonnes grading 10.35 grams Au, 7.84 gm Ag, 0.76% Cu, 1.17 Pb, and 8.37% Zn. This is an underground mine located in Lake Clark Park.

*Jualin Mine* -- No current exploration effort is underway. However, it is expected that exploration and possibly permitting for a mine will become active in the next 5 years. No major work is expected until the Kensington Project is under construction and/or operation. Lode Au quartz-fissure veins in diorite with reserves of 1.07 million tonnes of 12 g/tonne (0.349 oz/ton) Au. This deposit is located near Berners Bay North of Juneau and is an underground mine.

*Nixon Fork Mine* -- Scheduled to start production this month. All permits are in place and the project is on schedule. Reclamation plan in under review by DNR. Nixon Fork is a Au skarn deposit with reserves of approximately 400,000 oz Au. Deposit is located approximately 50 miles east of McGrath near Medfra and is an underground mine.

*Nolan Creek* -- Work in the Wiseman area continues with several active placer operations. Silverado Mines is the largest current operation, consisting of an open cut and underground drift placer mine.

*Nome Offshore* -- Lease transfers pending and there may be renewal of off-shore mining operation proposals within the next few years.

*Red Dog Mine* -- NANA is the owner of the producing mine site. Major exploration continues and significant additional ore reserves have been found. New discoveries have increased reserves to approximately 140 million tonnes. This is an open pit mine located north of Kotzebue.

*Ryan Lode Mine* -- Former heap leach operations are being reclaimed. It is expected that a new mining proposal will be submitted in the near future. This is a shear zone hosted Au deposit with reserves of 822,200 oz Au. This is both open pit and underground mine, located on Ester Dome in Fairbanks.

*True North Project* -- Active permitting expected this winter as reserve estimates are refined. This is an intrusive hosted Au deposit located west of Fort Knox near Fairbanks. This will be an open pit mine when developed.

High Potential Mineral Resource Areas: Access

Division of Mining and Water Management

Alaska Department of  
**NATURAL  
RESOURCES**

Joint Senate/House State Affairs Committee Hearing

October 4, 1995

-----

*Valdez Creek Mine* -- Mine is in the process of closing down. The mine has been operating on Federal mining claims, but in closure actions needs to have a solid waste disposal site. DNR, ADEC, and the mine are working together to complete permitting of an acceptable solid waste site. ADEC is in the final process of authorizing the solid waste dump site.

*Placer Mines/Exploration Work not associated with an Operating Mine or a Mineral Deposit with pending Development Applications (Average Annual)*

Between 400 and 450 APMA's are received and processed each year. These include mining related activities from exploration camps for geochemical or other geological data collection to small placer mines and larger suction dredges. As of July 10, 1995 there were 359 applications involving a total of 2,342 acres as follows:

Location by ownership category*	Number of APMA's**	Acres***
State	178	978
State and Federal	18	202
State and Private	6	34
State and Federal and Private	3	33
Federal	111	744
Federal and Private	7	118
Private	36	233
	<u>359</u>	<u>2,342</u>

\* 54 were located in an area subject to the ACMP process.

\*\* (as of 7/10/95) Currently there are approximately 400

\*\*\* Does not include acreage for the Fort Knox, Red Dog, and Valdez Creek mines which have approved operation and/or reclamation plans embracing more than 2,000 acres, or the on-going Usibelli coal mine at Healy which currently involves 1,065 acres under approved mining permits.

### *Other non-Coal Mines/Projects (Indeterminate or Long Range)*

*Ambler District* – New exploration and claim staking is underway. Known deposits include Bornite, Arctic, Sun, and Smucker. Major mining companies continue to work the general area. Reserves in the district are probably over 200 million tonnes of Cu-Pb-Zn-Ag-Cd ore with significant grades.

*Apollo Mine* – Patented mineral property now owned by the state. DNR is working with adjacent land owners to assure that potential mineral deposits remain available for future development. This deposit is lode Au in quartz veins. Reserves are approximately 400,000 oz. The mine is underground and is located on Unga Island near Sand Point.

*Chandalar District* – Significant exploration and claim staking ongoing. Located in the east central Brooks Range, major Au producing district.

*Colville District* – ASRC acquisition in the Drenchwater area may be indication of future mineral development opportunities. Other deposits include Story Creek and Kivliktrot Mountain. Located in southern NPRA.

*Delta Sulfide District* – Exploration interest continues, located in the north central Alaska Range. Contains at least 30 known volcanogenic massive sulfide deposits and occurrences. Grades from 0.3% to 1.1% Cu, 1.7% to 5.7% Zn, 0.5% to 2.3% Pb, 24 to 69 g/tonne Ag, and 0.61 to 2.1 g/tonne Au. Estimated potential reserves of 40 million tons for all deposits.

*Donlan Creek* – Substantial exploration under way for lode Au, located in the Iditarod District.

*Grant Mine* – Subparallel Au-bearing quartz veins. Indicated reserves of 192,285 tonnes of 12 g/tonne Au. Other veins identified within the property. Located on Ester Dome in Fairbanks. Underground mine.

*Kogarouk Project* – No significant activity currently underway. Sn deposit hosted in quartz-tourmaline-topaz greisen. Grades average 0.5% Sn and 0.01% Ta and Nb. Located south central Seward Peninsula.

*Pebble Beach Project* – Exploration continuing with focus on environmental and biologic baseline data. Project permitting is expected to be several years away. In addition to resolving transportation routing, an 85 megawatt power plant needs to be developed. Deposit is Cu-Au porphyry with identified resource of 454 million tonnes grading 0.35% Cu and 0.4 g/tonne (0.012 oz/ton) Au. Located approximately 30 miles north of Iliamna. This would be an open pit mine.

## High Potential Mineral Resource Areas: Access

*Division of Mining and Water Management*

Alaska Department of  
**NATURAL  
RESOURCES**

### Joint Senate/House State Affairs Committee Hearing

October 4, 1995

---

*Stoneboy Creek Project* – Grassroots exploration and drilling ongoing. Permitting for a mine is not expected in the next few years.

*Vinasale Project* – Exploration work continues. Economic factors are being evaluated by the property holders. Intrusive hosted Au deposit with a geologic resource of 14,351,000 tons with an average grade of 0.067 oz Au. Located just south of McGrath on the Kuskokwim River.

### *Coal Mines/Projects*

During the past year the overall world market price for coal has steadily increased. This increase in market price enhances the competitiveness of Alaskan coal reserves.

*Deadfall Syncline Project* – Located on the coast between Point Lay and Cape Beaufort in the North Slope Borough, Deadfall Syncline (ASRC ownership with financial support from the Bureau of Mines) is a high quality coal deposit. Access and a viable market are key issues. Access is a significant issue because of the shallow coastal waters. Options include an overland link to Red Dog to use that port facility. The existing exploratory mine work may have some follow up action by DNR, which is in temporary suspension.

*Diamond-Chuitna Project* – Coal deposits on the west side of Cook Inlet near Granite Point. State leases are in place and exploration permits have been issued. A mining permit has been received and partially processed, but litigation to the Alaska Supreme Court about how the access road and port facility were to be authorized has delayed final permitting.

*Evan Jones Coal Mine* – Placer Dome is in the process of disposing of its interest to NEROX Energy Corporation. The existing mine is operating under State and Federal guidelines. Randy Hobbs is operating this project under an agreement with Placer Dome which holds a coal lease from DNR.

*Jarvis Creek Project* – DNR has leased 4 sections of coal in the Jarvis Creek Coal Field, but no immediate requests for a mine permit are expected. Leases are not effective until land is received from BLM. The Pipeline Corridor Withdrawal has been amended to permit the State to acquire the majority of the Jarvis Creek Coal Field. Coal from this field will be used to produce electricity at Tok as a means for a long-term reduction of the cost of electricity that is presently tied to fuel oil prices.

*Usibelli Coal Mine* – Located east of Healy in the Denali Borough, the mine is operating under State guidelines. Existing operations at Gold Run Pass and Poker Flats will shortly transfer to Two Bull and Francis ridge area to the north and east of Poker Flats. This application is expected within the next year. Work continues on resolving slope instability at Poker Flats. Small amendments to the existing authorizations are on-going.

**High Potential Mineral Resource Areas: Access**

*Division of Mining and Water Management*

Alaska Department of  
**NATURAL  
RESOURCES**

Joint Senate/House State Affairs Committee Hearing

October 4, 1995

---

*Wishbone Hill Project* – Located near Palmer in the Matanuska Valley, this coal deposit is under a state lease, including Mental Health Trust Land, and approved mine permit recently were transferred from Idemitsu Alaska to CIRI control. All permits are in place and mining could start at will. There are no known plans to start production.

FINDINGS AND RECOMMENDATIONS ON THE ROLE AND STRUCTURE OF THE  
ALASKA DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS  
BY THE COMMITTEE ON PUBLIC GEOLOGY

*by the Committee on Public Geology: Chairman David Hite,  
Marty Rutherford, John Eichelberger, Teresa Imm, Sue Karl, Al Clough, Chuck Hawley, and Dan Young<sup>1</sup>*

EXECUTIVE SUMMARY

At the request of the Commissioner of the Department of Natural Resources (DNR), the Alaska Geologic Mapping Advisory Board established a committee to assess the role and function of the Division of Geological and Geophysical Surveys (DGGS) and the Director/State Geologist. Upon completion of the review the committee was to prepare a report for the Board and Commissioner. The report would provide recommendations regarding responsibilities, staffing, and type and interaction with partners and clients.

The committee met twice a month, commencing on March 10, 1995 and continuing to May 26, 1995. These meetings served to clarify issues, develop priorities, and gather input from the scientific community. External commentary was solicited from Alaskan geoscientists and a sampling of geological survey directors from other states. The committee recessed for the summer to prepare the final report. The final draft was approved by the committee on September 15, 1995.

The report's principal findings and recommendations are:

- ♦ The existence of a strong and committed geological survey is essential to a state as dependent on natural resources and as subject to recurring geological hazards as is Alaska. The mission and functions of the survey are those prescribed in the statutes which established the Alaska Division of Geological & Geophysical Surveys and the position of Director/State Geologist. To fulfill the mission of the Survey, the basin analysis and hydrogeology functions should be reassigned to the Survey.
- ♦ To maintain the activities of the Survey at a level that fulfills the charges put forth in the statutes, the state must sustain the Survey by providing adequate core funding, for which the current level is inadequate. This funding will provide for permanent staff salaries, facilities, and critical long-term programs and services. The committee recommends that the Survey be strongly encouraged to seek out external funding and support for expanded and additional high priority programs.
- ♦ The Survey should actively pursue and develop partnerships with those working toward a common goal - federal and state agencies, the Geophysical Institute, Native corporations, etc. The Survey is also encouraged to solicit clients who will provide funding for programs that are mutually beneficial and provide a specific product.
- ♦ The committee concludes that the Survey should remain within the Department of Natural Resources, where it can most effectively interact with its primary clients and be most responsive to its partners.
- ♦ The committee recommends that the Director/State Geologist should, at the discretion of the Commissioner, be located in Anchorage, with a minimum five year term. The committee further recommends

---

<sup>1</sup> The statewide committee is composed of the Deputy Commissioner of DNR, geologists and geophysicists representing the Geophysical Institute (UAF), Arctic Slope Regional Corporation, U.S. Geological Survey, Department of Commerce, private hydrology/geohazards/environmental companies, mining industry, and petroleum industry. These individuals also participate in local governments, the Alaska Geological Society, the Alaska Miners Association, and various national organizations such as the American Institute of Professional Geologists, Geologic Society of America, and the American Geophysical Union.

that the position be filled through a national recruitment effort, with a screening panel, appointed by the Geologic Mapping Advisory Board, to identify the best qualified candidates for final selection by the Commissioner.

- ◆ The staffing level of the Survey should reflect the responsibilities put forth in the statutes. Appropriate staff additions should be reinstated in the areas of basin analysis (oil and gas related function) and hydrogeology. These staffing moves can be accomplished by filling recently and soon to be vacant positions or by transfer of full-time employees from other divisions within DNR. A core staffing level should be determined, subject to change with changing needs. The Survey should have the option to employ contract or temporary personnel, when necessary for specific programs.
- ◆ The committee recommends that, at the discretion of the Commissioner, the Survey locate a second office in Anchorage, to enhance communications and working relationships within DNR, with other state and federal agencies, and with key Anchorage-based client groups. These needs will be best served if the Director/State Geologist, basin analysis function, hydrogeologic function, and appropriate support are located in the Anchorage office.

These recommendations are intended to increase the Survey's efficiency, provide greater access to clients and the public, improve communication with state agencies and legislators, and broaden and strengthen the Survey's ability to meet its mission and serve the state of Alaska.

## INTRODUCTION

Alaska's immense size and limited infrastructure have been serious impediments to the development and completion of detailed basic mapping/data acquisition programs. Currently only about seven percent (41,000 square miles) of the state have been mapped in sufficient detail (1 inch to 1 mile or 1:62,500) to allow useful resource evaluation and adequate assessment of potential geohazards. Reliance on other agencies, industry, and the federal government will not satisfy the need for unbiased, basic geological/geophysical data upon which the state and other DGGs clients can initiate activities.

Some other state agencies that work with geological data are largely regulatory in nature. These data are frequently gathered to support a specific position or objective and may not have adequate regional context. Thus, while much of the data is of good quality, it is too focused to be useful in a wider range of applications.

Federal agencies, such as the U.S. Geological Survey and Minerals Management Service, are currently being downsized with a proposed transfer of many functions to the states. Federal priorities are frequently quite different than those of the state of Alaska.

Private industry has a narrow focus when doing geological and geophysical work and does not have the resources or incentive to collect and inventory much of the data that the state would require for long-range resource and land-use planning. Also, industry, having spent their dollars, will keep any data acquired in proprietary status for as long as possible or until it no longer provides a competitive advantage. Data in the public domain will promote economic development of the state's resources.

The role of the survey and/or the proportion of its staff and budget dedicated to a particular endeavor may change significantly with time. Engineering geology, environmental geology, and hydrogeology are all areas that will grow significantly in the coming years. In addition, a greater emphasis on high-tech approaches to old problems and the emergence of new fields of expertise will cause pressure on the existing staffing profile. Growth in or emergence of these or other areas cause inevitable funding and staffing conflicts. The combination of stringent state rules on hiring and termination of employees and declining budgets make it difficult for DGGs to evolve at the pace required.

The long-term role and impact of the DGGs, on Alaska and its citizens, is profound and should be recognized. Virtually every aspect of life in Alaska is, in one way or another, influenced by natural geologic processes and/or resources. A strong state survey is one of the best long-term investments that a resource-rich state like Alaska can make.

With increased pressure on the state budget, due to a decline in revenues, the functions and needs of the DGGs have come under scrutiny on a number of fronts. As a result, funding for both staff and programs have been curtailed. In light of the critical role DGGs perform within the state, the need to address alternative sources of revenue, the changing technologic environment, and efforts to reduce or eliminate the DGGs, a committee was formed to review the role of public geology, especially DGGs, in Alaska and submit recommendations to the Commissioner of DNR. The committee was established through the auspices of the Alaska Geologic Mapping Advisory Board<sup>2</sup> at the request of the Commissioner of DNR. The findings of this committee are to be submitted to the Commissioner in October 1995. The committee was developed and constituted to provide a wide range of input from potential clients and partners.

The committee met regularly to identify and evaluate those issues related to the role of DGGs. The committee membership polled many professionals and DGGs clients within Alaska, seeking a broad base of opinion and concern regarding the current status of the DGGs and its future direction and emphasis. To further broaden the input, State Geologists and survey directors from nearly 20 states were interviewed. Most of these State Geologists were from western states with resource-based economies. Their input strongly supported views that the State Geologist should have a key role in state resource planning, an independent non-regulatory role for the survey, a fixed term of office for the director, an expanded partnering and external funding effort, and the maintenance of a strong and flexible core staff with the ability to expand by hiring contract or temporary personnel in times of increased activity.

The committee membership identified seven items of consideration critical to the present and future of DGGs in Alaska:

1. Mission and functions of DGGs

Mapping  
Mineral occurrence databases  
Geochemical databases  
Geophysical databases  
Volcanic hazards databases  
Seismic hazards databases  
Hydrologic databases  
Basin analysis

2. Funding sources for DGGs

Core funding  
Other state agencies (information for land planning or regulation)  
Federal agencies (information for land use; mineral or energy resources)  
Native corporations (mineral and energy resources; mapping; geochemical and geophysical databases)  
Mining consortiums (mapping; mineral, geochemical, and geophysical databases)

---

<sup>2</sup>The Advisory Board was established to aid the Alaska Division of Geological & Geophysical Surveys in its goal of providing earth science information to the Alaskan public. A number of prominent leaders in the geological community with a variety of backgrounds and a broad spectrum of experience in Alaska have agreed to serve on the board. These members include: Chairman Gerald G. Booth (Cook Inlet Region, Inc.); Vice Chairman Dr. John Sims (Usibelli Coal Mine, Inc.); Secretary Mr. James Rooney (R & M Consultants); Dr. Harry Noyes (Doyon Ltd.); Dr. David Hite (Hite Consultants); and Dr. Keith Crowder (University of Alaska Fairbanks, Department of Geology and Geophysics).

- Energy consortiums (mapping, mineral, geochemical, and geophysical databases)
  - Communities (hydrologic databases; geologic hazards)
  - Infrastructure (geologic and geomorphic hazards)
  - Environmental consortiums (hydrogeologic and geochemical databases)
3. Partnering potential for DGGs
    - State agencies (DOG, DMWM, DEC, DOT)
    - University of Alaska, Geophysical Institute
    - Federal agencies (USGS, DOE, BLM, NPS, EPA, DOD)
    - Oil, gas, coal, geothermal companies
    - Mining companies
    - Hydrology, environmental, engineering firms
    - Native corporations
  4. Administrative location of DGGs
    - DNR
    - University system
    - Independent state commission
  5. Responsibilities and location of State Geologist
    - Acquisition of funds
    - Partnering arrangements
    - Prioritization of projects
    - Products and completion dates
    - Staffing for projects
    - Accessibility to partners and clients
  6. Staffing of DGGs
    - Core staffing and staff support
    - Critical mass problems
    - Staff flexibility
    - Evolution of staff expertise
    - Staff expansion and contraction capabilities
  7. Physical location of DGGs
    - Fairbanks, Anchorage, and/or Juneau
    - University campus, state office buildings, and/or independent
    - Isolation versus insulation

These items have been examined in light of DGGs' past, present, and anticipated future roles; results and demonstrable impact/influence on state resource and safety issues. The committee's recommendations are presented in the following sections of this report and represent virtually unanimous agreement on each element of the proposed action.

### MISSION AND FUNCTIONS OF DGGs

The statutes establishing the DGGs clearly define the function and role of the DGGs and its director. By statute, the DGGs is to perform "systematic collection, recording, evaluation, and distribution of data on the quantity, location, and quality of water of the state...to the orderly domestic and industrial development of the state." Additionally, the DGGs is to collect, evaluate, archive, and distribute geologic data on earthquakes, volcanic eruptions, engineering geology, and other geologic hazards throughout the state that are of public interest and necessary to orderly, safe, and cost-effective development in the state. The

NO statutes also state "the State Geologist shall conduct geological and geophysical surveys to determine the potential of Alaskan land for production of metals, minerals, fuels, geothermal resources...and shall conduct such other surveys and investigations as will advance knowledge of the geology of Alaska."

## OIL AND GAS ACTIVITIES

### Background

OK Oil and gas related data acquisition and distribution is an under-valued and probably under-utilized aspect of DGGs activities. Large, well established companies like ARCO and others with long histories in the state, possess extensive proprietary geological and geophysical databases. These databases have been developed over a period of 40 to 50 years but tend to be concentrated in geographic areas that have long and successful exploration histories. These databases have served these companies well and tend to give them a distinct advantage over competitors that are relatively late arrivals on the Alaska exploration scene. Companies that may want to enter the Alaskan exploration arena are, or would be, at a distinct disadvantage if there did not exist a volume of publicly available data upon which to plan their own data acquisition and develop a general understanding of the geological and hydrocarbon framework of a specific area. Even the established companies must access the public databases to expedite exploration efforts in the frontier basins. AOGCC data

### Justification

Where long-time Alaskan exploration companies do possess an extensive database, they maintain the proprietary nature of the data and do not share it with the state. Even when working with a partner who may lack comparable data, these companies share only the minimum level of interpretation and not the critical basic data sets.

The clients requiring these databases are varied and represent a surprisingly large segment of the potential beneficiaries of energy exploration activities. Clients include:

- ◆ Industry: both established industry and newcomers to Alaska
- ◆ State Agencies: DEC (regulation of resources) and DOG (development of resources)
- ◆ Native Corporations
- ◆ Public, as beneficiaries of good development strategies

Even the largest and most well-established companies still do not have comprehensive databases in the little-explored interior basins and in the peripheral areas of the North Slope and Cook Inlet. It is in the state's best long-term interest to establish readily accessible resource assessments and to encourage exploration and development.

### Recommendation

If the state plans to offer large tracts of acreage (block leasing) to a group of contending companies, it must have data approximating that held by the companies vying for the acreage. Without such a database, it will be impossible for the state to realistically evaluate the economics of the bids. Similarly, when tract leasing is intended to occur in areas outside the principal producing regions of the North Slope and upper Cook Inlet, many companies may lack data and hence, without a publicly available database, find themselves unable and unwilling to effectively compete in sales with short lead times. This reduces competition and return to the state. Thus, an ongoing effort to acquire and distribute oil and gas related data to appropriate state agencies and the petroleum industry is in the best long-term financial interest of the state. To best serve a diverse client base and assure credibility, it is important that data be acquired and maintained by a non-regulatory agency without an espoused economic objective.

Currently the DGGs and Division of Oil and Gas (DOG) have overlapping functions that can reasonably be considered to involve the acquisition, evaluation, archival, and distribution of basic geological/geophysical data pertinent to oil and gas exploration. Both DGGs and DOG have vital but separate roles in the generation/acquisition and handling of geological and geophysical data pertaining to oil and gas exploration. There is a need for DOG to have and work exclusively with certain confidential information pertaining to lease sales and related operations, without giving local well-established companies or individuals an advantage. DGGs should be acquiring, evaluating, archiving, and distributing information that needs to be available to everyone in the public domain. DOG should be doing specific tracts, as those being reviewed for pending lease sales, and DGGs should be working with and analyzing data on the regional scale, well in advance of any lease sale or tract offering.

There is a basin analysis function within DOG that duplicated the charges of DGGs. Basin analysis is the fundamental stage in the exploration process. It requires a wide range of data types, the integration of which provides a regional as well as prospect-specific understanding or interpretation of the geologic risk and hydrocarbon potential.

To remove this function from an agency which has a largely regulatory role and relocate it in DGGs is appropriate for purposes of objectivity. The transfer of the function to DGGs would involve at least one full-time employee associated with basin analysis from DOG with funding. The committee recommends that the position be located in Anchorage. The current oil and gas effort in Fairbanks is recommended to be transferred to Anchorage as soon as feasible because that is where a majority of the clients reside.

#### Expected Results

This reallocation of effort will not only enhance the credibility of the state's oil and gas data efforts but will also increase their utilization by placing these activities in one agency and making them more readily available to the Anchorage-based industry.

## HYDROGEOLOGIC ACTIVITIES

### Background

Alaska statutes state that the "systematic collection, recording, evaluation and distribution of data on the quality, location and quantity of water of the state in the ground, on the surface of the ground or along the coasts, are in the public interest and necessary to the orderly domestic and industrial development of the state." The DGGs no longer has a hydrogeology group performing these vital functions.

Since Alaska derives the majority of its revenues from its resources, the lack of a hydrology group is detrimental to the economy of the State.

What major industries require fresh water? Every major industry in Alaska: oil and gas, commercial and sport fishing, timber, mining, agriculture and dairy, manufacturing and commercial. Understanding Alaska's water resources is paramount to enabling industry to thrive in our state. Industry needs fresh water and growing human populations need growing water supplies. Rural communities in Alaska do not have adequate water to support their populations. Many communities are living in third world conditions. Neither do these communities have adequate water to support industrial development that would encourage self-sustained economic development. Establishment of local economies in rural Alaska will relieve the pressure on government support. Alaska needs to increase its available water supplies to ensure economic and all other growth. The state needs to understand our water resources--water may be the most valuable resource in Alaska.

## Needs of the State

Industry, the public, legislators, universities and regulatory agencies all need access to data on surface and ground water quality, stream flow measurements, meteorologic data, ground water levels, trace element distribution, well logs and geophysical logs. The State of Alaska must collect and disseminate this data, as well as maintain and expand existing databases. A brief outline of water information needs follows:

- ◆ Many of our rural communities lack the most basic of water needs (i.e., flush toilets). Hepatitis and other sanitation-related diseases are all too common in Alaska. Residents of many of these communities are frequently forced to live in poverty. Alaska needs to protect existing known water supplies and develop new sources of water for its more than 320 communities. With adequate water supplies, communities could develop industries like fish processing, creating local jobs and economic independence. Communities need technical data on ground water, surface water, and water quality plus technical assistance to develop water supplies. Public concerns about water quality and environmental impacts need to be addressed.
- ◆ The public needs to know when landfill leachate or coal mine drainage may affect their water supply and they cannot always get sufficient information from the Department of Conservation because the data often does not exist.
- ◆ The State of Alaska needs technical expertise to evaluate impacts from hazardous waste releases on state property to assist regulatory compliance actions, to evaluate enforcement actions, or to provide detailed risk analysis.
- ◆ Alaska's fisheries are dependent on water flow and water quality. Water quality data and in-stream flow measurements does not exist for much of the state. Alaska's fisheries need this data.
- ◆ The Department of Natural Resources is responsible for managing water rights. The department needs to know who has water rights, who has water wells, how the wells are being used and how proposed uses will impact existing water resources. This requires databases of wells and water quality, geology and hydrogeology. Technical studies of entire areas may be required to allocate water rights. The Department of Natural Resources needs hydrogeologists and chemists to conduct these studies and to provide technical assistance.
- ◆ Most of the water well database is inadequate and inaccessible for state and public needs. Alaska needs to update and maintain this database. Existing well logs should be scanned and distributed on CD-ROM to satisfy public needs.
- ◆ Collecting information about in-stream flow is critical to many industries. Alaska has vast numbers of streams in many diverse regions. This information is necessary for fisheries management, erosion control, hydroelectric projects and mining. Although data collection can be shared with federal agencies like the U.S. Geological Survey, Alaska needs to be responsible for this data on state lands.
- ◆ Mining, mine impacts, mineral exploration and mine regulation all depend on water quality, watershed analysis and water supply. The mining industry needs inventories, stream flow data, water quality data, ground water levels and quality, and watershed mapping.
- ◆ River erosion regularly impacts pipelines, roads, homes, railroads, residences, indeed rural communities. Maps showing potential hazards would reduce risk, allow for intervention and planning. The state needs river erosion data and prediction expertise. The state could produce the maps for less than we now pay for erosion prevention after damage occurs.
- ◆ The state needs to evaluate special flood hazards from glacier-fed lakes and rivers such as the Kenai and Beluga systems. Long-term monitoring will lead to understanding and prediction of "outbreaks" such as Lake George events or Yakutat glacier surges.

- ◆ Decision makers when evaluating hydroelectric projects, ADOT/PF when protecting roads from erosion, the Alaska Railroad when designing for erosion, Fish and Game when managing resources, and the public when exploring for water all need basin flow analyses, watershed mapping, and the technical assistance.
- ◆ The interaction of meteorologic impacts with stream flow is unknown in most of the state yet it is very important for resource management and development.

#### Client Funding Requirements/Budget Impacts

Many state agencies use ground water information and require expertise and thus represent potential funding sources. The DNR is responsible for allocating water rights and managing many of the state's water resources. Division of Mining and Water Management now has some of the hydrologists that formerly worked for DGGs. Other state entities that may be able to help fund hydrology studies include the Alaska Department of Fish and Game, Department of Community and Regional Affairs, and Alaska Industrial Development and Export Authority. The public is another source of revenues, from purchases of publications and maps. A strong potential also exists for DGGs to partner with the petroleum and mining industries.

#### Recommendations

In order to attract sufficient industry to help develop Alaska's vast resources the state needs to invest in cataloging its own water resources. Continued lack of development will likely result in additional decline of revenues into the next century. Alaska is more than 20 years behind other states in mapping its water resources. We must catch up.

The committee recommends that a hydrogeologic unit be reinstated within the DGGs.

### STATE SEISMOLOGIST

#### Background

DGGs is charged by state statute with the responsibility of identifying, monitoring, and mitigating earthquake hazards. For more than a decade, the scientific focal point of this effort has been the Office of the State Seismologist, now at the University of Alaska Fairbanks Geophysical Institute (UAFGI) rather than DGGs. The State Seismologist and his or her deputy(s) operate the state seismic network and communicate information on earthquake likelihood, occurrence, magnitude, location, and effects from the net and related studies to appropriate state officials and agencies. The office, which was established by statute in 1984, has an interesting history that highlights some of the challenges to assigning a physical and administrative home to mission-oriented geoscience.

The state seismic network was first established in the 1960s with the U.S. Air Force funding and operated from the UAFGI. The primary motivation of the sponsor was monitoring of Soviet nuclear tests. Network operations remain at UAFGI today, and the net has grown to about 150 remote, self-contained stations dispersed around the state but concentrated in more populous regions. Funding was shifted from the military and, later, the Atomic Energy Commission and its successors, to the U.S. Geological Survey and State of Alaska. Support from the USGS is through the National Earthquake Hazard Reduction Program (NEHRP). The USGS contributes \$250 K/year and also assigns its own staff to the laboratory. State support is through base funding for UAFGI and totals about \$650 K/year. The university does not apply an overhead charge to the state funds, but 50 percent overhead is charged on federal expenditures. The overall strength of the Seismology Laboratory effort is greatly augmented by \$550 K/year from the Volcano Hazards Program of the USGS for volcano seismology.

It seems appropriate for the state with the largest earthquakes and the greatest challenges in monitoring them. Of necessity, the State Seismologist has, from inception of the position, been physically co-located with net operations at UAFGI. However, the first incumbent was employed by DGGG as a consequence of DGGG's natural hazard responsibility. This caused some strain, as the State Seismologist was not available for informal discussions among DGGG staff and, for his part, felt that the strongly geologically oriented DGGG placed a low priority on seismic work. One of the disadvantages of partnering with other organizations is that the DGGG participant may be seen as "doing his/her own thing" by DGGG, particularly if the work is done off-site, however beneficial the work may be.

In 1986, there were substantial layoffs from state government due to a precipitous decline in oil revenue. Because positions within DGGG do not distinguish among types of geoscientists, the State Seismologist would have been "bumped" by more senior non-seismologists, eliminating seismology with DGGG even though both state and federal support for the seismic network continued. To accommodate this situation, funding was transferred to UAFGI and the State Seismologist was employed there in a non-tenure track, research faculty position. This change was formalized by modification of the relevant statute in 1987. The current State Seismologist is a Research Professor at UAFGI, and has an office in the UAFGI's Seismology Laboratory. This is logical from the standpoint of network operations, but has diminished DGGG's role in earthquake issues. A staff member of DGGG did serve on the UAFGI search committee when the current State Seismologist was sought and hired.

#### Justification

Alaska has experienced the second and third largest earthquakes on Earth this century, and will continue to be subject to violent and damaging seismic events. Although the Good Friday 1964 quake of south-central Alaska is famous, the fact that the Fairbanks region has had three magnitude 7 earthquakes in the past half century is less well known. Earthquakes affect all aspects of human activity in Alaska, and even relatively small events could have severe consequences in winter. Unique conditions in Alaska, such as extreme cold in winter and ice and glacial silt in soils, make the presence of local expertise especially important. Damaging consequences can be mitigated by planning growth and construction in a way that takes seismic risks into account. Monitoring of earthquakes, though not yet predictive in capability, permits rapid focusing of relief efforts. As a hazard that affects all of society, knowledge of the occurrence and mitigation of seismic hazards is clearly within the purview of DGGG.

#### Clients

The most important clients of the State Seismologist are the Office of the Governor and the Alaska Division of Emergency Services, who must be informed immediately of the occurrence, severity, and geographic extent of an earthquake disaster. In a crisis, delivery of medical services, shelter, food, and water, and maintenance of energy supplies are immediate concerns. In normal times, information on the location of active faults and unstable soils in earthquake-prone areas is very important to both public and private sector planners. The State Seismologist must coordinate his/her efforts with those of other networks operated under the national monitoring program, NEHRP, of the USGS. Finally, the network represents an extremely important research tool. Data from it must be readily available to the university community and to the scientific community outside the state. The data contain information on crustal and mantle structure and large-scale (tectonic) crustal plate motion that is of global significance.

#### Recommendations

The committee finds that the State Seismologist serves an important role that needs continued support from the state. The issue of the physical and administrative location of the Office resembles in some ways the issue of the location of DGGG as a whole. It should be noted, however, that history here and common practice in other states favors location of seismic net operations at the University. Other universities that

operate state- and federally-funded seismic nets include University of California at Berkeley, California Institute of Technology, University of Nevada at Reno, and the University of Washington. This reflects the importance of a state net as a research, as well as a monitoring tool and is probably a prerequisite for federal support. Given this and the fact that staff who maintain the net work for UAFGI, it seems logical that the State Seismologist position continue to be at UAFGI. Nevertheless, DGGGS can still serve as a repository for seismic risk information and in an advisory capacity during earthquake crises. In addition, it should continue its efforts in engineering and geotechnical aspects of mitigating the problem. Ties between the State Seismologist and DGGGS should be strengthened, at least by MOU spelling out areas of responsibility and mechanisms for cooperation, and perhaps, if administrative constraints permit, a joint appointment. However, a joint appointment between DGGGS and UAFGI for the State Seismologist could be made only under conditions that do not permit a repetition of the "bumping" that occurred in 1986.

### Expected Results

Although the office of the State Seismologist will remain at the UAFGI, the relationship between DGGGS and the State Seismologist will be formalized in order to coordinate delivery of information on earthquake hazards and to respond collaboratively in an earthquake disaster.

## PARTNERS, CLIENTS, AND FUNDING

### Background

The issues of partners, clients, and funding are closely interwoven. The terms used in this report are as follows: A partner shares staff, funds, facilities, and logistics to attain a common goal and are other agencies or like-minded organizations, (i.e., U.S. Geological Survey, University of Alaska's Geophysical Institute, etc). A client is one who expects a product (usually specific). In the current fiscal climate, a client can be expected to pay for services and/or supply logistical support. Clients include other agencies, Native corporations, private industry, boroughs, public, and legislators. It is possible for an entity to be both a client and a partner.

Support may be in the form of money, shared office space, filing, and library systems, computer/telecommunications systems, helicopter and other forms of logistical support, and shared staff. These arrangements, some of which are currently more-or-less informally in place, can result in financial and personnel savings for both the long and short term.

Geological surveys in other states have found that they can significantly augment their direct state funding by pursuing pertinent timely programs with other state departments or divisions, federal agencies, local governments, and all facets of the private sector. These surveys are seeing increased success in raising funds through their clients and/or partners, for projects that address specific needs, save the state money, and supply needed baseline data that can be utilized in future programs. Presently nearly ten percent of the Washington state survey's total budget is derived from a single contract with Spokane County, for a water resources study. More than 90 percent of the Texas Bureau of Economic Geology's budget is derived from sources other than direct support. Other examples of the successful search for external funding include:

- ◆ Colorado--75 percent of total funding is from external sources
- ◆ Kansas--70 percent outside sources
- ◆ Nevada--50 percent of the funding is from external sources
- ◆ Idaho--outside funding constitutes 30-40 percent of the total expenditures
- ◆ Arizona--about 25 percent of total expenditures are non-state funds

Generally, these funds are used for operating expenses and to hire contract experts. The state core funding should cover salaries of permanent staff and facilities. This is something we can develop. The

committee recognizes that this does not happen overnight, for example, Kansas took 50 years to get 70 percent outside funding. To achieve this one must have continuity in planning and leadership, and persistent effort.

### **Justification**

The development of strong and interactive client and partner relationship constitutes the foundation upon which the DGGs can increase its funding base and react in a timely manner to emerging problem areas or issues. In fact, such a cooperative network, with its attendant financial support, should allow the survey to become more proactive and more effectively anticipate the needs of both the public and private sectors.

### **Recommendations**

Based on the examples which demonstrate the success other states have had in securing external funding, with sufficient planning and an entrepreneurial approach the DGGs should be able to raise, from external sources, a significant addition to its state derived expenditures.

One of the possible keys to successful long-term funding opportunities could be through a broad-based, cooperative approach involving several state departments working in concert to secure federal funds. Even with possible decreases in the level of direct federal aid to the states, there appears to be support for some type of block grant to help pay for programs previously financed by the federal government. Some of these grants could be designed for or directed toward long-term integrated projects which take a program from "the cradle to the grave."

The committee's recommendation is to aggressively pursue all viable sources of external funding and use those funds to support operating expenses and the use of contract expertise. The state core funding should be increased to pay salaries of permanent staff and facilities.

### **Expected Results**

Programs that involve two or more state agencies or departments would be long term in nature, and proceed from acquisition of the basic geological and geophysical data, through the determination of the economic viability of the program, to the development and distribution of the final report or product. The program and its funding, which could be proportionately distributed to the various departments, could move from one department to another sequentially or simultaneously. Examples might be programs that (1) demonstrate the existence, quality, economic viability, development and distribution of coalbed methane as a cheaper fuel for an isolated interior village; (2) study of the existence of geohazards, their potential impact, design or monitoring programs, and development and evaluation of regulations concerning activities within the area of interest; or (3) baseline data for the Department of Environmental Conservation.

The committee strongly supports the idea of partnering and shared funding. An example of a highly successful partnering effort, the Alaska Volcano Observatory (AVO), has been included as an appendix to this report.

## **ADMINISTRATIVE LOCATION OF DGGs**

### **Background**

The DGGs was conceived and established to serve the State of Alaska. As discussed earlier in this report, its mission is to collect, evaluate, archive, and distribute geologic data and interpretive information on the state's energy and mineral resources, earthquake and volcanic hazards, and water quantity and quality. This information has historically served other state agencies, land managers, industry, the engineering community, and the general public.

## Justification

DGGS is housed in the Department of Natural Resources because energy, minerals, and water are resources fundamental to the state's health and wealth. Geologic hazards profoundly affect the development and maintenance of the state's energy and mineral resources, communities and infrastructure, and the welfare of its people. Its location within DNR most directly connects DGGS with agencies and people who need the information DGGS can provide.

## Recommendation

The committee has investigated various alternatives to the administrative location of DGGS within DNR by interviewing other state geological surveys in the United States that have various administrative relationships with their legislative, industrial, engineering, public, and academic communities. The committee considered these examples with special circumstances of Alaska's fundamentally resource-based economy. The viable alternatives are (1) remaining in DNR; (2) restructuring as an independent commission directly responsible to the governor and cabinet; and (3) becoming an adjunct to the university system.

As an independent commission answering to the governor, designation of priorities for the project work assigned to DGGS could swing radically from one administration to the next. Politics could have a very negative influence on the progress of projects, due to radical shifts in administrative policy or the whims of governors. In the long term, a stable environment allows greater efficiency and a faster response time to the great variety of political, economic, and public demands on DGGS for geologic expertise, analysis, and information. In view of a long term, stable environment, the committee concluded that an independent geologic commission would not be adequately insulated from political variations.

Within the university system, DGGS could perhaps retain a smaller core of scientists and still maintain scientific "critical mass" needed to accomplish multidisciplinary projects by drawing more heavily on the university geologic faculty and students. Other potential advantages include shared lab facilities and administrative costs, and enhanced scientific credentials and respect. This is a solution employed by several (15) other state geological surveys. The committee sees two main drawbacks to this solution.

First, within the university system, DGGS could very easily be too isolated from its clients and from a daily dialogue with partner agencies that would keep prioritization of its efforts on a steady course, relevant to the needs of its main clients. The university has not historically been a client of DGGS. Second, the exciting academic research environment of the university, and likely involvement with teaching and student advisory request and opportunities, although stimulating, would compete with the practical geologic project work that define the mission of DGGS. The threat of "academic isolation" is too real, and has traditionally been one of the main complaints about DGGS and other state and federal scientific agencies, even when they are not associated with universities. At present, located less than a mile from the university campus, the DGGS already enjoys the benefits of stimulating geologic interaction, student labor, and shared laboratory facilities.

It is the view of the committee that DGGS already has the best of both worlds: physical proximity to the university and administrative proximity to state government. Remaining within DNR would also protect DGGS from university politics. The university is addressing its own budgetary cutbacks and conserving energies for its teaching mission. Sharing people and resources that are already stretched too thin could strain relations within and between DGGS and the university. In the interest of long-term stability, independence from the university system would best serve DGGS and ultimately its clients.

## Expected Results

DGGS should remain as a division within DNR. The Commissioner and state Advisory Board would continue to negotiate priorities and timeframes for projects undertaken by DGGS. The Commissioner, other agency leaders, and the State Geologist should coordinate DGGS project work with that of other agencies within DNR, and any other clients that require the expertise of DGGS.

N?

## STATE GEOLOGIST

### Background

The State Geologist has a critical role in the scientific affairs of Alaska. The position carries the responsibility of knowledge of natural resources, geologic hazards, and current technologies available to the geoscience community. The position requires an individual that has strong leadership capabilities and the vision to guide the DGGS in its role as a responsible, proactive resource agency in the future.

One of the primary roles of the State Geologist is to secure adequate budgets for DGGS to preserve existing programs. As a result of recent budgetary degradation the DGGS is only able to provide low-level maintenance of high profile programs. However, opportunities do exist to obtain funding from non-traditional public and private sources.

### Justification

Alaska is a significant repository of petroleum and mineral reserves, and coal and water resources and the state economy is strongly resource-based. The vast size and resource potential of the state combined with the extreme potential for geologic hazards dictates the need for a strong state geological survey. Due to the conditions presented the survey must be a very multi-faceted agency, likewise the individual filling the State Geologist position must have a very diverse background and be conversant in all aspects of the geology of Alaska.

### Recommendations

The committee recommends that the position of State Geologist be filled without delay with a nationally recognized earth scientist noted for exceptional public vision and real knowledge of private resource industries. It is highly recommended the individual selected for the State Geologist has understanding of both state-level and federal political processes.

Because of the nature of the professionals within an agency such as DGGS, the State Geologist must have strong leadership qualities. The State Geologist must have the ability to be a strong manager and consensus builder for programs which may be unpopular from a strict scientific perspective. The individual selected for the State Geologist will be required to move the DGGS from traditional survey programs, such as regional mapping, toward projects that reflect new and changing public needs. The State Geologist should have the experience to predict shifts in resource industry requirements and public attitudes and awareness towards hazards and development and be one step ahead.

The new State Geologist must address new areas of funding potential such as partnering and cooperative agreements with both public agencies and private industry. Working with private industry and public agencies will be a primary function of the position.

Through the Geologic Mapping Advisory Board, the State Geologist should prioritize projects and staff them accordingly to assure quality products completed in a timely manner.

Candidates for State Geologist should be identified by a panel of scientists and citizens named by the Geologic Mapping Advisory Board. The constituent panel should forward their nominations to the Commissioner for final selection.

We recommend that the basic term be staggered across election year boundaries to provide continuity to DGGs. The position must also have sufficient tenure to be attractive to high quality individuals. Therefore, the committee proposes a five-year renewable term for the position.

#### Expected Results

The selection of a well-recognized, multidisciplinary earth scientist as State Geologist will provide DGGs with strong leadership to carry the agency forward into the next century. Results of this selection should conclude with the identification and appointment of an individual with capabilities to effectively address

- ◆ local legislature during budgetary hearings;
- ◆ other state agencies for cost-sharing programs;
- ◆ federal agencies for cost-sharing and cooperative agreement programs;
- ◆ and private industry for cooperative agreements.

## STAFFING

### Background

DGGs mission requires maintaining expertise in a variety of geologic disciplines to meet the state's needs with respect to identification and development of resources, monitoring, mitigation of hazards, land use, and regulation.

### Justification

To accomplish the various missions of DGGs, there are several key staffing needs that must be provided for and maintained. These include:

- ◆ A variety of regional and topical expertise to identify, prioritize, propose, and execute projects through the Advisory Board and other agencies. The State Geologist will need input, support, and ideas from staff.
- ◆ The breadth and flexibility to evolve with changing scientific needs into the 21st century.
- ◆ The regional background and depth to identify the needed expertise for contracting on special projects (this includes both expertise in a discipline to recognize, for example, the need to contract an expert in magnetics or seismic interpretation for a specific data set *and* enough background in the field to know who are the experts to call).
- ◆ A sufficient number of professional scientists to cover:
  - main Alaska regions (north, central, south, southwest, and southeast);
  - main functions of DGGs (mapping, geochemistry, geophysics, mineral deposits, basin analysis, hydrology, seismic hazards, volcanic hazards, and environmental)
  - basic disciplines (igneous petrologist, metamorphic petrologist, sedimentary geologist/stratigrapher, structural geologist, surficial geologist, economic geologist, geochemist, and geophysicist).

The committee recognizes that a number of these specialties overlap.

### Recommendations

The core staff size should remain relatively constant over at least the near term, roughly five years. Short-term changes in staffing can be accommodated by using temporary or contract employees, or involving

employees from other agencies in partnering arrangements. Proposed staffing levels and disciplines, based on the concept of two DGGs offices, in Fairbanks and Anchorage, are presented below.

Suggested staff allocation assigned to Anchorage would include the State Geologist, hydrologist(s), sedimentologist/stratigrapher, structural geologist/seismic geophysicist, GIS expert, and necessary administrative support staff. The remaining staff would be located in the Fairbanks office.

Over time, it would be highly desirable to reallocate personnel between the two offices on the basis of need and proximity to the principal client(s). As an example, it would be an advantage to ultimately have hydrogeologic capability in Fairbanks and mining geologists and an engineering geologist in Anchorage. Given a demonstrated need and additional sources of funding for DGGs these staffing changes could also be met by carefully managed additions to staff.

#### Expected Results

The location of the State Geologist and a small regional staff in Anchorage should greatly enhance the working relationships with both clients and partners. The level of financial support from both partners and clients should significantly increase, and new sources of revenue will eventually open up to the DGGs.

### PHYSICAL LOCATION OF DGGs

#### Background

The main office of DGGs has been located in Fairbanks for most of its existence. At various times DGGs has also maintained offices in Anchorage and Juneau. Presently all DGGs employees are located in Fairbanks, except for the curator of the Geologic Materials Center in Eagle River. In the 1970s, the Fairbanks offices of DGGs were located in the O'Neill Building on the University of Alaska campus. An off-campus location was subsequently obtained at the university's request and to save costs. During the 1980s, several DGGs employees had offices in the DNR complex in Fairbanks. Currently all employees are located in office space about a half mile from campus and in Alaska Volcano Observatory office space at the Geophysical Institute.

This committee has weighed the benefits and disadvantages of the various past locations of DGGs offices and employees, and considered the effectiveness of DGGs in each situation. The most important factors relating to the effectiveness of DGGs in meeting its responsibilities to clients include communication and cooperation between DGGs, the Commissioner, and other state and federal agencies, communication and cooperation between DGGs and university faculty and students, access to university lab facilities and part-time student help, and access clients such as industry, engineers, Native corporations, and the public have to DGGs.

#### Justification

NO The Fairbanks location of DGGs has distinct advantages because of the Fairbanks' location of a large component of the state's mining community, access to the university, and a geographically central location. It has drawbacks with respect to interagency communication, although the State Geologist frequently travels to Anchorage and Juneau to meet with the Commissioner and other agency leaders, and also with respect to accessibility to the energy industry and the bulk of Alaska's population.

#### Clients

The main disadvantage of the Fairbanks location of DGGs is its inaccessibility to a range of clients. These clients are found within the energy industry, the remaining contingent of the mining industry, the

engineering community, and the hydrologic/environmental industry. These clients have significant geologic needs in southern Alaska.

One major user of geologic information is the energy industry, which is based in Anchorage. The Division of Oil and Gas, whose mission is predominantly regulatory, is located in Anchorage and for practical reasons acquires its own geological baseline information needed for energy-related regulatory decisions. DOG has competent geologists capable of meeting these needs. If this responsibility is removed from the purview of DGGGS, there are dangers in that (1) DOG information is confidential and unavailable to other clients, and (2) data collection and analysis by a regulatory agency could have the appearance of being self-serving.

Another need for geologic expertise in southern Alaska arises from some of Alaska's most salient geologic hazards, earthquakes, and volcanoes, which are concentrated in the general vicinity of Anchorage. Much of the data collected for monitoring these hazards is processed at the Geophysical Institute on the University campus in Fairbanks, and the USGS maintains an observatory headquarters in Anchorage that works closely with UAF, USGS, and DGGGS volcanologists in Fairbanks. The two parts of the Alaska Volcano Observatory coordinate a rapid response to eruptions. But emergencies aside, there is a larger need for geologists to provide information with respect to earthquake hazards that will affect structures and transportation systems in southern Alaska, for the engineering community and for public safety in general.

A growing concern in Alaska is water quantity and quality. Increasing population pressure, and long-ignored problems with disposal of hazardous materials on military bases have resulted in a dynamic hydrologic and environmental geologic industry that has a pressing need for baseline geologic and hydrologic information. In the 1980s, the water program was removed from DGGGS and transferred to the Division of Mines and Water in DNR. However, this is primarily a regulatory agency, and as with DOG, there is always the problem of credibility when a regulatory agency collects and maintains its own baseline data. In another section of this report, the committee recommends that water information functions should be returned to the mission of DGGGS. A large component of the hydrologic/environmental industry and the mining and water regulatory agency are located in Anchorage, and expertise in Fairbanks at DGGGS is not adequately accessible to Anchorage-based clients of DGGGS. In addition, the USGS Water Resources Division has its main offices in Anchorage, and coordination would be mutually beneficial.

### Recommendation

The committee recognizes clear advantages to the location of DGGGS in Fairbanks near the university campus. These advantages include accessibility to DGGGS for the large Fairbanks-based mining industry, access to university facilities and scientists for DGGGS, and a location geographically centered in the state. There is also a demonstrated need for geologic expertise in DGGGS in Fairbanks to address hydrologic and environmental problems in northern Alaska, particularly now with the recent development of mineral properties in the Fairbanks and Circle mining districts.

The committee also recognizes an unfulfilled need for DGGGS to have a presence in Anchorage to deal with a larger, and growing client base in southern Alaska. A presence in Juneau for southeastern Alaska is also warranted, but is seen to be a luxury in the present fiscal climate. The committee recommends that DGGGS maintain offices in both Anchorage and Fairbanks.

There are obvious budgetary concerns with this recommendation. The Fairbanks office is perceived to be understaffed to meet its project responsibilities and can not afford to lose scientists by transfer to Anchorage. In addition, DNR can not afford a major staff increase in this time of diminishing funds. An attractive possibility is to move a few geologists from the Division of Mining and Water Management and the Division of Oil and Gas who are already located in Anchorage over to DGGGS and to replace the few recently retired geologists from Fairbanks with new hires in Anchorage. To minimize the understaffing

problem, it would be most efficient to split along disciplinary lines with energy and water focused in Anchorage.

Because the Commissioner, most other state and federal agency leaders, and the greater proportion of DGGGS clients in industry, transportation, and the public are in Anchorage, we have already recommended that the most logical and efficient residence for the State Geologist is Anchorage. It is anticipated that the State Geologist will need to meet with, generate proposals to, and respond to this large and diverse group of partners and clients on a daily basis. The State Geologist will obviously need a strong deputy in Fairbanks, and will need to visit Fairbanks on a regular basis.

The location of the DGGGS office in Fairbanks has risen as a subject of debate. There is an opportunity for DGGGS to move to a planned new wing of the Geophysical Institute on the university campus. There are clear scientific advantages to being housed with other geologists and in the same building with lab facilities. This location would also somewhat alleviate the feeling of isolation within DGGGS because they would be surrounded with university scientists. However, DGGGS has had offices on campus several times in the past, and there have been problems that ultimately resulted in moving back off campus. The present location, less than a mile from campus allows proximity to university scientists and insulation from university politics, including unpredictable fee structures developing from university budget variations. Any future space-sharing agreement with UAF should take these past problems into account. Another alternative would be to move DGGGS in the DNR complex in Fairbanks. This would be advantageous for cooperation and collaboration with other state agencies, but would probably result in less communication with the university scientists because of the physical separation. Although it is extremely important for the State Geologist to interact with other state agency leaders, that will happen in Anchorage, and the individual scientists will benefit more from proximity to university facilities and student labor. The committee suggests that the present location of the DGGGS offices in Fairbanks is a good compromise.

The optimum location of the Anchorage component of DGGGS will also be a compromise between scientific advantages and political necessities. The committee concludes that it is essential for the State Geologist to be in close contact with the Commissioner and other state agencies, which translates to finding space near the other DNR agencies in the Frontier Building. This would also maintain accessibility of the regulatory agencies to water and energy scientists. An alternative would be office space adjacent to the USGS offices on the Alaska Pacific University campus, which would facilitate collaboration with USGS hydrologists, surficial geologists working on earthquake hazards, and geologists in the Alaska Volcano Observatory. University politics are less of a threat on the APU campus because it is very small and university politics are consequently smaller scale. APU acts simply as a landlord to the USGS. There is a geology faculty of one, and although USGS scientists occasionally provide a lecture, there have been no students available for help.

#### **Expected Results**

With a presence in Anchorage DGGGS will more easily interface with other state agencies, will be more accessible to industry and the public in southern Alaska, and will have stronger collaboration with the USGS in building a hydrologic database across the state. The location of the State Geologist in Anchorage is anticipated to increase exposure and access to funding-opportunities both within and outside of state government.

## APPENDIX

### EXAMPLE OF PARTNERING

#### Background

The Alaska Volcano Observatory (AVO) is a cooperative organization that uses federal, state, and university resources to monitor Alaska's hazardous volcanoes, predict and record eruptive activity, and implement public safety measures. AVO focuses on volcanoes in the Cook Inlet region, Alaska's most populous area and one important for international air transportation, oil and gas production, commercial fishing and tourism. Eruptions of three volcanoes in this region have significantly impacted human activities in each of the past five decades. The program also monitors other Alaskan volcanic areas because of their potential for catastrophic events or as a guide to Cook Inlet volcanism. AVO is a joint program of the U.S. Geological Survey, Geophysical Institute of the University of Alaska Fairbanks, and the State of Alaska Division of Geological & Geophysical Surveys. Components of the program are:

1. Monitoring, principally with a seismic network but supplemented as needed through geodesy, slow scan TV, satellite, geochemical, hydrologic and spectroscopic observations, to detect eruptive precursors and to track and record ongoing eruptions.
2. Communication to disseminate public safety information. This component involves general education concerning volcanic hazards as well and timely warnings of impending eruptions and the areas these eruptions will impact.
3. Basic geological, geochemical, and geophysical investigations to determine the history, physical characteristics, and eruptive mechanisms of Alaska volcanic systems, as a guide to future activity.

#### Justification

Alaska's Aleutian volcanic arc contains more than 50 geologically young and potentially explosive volcanic centers. Together, these have erupted once or twice each year since the turn of the century. In addition, more than 20 catastrophic caldera-forming eruptions have occurred in the past 10,000 years. The most recent of these was the great eruption of 1912 near Mt. Katmai on the Alaska Peninsula in what is now Katmai National Park. Approximately 30 km<sup>3</sup> of pumice and ash were erupted in 60 hours, filling a large glacial valley with up to 200 m of ignimbrite and dumping 30 cm (when fully compacted) of ash on Kodiak, 160 km down wind. The event was accompanied by floods, mud flows, magnitude 6 earthquakes, and the collapse of Mt. Katmai to form a 3-km-diameter, 1-km-deep caldera. This remains the largest eruption of this century on Earth, but numerous young caldera structures elsewhere in the arc show that its size is not without precedent here. With a record of unnumbered "average" eruptions and several truly world-class events in the Holocene, the Aleutian arc is clearly the most dangerous area in the nation with respect to explosive volcanism, and one of the most important such regions in the world.

Hazards associated with explosive volcanism take many forms. The most direct are the explosions themselves. Eruption clouds most often rise vertically above the vent, but they may be laterally directed as well. Ballistic ejecta pose a hazard to aircraft and buildings within a few kilometers, sometimes farther if the blast is directed. Hot, fast moving pyroclastic flows can reach out along valley floors many kilometers from the eruptive center. Usually more far-reaching are the consequences of ash falls from the eruptive plumes, which can make air and surface travel impossible and, in major eruptions, cause buildings to collapse. Perhaps of equal seriousness in Alaska is the presence of water and ice on and around active volcanoes. Eruptions cause catastrophic melting of glacial ice generating mud flows which can travel tens of kilometers. Volcanic cones, over-steepened by eruptive or intrusive activity, can undergo sector collapse. Debris flows thus generated will, if they enter the sea, cause tsunamis and attendant widespread devastation along shorelines.

Alaska is sparsely populated, and so the potential for near-field damage is low in most cases. There is however, a high potential for repeated disruption of air traffic, oil and gas production, commercial fishing, tourism, and military operations due to ash plumes and falls, and far-reaching mud flows and tsunamis. This threat is most serious in the Cook Inlet region, where Alaska's population is concentrated. Augustine is the most active of the Cook Inlet centers, with 6 explosive eruptions this century. In 1883, a volcanic debris flow shed by Augustine entered the sea, apparently triggering a tsunami that inundated the harbor of English Bay on the lower Kenai Peninsula. This type of activity remains a serious threat to coastal Kenai communities. The most recent of Augustine eruption closed businesses in Anchorage and halted transportation throughout southern Alaska in March and April of 1986. An eruption of Spurr in 1953 caused significant ash falls in Anchorage. In 1989-1990, the explosive eruptions and associated mud flows of Redoubt volcano disrupted air travel, caused nearly \$100 million of damage to aircraft, and required \$20 million of preventive measures at a neighboring oil terminal. Mount Spurr erupted again in 1992, dusting Anchorage with ash and causing the airport to be shut down for a day. These were modest eruptions by Aleutian arc standards, but Cook Inlet has reached the level of development where even a small eruption can have major consequences. Meanwhile, traffic on North Pacific air routes has grown to the point where about 10,000 passengers per day transit the Aleutian Arc. Some 70 percent of cargo between eastern Asia and the United States is landed at Anchorage, which has become the first-ranked freight airport in North America. All that is required for a lethal accident is an ash cloud to reach 30,000 to 40,000 feet above one of these volcanoes undetected.

#### History of Development of AVO

Volcanology in Alaska can be regarded as beginning with the great eruption of 1912. The burial of the village of Kodiak under a thick blanket of ash, all the more disturbing to the inhabitants because they did not regard themselves as being near a volcano, triggered a four-year search for the eruptive vent on the remote Alaska Peninsula. That search, funded by the National Geographic Society and led by Robert Griggs, discovered the Valley of Ten Thousand Smokes and initiated debates and inquiries that have become themes in modern volcanology. However, volcanology was not extensively practiced by Alaskans until modern-style investigations of the Aleutian Arc were begun in the 1960s and 70s by UAFGI, the branch of Alaskan Geology of the USGS, and DGGs. Motivations for all three organizations included basic research, volcano hazards, and geothermal energy. The UAFGI and USGS work had a substantial basic research component, whereas DGGs efforts emphasized a statewide survey of geothermal resources. DGGs conducted detailed studies of Redoubt, Makushin, Geyser Bight, Akutan, and Spurr magma/hydrothermal systems and undertook monitoring of the fumaroles at Cook Inlet volcanoes. Much of the DGGs effort was funded by the U.S. Department of Energy. UAFGI and USGS established limited volcano seismic networks for monitoring purposes. In 1982, the Workshop on Alaskan Seismology organized by DGGs formally called for the establishment of a research consortium to coordinate and strengthen these activities for the Cook Inlet region. Although Alaskan scientists worked toward this goal, it remained for Augustine Volcano to bring their efforts to fruition. In response to the disruption of commerce caused by the 1986 Augustine eruption and in consultation with Alaskan scientific leaders, members of the Alaskan congressional delegation asked the USGS to outline requirements for a volcano observatory, incorporating existing USGS, UAF, and DGGs facilities and expertise. As a result, the Alaska Volcano Observatory (AVO) was established in 1988 as a joint program of the USGS, UAFGI, and DGGs, under a Memorandum of Understanding signed by the Chief Geologist of the USGS, the Director of UAFGI, and the State Geologist. The \$500K/year federal contribution was an annual Congressional add-on to the USGS budget and was adequate only for minimal geophysical monitoring of the Cook Inlet volcanoes.

The original concept was to monitor Augustine, however the mission was soon broadened to include Augustine's neighbors. This was fortunate, because Redoubt Volcano burst into eruption on December 14, 1989, only two months after Redoubt's seismic network was placed on line. The precursor seismic activity, which preceded the eruption by only 24 hours, was successfully detected, with appropriate warnings issued.

Under these emergency conditions, AVO's level of effort was rapidly expanded from its modest base to encompass monitoring of gas, tephra, eruption-caused lightning, and floods as well as visual monitoring by slow-scan TV and satellite. Warnings were issued prior to the major eruptive events of January 2, March 23, and April 6. Of special note was the use of meteorological data to predict plume trajectories and the timely evacuation of personnel from the Drift River Oil Terminal prior to a major debris flow.

The number and severity of explosive eruptions at Redoubt required a labor-intensive response, for which several million dollars in federal funds were made available. Two AVO centers evolved. One in Anchorage was staffed by the USGS, directed most field operations, and interfaced with federal agencies and concerned commercial enterprises (aviation, oil and gas). The center in Fairbanks, located at the Seismology Laboratory of UAFGI, was staffed by UAFGI, USGS, and DGGs personnel. It focused on real-time acquisition and interpretation of seismic data, and interfaced with state agencies. Two DGGs personnel were "drafted" early in the crisis, one to provide volcanological expertise and the other to help run the then-overloaded computer system. Their time was covered through a combination of state supplemental and emergency federal funds. Following the eruption, federal funding of AVO dropped from a peak of \$6 million/year to \$3 million/year. State support of communications, volcano work within the Seismology Laboratory, and part of the time of DGGs personnel totaled about \$500K/year.

The next crisis, the Mount Spurr eruptions of 1992, was also successfully predicted by AVO. Because of fewer explosions and consequently less disruption than Redoubt, Spurr activity brought no new federal dollars, but did help AVO to become a permanent, USGS-budgeted part of the Volcano Hazards Program. The state provided \$300 k in emergency funds through the Division of Emergency Services to UAFGI to defray the cost of replacing eruption-damaged equipment, greatly increased helicopter time, and maintaining 24 hour/day operation. At this writing, the approximate funding levels of \$3 M from USGS and \$0.5 M from the state continue. Federal support may increase to accommodate monitoring of Alaska Peninsula and Aleutian Islands volcanoes. DGGs now contributes 18 person-months per year to AVO, for which it is reimbursed for 13 months by the USGS.

### Discussion

AVO exemplifies the type of partnering that can enhance the effectiveness of a government program and eliminate wasteful duplication. This approach respects the historical role that the USGS, UAF, and DGGs have played in volcanological studies, and combines the perspectives, missions, and strengths of these organizations. The USGS is the federal agency with primary responsibility for warning of volcanic and hydrologic hazards in the US (Disaster Relief Act of 1974). The USGS has extensive experience in volcano monitoring and the management of observatories, and in times of crisis can draw on its substantial resources of expertise outside the state, including scientists from its Cascades of Hawaiian observatories and its center at Menlo Park, California. The DGGs has a similar mandate for hazard mitigation within the state and possesses important expertise in acquisition and management of state geologic and geophysical data. More than the other organizations, it provides the Alaskan perspective within AVO. As an educational and research institution, UAFGI brings a tradition of productive research and also provides a route for student involvement in AVO. This is cost-effective for AVO operations and represents an exceptional scientific opportunity for students. This partnership is also important from a political standpoint. It is a matter of significance to legislators in Juneau that support for DGGs and UAF augments a significant federal effort within the state, and it is of importance to Congress that the State of Alaska takes volcano hazards seriously and contributes to the monitoring effort. The appropriate proportions of state and federal support are difficult to quantify. More important is that both entities acknowledge through their support that volcano hazards in Alaska have an impact at both the local and national levels.

Although the need for partnering in the form of AVO was recognized in 1982, it did not occur until propelled by the dual forces of crisis and new money. The challenge for the future of DGGs will be to

develop partnerships without such forces, but where the only incentive is increased effectiveness in accomplishing the DGGs mission. To do this, partnering must be seen by both employees and management as a good thing. In general, partnering will require some base of state support: it leverages state support rather than replacing it. A special effort must be made to maintain contact between DGGs and DGGs employees who are stationed at partner institutions. Finally, personal initiative in obtaining outside funds should be seen as increasing job security and flexibility, rather than decreasing security by reliance on outside "soft" money.