Federal Advisory Committee

for the

U.S. Geological Survey

National Cooperative Geologic Mapping Program

Annual Report to the Secretary of the Interior – 2007

Executive Summary

The Federal Advisory Committee (FAC) deems the National Cooperative Geologic Mapping Program (NCGMP) to be progressing well. The program is effective in creating new geologic maps that provide the Nation with the scientific information to address a broad range of issues, including (1) reducing risks from natural hazards, (2) land-management and land-use decisions, (3) assessment of water, energy, and mineral resources, (4) environmental and health concerns, and (5) furthering our scientific knowledge about Earth processes. The program also helps train the next generation of geologic mappers, whose future is very bright, given the need for new domestic geologic maps.

Despite its accomplishments, the program needs a substantial increase in funding to more fully accomplish its mission "to provide accurate geologic maps and three-dimensional framework models that help to sustain and improve the quality of life and economic viability of the Nation through understanding ground-water availability and quality, supporting DOI land management decisions, mitigating hazards, assisting in ecological and climatic monitoring and modeling, and understanding onshore-offshore sediment processes." The FAC recommends that program funding be boosted by at least $10 million per year to keep pace with the demand for new geologic maps and digital, geographic information system versions of previously published geologic maps. Because geologic maps are used to understand and mitigate against natural hazards (including floods, earthquakes, landslides, tsunamis, volcanoes, etc.), it would be appropriate that new funds provided for the USGS hazards initiative be shared with NCGMP.

The FAC is pleased that the USGS is responding to its previous recommendations, especially making more geologic maps accessible to the public. The FAC has made additional recommendations intended to enhance the EDMAP, STATEMAP, and FEDMAP components of the program.

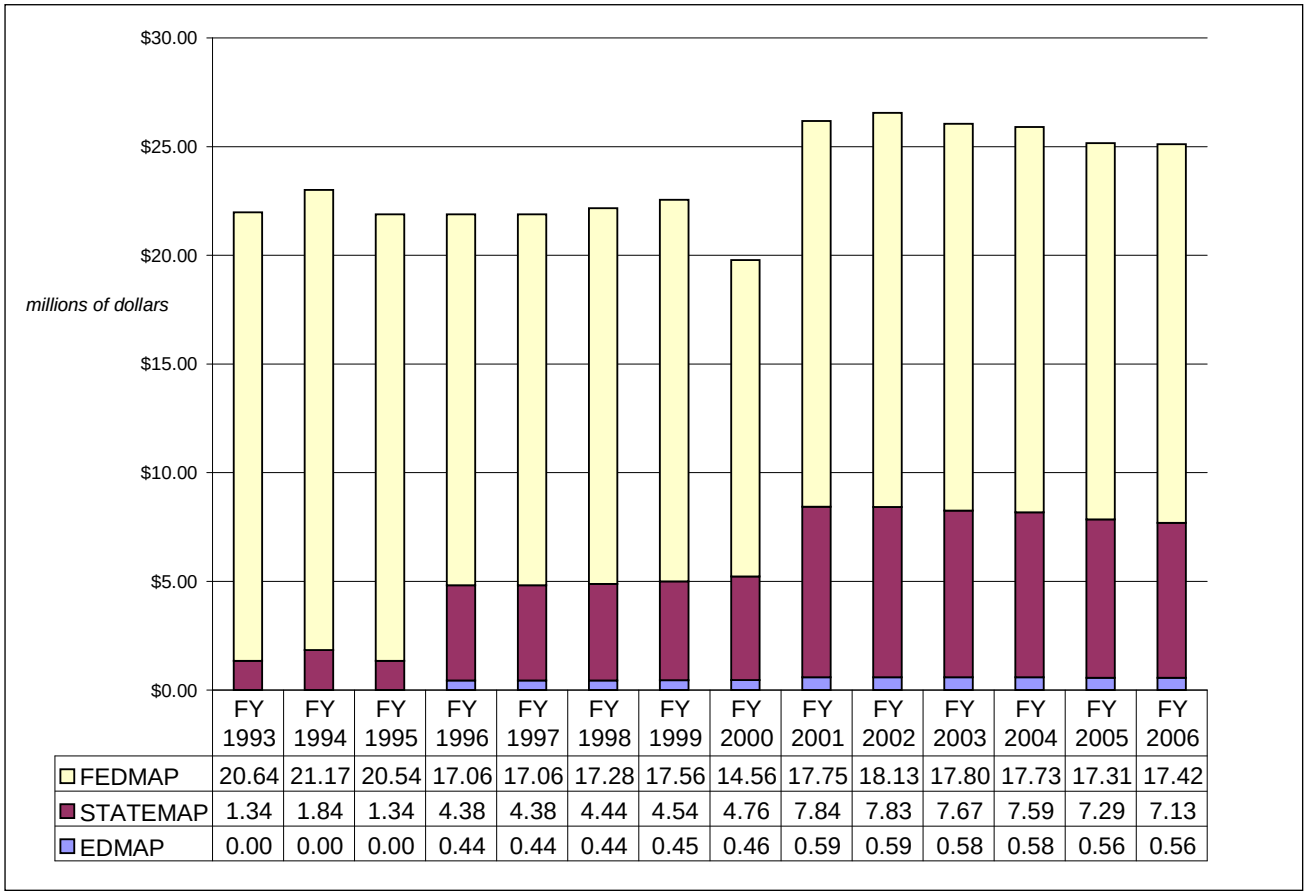
Introduction

As mandated by the National Geologic Mapping Act (NGMA) of 1992 (Public Law 102-285), and its reauthorizations of 1997 and 1999 (Public Laws 105-36 and 106-148, respectively), the Federal Advisory Committee (FAC) for the National Cooperative Geologic Mapping Program (NCGMP) is required to submit an annual report to the Secretary of the Interior that evaluates progress made toward fulfilling the Federal, State, and Educational components of the NGMA. This document fulfills this requirement for 2007.

The NCGMP contains three components: 1) FEDMAP, to meet Federal priorities for geologic maps and basic geologic information about the country; 2) STATEMAP, to meet State needs in a cost-sharing partnership between the USGS and State geological surveys; and 3) EDMAP, to train the next generation of geologic mappers in a cost-sharing partnership between the USGS and colleges and universities in the United States. While the program has grown over the years, funding has been well below congressionally authorized levels and does not provide the resources to make significant improvements to domestic mapping efforts.

FY 1999 - $28,000,000
FY 2000 - $30,000,000
FY 2001 -$37,000,000
FY 2002 -$43,000,000
FY 2003 - $50,000,000
FY 2004 - $57,000,000
FY 2005 - $64,000,000

Congressionally Authorized Funding for NCGMP



	FY 1993	FY 1994	FY 1995	FY 1996	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006
FEDMAP	20.64	21.17	20.54	17.06	17.06	17.28	17.56	14.56	17.75	18.13	17.80	17.73	17.31	17.42
STATEMAP	1.34	1.84	1.34	4.38	4.38	4.44	4.54	4.76	7.84	7.83	7.67	7.59	7.29	7.13
EDMAP	0.00	0.00	0.00	0.44	0.44	0.44	0.45	0.46	0.59	0.59	0.58	0.58	0.56	0.56

Actual Funding for NCGMP

Congressional reauthorization of the NCGMP, while under consideration by both houses of Congress, still has not been passed.

At the suggestion of the FAC, the NCGMP Federal Advisory Committee met outside of the Washington, DC, area on November 1-2, 2007, at the Denver Federal Center, U.S. Geological Survey Building 25 in Room 1787. The primary thrust of the first meeting day was EDMAP, while the second day consisted of a field trip to the Front Range of the Rocky Mountains. This trip provided the FAC members with the opportunity to witness first hand some of the applications of the geologic maps in addressing engineering and environmental issues.

Representatives of the FAC who were present included: Linda Gundersen (USGS Acting Chair), Carla A. Kertis (USDA-Natural Resources Conservation Service), Peter T. Lyttle (NCGMP Program Coordinator), Jonathan G. Price (State Geologist of Nevada), James M. Robertson (State Geologist of Wisconsin) and Robert J. Silva (U.S. Department of Energy). Others who attended the meeting included: Laurel M. Bybell (NCGMP Associate Program Coordinators), Tammy Dickinson (USGS National Geological and Geophysical Data Preservation Program Coordinator), Randall C. Orndorff (NCGMP Associate Program Coordinator), Lydia Quintana (USGS Program Analyst), William J. Siok (American Institute of Professional Geologists), David R. Soller (Head of National Geologic Map Database), Mark Steltenpohl (Auburn University) and Kelly Valoris (USGS Program Assistant)

Progress of the National Cooperative Geologic Mapping Program

Program Growth Area

Geologic maps provide a value resource in an industrial world well beyond the purely scientific benefits. As people discover this resource, additional demands are made for geologic maps. The proposed USGS Water Initiative for FY 2009 includes some funding for geologic maps from the NCGMP. If funding is received, the program will have to work with AASG to devise a mechanism for funding STATEMAP efforts that support the needs of the initiative. This mechanism will also need to be incorporated into the proposed NCGMP PART Improvement Plan for FY 2008. After discussion at the meeting with the FAC, a clearer understanding of the issue was obtained, and the wording in the improvement plan will be changed to accommodate everyone's requirements.

FEDMAP

Following up on a prior FAC recommendation, the program is making an effort to publish FEDMAP legacy data. Each project that is funded by NCGMP will be required to investigate ways to make these important legacy products available to the public.

The geoscience community has discovered the benefits of using the map-laden National Geologic Map Database (NGMDB). The first EDMAP maps have been entered in the catalog, and the program is working on a cartographic readiness page so the students can easily submit

their maps in a format that is ready for Internet delivery. The recently revitalized "Mapping in Progress" component of the NGMDB is being used extensively by customers.

STATEMAP

South Dakota and Hawaii are the only two State geological surveys that have not participated in STATEMAP. It is possible the AIPG will be able to assist in getting South Dakota to participate by providing an ad hoc committee out of their South Dakota section that could serve as their State Mapping Advisory Committee.

Once again, annual federal funding for STATEMAP is well below the states' financial matching ceiling.

EDMAP

Mark Steltenpohl, a geoscience professor at Auburn University, provided a lively discussion of his 11 years of very positive EDMAP experiences in the state of Alabama. His track record of graduate and undergraduate geologic mappers was remarkable, and his talk set the stage for the following day's field trip.

Per capita funding for EDMAP students has not increased since the program started in 1996 ($15,000 for graduate students and $7500 for undergraduates). The committee discussed ways to increase the yearly funding to each student. A number of "out of the box" opportunities were discussed. Perhaps a way could be found to obtain funding through private industry because they hired the majority of EDMAP students. AIPG could perhaps have a role in doing this.

One of the missions of NCGMP is training the next generation of geologic mappers. An untapped resource for candidates is urban youths, especially minorities. Many of these youths have never had an "outdoor experience." A discussion ensued about how to attract these students. NCGMP would like to get more minority students involved with EDMAP. The committee felt that it would be more successful if these students could have some geologic field experience before they enter college. This could perhaps be done through organizations that work with inner city youths like Boy Scouts, Girls Scouts, Boys Club, or Girls Club. Another option is to have a high school component of EDMAP or to partner a college-level EDMAP student with a minority student from a nearby high school. Perhaps the program should try this as a pilot effort.

National Geological and Geophysical Data Preservation Program (NGGDPP)

Tammy Dickinson reported on the program's FY 2007 activities. The program is developing performance measures. It has established two committees: national catalog, which is working on the design for the catalog, and financial assistance, which is working on the request for proposal (RFP), priorities, evaluation criteria, etc.

Recommendations

The FAC voted to endorse the FY 2008 technical assistance committee recommendations. The committee requested to see the recommendations for FY 2009.

Review of Recommendations from 2006 FAC report

Progress was made by the program on several of the recommendations made by the FAC in its report for 2006. Those recommendations are listed below in italics, followed by statements of progress.

1. Reauthorization and Funding for the NCGMP. *The FAC recommends that reauthorization of the NCGMP be a high priority for the Department of Interior, not only because the program products contribute to the public good but also because they are in great demand by other bureaus within the Department. Funding for the program should be increased from its current level of $25.113 million to at least $35 million per year. The USGS hazards initiative is a logical and easily justifiable source of new funds for this $10 million addition to the NCGMP.*

Unfortunately, as of early in FY 2008, reauthorization of the NCGMP has stalled in Congress. The USGS may not lobby for increased funding, but NCGMP is an active participant in many USGS funding initiatives. However, NCGMP has not received any money from the USGS hazards initiative.

2. Legacy Products. *For the purposes of this program, legacy work includes geologic maps that are incomplete but where most or all of the data have been collected and assembled. The FAC recommends that the USGS develop guidelines for inclusion of unpublished geologic maps as items in the National Geologic Map Database. In some cases, this may mean release of draft copies of maps (for public review); in other cases this may mean providing funding to complete USGS maps that are almost finished.*
The FAC recommends that such legacy products be given high priority, as the cost for completing such maps is likely to be considerably less than the cost to create an entirely new map. The USGS should set priorities for which maps to complete first based on national needs that include priorities of other agencies within the Department of Interior. The FAC is encouraged by the newly reestablished Bradley Scholar Program for the Scientists Emeriti, which is providing some funding for completion of legacy geologic maps.
The FAC recognizes that USGS geologic mappers work not only for the Earth Surface Processes Teams, whose funding comes primarily from the NCGMP, but also for USGS programs in Minerals, Energy, and Hazards (volcanoes, earthquakes, landslides), and other programs. The FAC recommends that the geologists in these other programs be included in the effort to dramatically increase the rate of publication of legacy maps.

Linda Gundersen provided $66,000 to the Bradley Scholar Program in FY 2007 for Geologic Discipline Scientists Emeriti to complete legacy products. NCGMP is developing a strategy for program-funded projects to complete legacy products.

3. Release of EDMAP Products. *The FAC recommends that the USGS continue to move forward in the process to allow unpublished EDMAP products to be released through the National Geologic Mapping Database. The USGS has agreed to do this, and David Soller will design a web-based form for use by professors and their graduate students in submitting a PDF or similar printable and viewable versions of their maps.*

Two EDMAP produced geologic maps are now in the NGMDB. A request for additional maps will be sent out shortly to universities that have participated in EDMAP. The NCGMP has

developed language to include on the maps to inform users about the level of review that the map has undergone. This language will help more maps become user friendly.

4. Additional EDMAP Recommendations. *On the basis of dialogue between the USGS and the academic community, the FAC recommends that the cap for EDMAP funding be kept at $15,000 until funding for the NCGMP is raised significantly. The short-term goal is to raise the cap to $20,000 per student and to increase the number of students funded through EDMAP. The FAC reiterates its 2005 recommendation that the USGS undertake a survey of employers of geologists to assess the need for geologic mappers. This information will be useful in setting goals for EDMAP funding in future authorizations of the program. The survey should include employers who produce geologic maps for the public, as well as those who create geologic maps for internal use. The FAC recommends that the USGS investigate working with the American Geological Institute, which has a long history of employment surveys in the geosciences, in this effort. The FAC recommends that the USGS investigate ways to encourage EDMAP students to have projects in the Caribbean where new earthquake monitoring equipment will be or is being installed as part of the USGS hazards (tsunami and earthquake) program.*

EDMAP funds will continue to have a $15,000 cap until additional funds can be obtained. NCGMP has met with Chris Keane at AGI on the issue of statistics on the future need for geologic mapping skills. The next FAC meeting will focus on this issue.

5. Populating the National Geologic Map Database. *The FAC recommends that the USGS encourage non-governmental organizations, including private companies and scientific societies that have geologic maps for sale, to submit information on their maps to the National Geologic Map Database.*

Dave Soller has been actively involved in obtaining this type of geologic map information and adding it to the NGMDB.

6. Prioritization of Funding for the National Geological and Geophysical Data Preservation Program. *The FAC recommends that the USGS seek its advice in setting annual priorities for the data-preservation program. The USGS should engage geologists in the user community, perhaps at annual meetings of the leading societies whose members use geologic maps (Geological Society of America, American Association of Petroleum Geologists, American Institute of Professional Geologists, Society of Economic Geologists, Association of Environmental and Engineering Geologists). The FAC further recommends that a peer-review process be used for the selection of specific projects in both the internal and external components of the data-preservation program.*

As recommended by the NGGDPP implementation plan, there will be a peer-review process in place to select projects that receive program funding.

7. Operation of the Federal Advisory Committee. *The Federal Advisory Committee requests that the USGS fund at least two meetings of the FAC per year. Each meeting should contain components of both the National Cooperative Geologic Mapping Program and the National Geological and Geophysical Data Preservation Program. A review of metrics for the programs should be included annually to assist the FAC in reporting on progress of the programs. The USGS should include dialogue between the FAC and USGS geologic mappers, STATEMAP geologic mappers, and EDMAP professors and students on the agendas of some of its meetings each year.*

The NCGMP will fund more than one FAC meeting per year when it is deemed the most appropriate use of the FAC representatives' time. In FY 2008, it is anticipated that there will be two meetings.

The FAC recommends that the USGS activate the two task forces mentioned in the 2005 report. First, a Task Force on Education and Awareness Issues should be charged with drafting recommendations for better ways of communicating the benefits of geologic mapping and the National Cooperative Geologic Mapping Program and for assisting non-geologist users of geologic maps. Second, a Task Force on Legacy Maps should be charged with drafting recommendations for ways to rapidly publish maps for which field work has been entirely or partially completed but have not been through the peer review process for formal publication. These task forces may need to be creative in avoiding problems of giving the impression that these products carry the seal of approval of the USGS or State geological surveys.

Although task forces were not used, NCGMP is pursuing ways to deliver legacy geologic map information.

8. Rotation of Membership on the Federal Advisory Committee. *The FAC recommends the following regarding future membership and terms of office.*

1. *In general, all members of the FAC, except for those USGS representatives whose positions on the FAC are defined as their administrative roles within the USGS, should be limited to five-year terms.*
2. *To encourage independence and high-quality representatives, the industry and academic representatives should be recommended by non-governmental organizations:*
    a. *The Executive Committee of the American Institute of Professional Geologists will be asked to recommend representatives from private industry.*
    b. *The Council of the Geological Society of America will be asked to recommend representatives from academia.*
3. *For all Federal agency members, the USGS Director will ask Directors/Chiefs of the agencies for recommendations.*
4. *The Act already calls for the Association of American State Geologists to choose two State representatives.*

Maintaining consistency with the five-year term limit for FAC representatives established in 2006, Carla Kertis and James Robertson attended their last NCGMP FAC meeting on November 1-2, 2007. Carla and James each received an appreciation award at the meeting for their part in advancing the cause of geologic mapping through service on its Federal Advisory Committee. NCGMP will move forward to fill these vacancies. The Association of American State Geologists has been contacted, and as established in the NGMA, they will select a State Geologist to replace James Robertson. The USGS Director will ask the Director of the U.S. Department of Agriculture to recommend a representative from that agency with the appropriate knowledge of geologic mapping.

Recommendations in 2007

1. The committee recommends that NCGMP consider adding new types of representatives on EDMAP panel to bring in new perspectives, particularly with regard to minority issues.

2. The committee recommends that the next FAC meeting focus on future workforce issues in the United States with regard to geologic mapping and GIS skills. The format should be an open discussion about the issues. NCGMP should invite knowledgeable individuals on this subject to attend the meeting.

3. The committee recommends that the program, in cooperation with Chris Keane of AGI, write a paper about success of the EDMAP program.

4. The committee recommends that NCGMP provide guidance in the next EDMAP request for proposal to facilitate incorporation of EDMAP-produced geologic maps into the NGMDB.

5. The committee recommends that there be additional emphasis on finding ways for EDMAP students to work together in the field for safety reasons. GSA should be approached about the possibility of making a recommendation on this issue. At this time, the FAC limited its consideration to student safety.

6. The committee recommends the NCGMP meet with the Association of American State Geologists Executive Committee to begin alignment of Federal initiatives, including research aimed at conducting a water census of the Nation. Following this, NCGMP should modify the STATEMAP RFP to improve alignment between State and USGS geologic mapping projects in support of federal initiatives that add funds to the NCGMP.

7. The committee endorses the NGGDPP FY 2008 priorities for funding and requests that FY 2009 priorities also be presented to the FAC.

10. The committee recommends that there be a FAC meeting to discuss future technologies for geologic mapping, including 3-D, 4-D, multiple dimensions, and framework studies done for broader applications. Both FEDMAP and STATEMAP should participate in this discussion.

11. The committee recommends that there be more dialog on future ways to deliver and distribute geologic map data – add a day to Digital Mapping Techniques (DMT) meeting to discuss this. Perhaps have this presented at a GSA session.

12. The committee recommends that its representatives be able to participate in the next DMT meeting in 2008.

13. The committee recommends that program funding be boosted by at least $10 million per year to keep pace with the demand for new geologic maps and digital, geographic information system versions of previously published geologic maps. Because geologic maps are used to understand and mitigate against natural hazards (including floods, earthquakes, landslides, tsunamis, volcanoes, etc.), it would be appropriate that new funds provided for the USGS hazards initiative be shared with NCGMP.

Field Trip

On Friday, November 2, Karl Kellogg (USGS) and David Noe (Colorado Geologic Survey) led the FAC on a nine stop field trip along portions of the Rocky Mountains Front Range. Stop 1) Viewed North Table Mountain, Golden for an examination of rockfall and landslides. Stop 2)

Dakota Hogback to observe the impacts of the Laramide orogeny. Step 3) Dinosaur Ridge Tracksite to view geologic outreach for students. Step 4) Great Unconformity at the base of the Fountain Formation. Stop 5) Turkey Creek Gap for a study of oil deposits. Stop 6) Southern Jefferson County to study shale heaving construction issues. Stop 7) drove the new highway to Central City to see construction issues of high-level gravel. Stop 8) geologic basis for the Central City-Idaho Spring mining district. Stop 9) Early Proterozoic structures in the Clear Creek area.

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