

Mapping Cooperation among Civilian Agencies

I AM PLEASED and honored to speak at this joint plenary session regarding my agency's relationship to the Survey's National Mapping Program. My agency, Soil Conservation Service, or scs, has the responsibility for developing and carrying out a national soil and water program. It provides technical assistance only at the requests of locally elected governing boards in the entire United States, Puerto Rico, and the Virgin Islands. This technical assistance covers several programs. These include conservation operations, soil surveys, snow surveys, inventorying, monitoring of soil, water, and related resource data, river basin studies, watershed planning and operations, resource conservation studies, and several other programs. All these programs have one common requirement—maps. scs considers the usgs to be the federal mapping agency. cs maps are used as is or they are used as a source for map compilation for our programs.

I represented my agency as part of the support staff for the Federal Mapping Task Force Study in 1972. Task Force members were surprised to hear that scs and the Geological Survey at that time were working on a memorandum of understanding relative to the exchange of data and program coordination. This memo of understanding was formalized in May 1973. Both agencies have primary responsibilities in a number of subject areas and it is in the national interest that related programs be closely coordinated and mutually supported. Accordingly, scs and cs drew up the memorandum of understanding to exchange data, information, and findings of mutual concern; to cooperate in and support the operations of related programs; and to coordinate related programs within the full range of interface between the two agencies. These include programs involving such primary subjects as land, water, mapping, digital data bases, environmental studies, and other studies.

The Soil Conservation Service and cs were in fact implementing some of the proposals of the Federal Mapping Task Force re-

ports before the Task Force reports were even published. Our two agencies have met quarterly since 1973. We have shared our expertise and we have been candid in discussing and resolving mutual problems. Cooperative agreements have resulted. The first ncic cooperative agreement relating to cartographic information and management, primarily, aerial imagery and soil survey data, was signed May 30, 1975, between scs and cs. The scs and the Topographic Division of cs have commenced work on developing compatibility of our respective data bases. We intend to use the cs map data bases. cs and other agencies should be able to use our resource data bases, primarily soil. This is a direct result of the coordination meetings between our two agencies.

In 1968, the Cartographic Division of scs investigated the possibility of using high-altitude photography for photo base sheet preparation for its soil survey program. We had been laying mosaics of aerial photography for all the public soil surveys up to this time. Since 1970, we have obtained high-altitude aerial photography for approximately three fourths of all the soil survey areas that are published annually, which is about 100 per year. However, we were still required to mosaic those areas that had excessive differences in relief, primarily in the western and northeastern States. There was a personnel reduction required in the early 70's. We looked for alternative means of preparing satisfactory photographic bases in these high-relief areas. In August of 1973 we developed a cooperative cost sharing agreement with the cs for the preparation of orthophotoquad base sheets.

With the 50/50 cost sharing arrangement an orthophotoquad is obtained today from cs for approximately \$625 or about \$11.35 per square mile as our share, thereby placing it in a competitive position with mosaicking and high-altitude imagery for photo base sheet preparation. But what is even more important is that these orthophotos provide a planimetrically correct base on which our

soil survey data are recorded. At the present time we have contracted with GS for a total of more than 11,400 quadrangles at a total cost exceeding \$3.6 million. Morris Thompson mentioned this morning that GS has produced about 19,000 black-and-white orthophoto quads. I pushed the pencil a little while ago and find that SCS has cost shared on 62 percent of these quads.

We anticipate contracting for about 200 additional county-size areas in the next four or five years in the orthophoto program to complete our soil surveys once over nationwide. This wasn't done without any problems. We had problems getting geared up with Geological Survey so that the GS orthophoto production schedule met our SCS requirements. Prior to March 1978 the GS dates for delivery of orthophotos were continually being rescheduled monthly for later delivery. This gave us some real heartburn. SCS field staffing was based on the projected GS delivery dates since we required the orthophotos to commence our soil survey map compilation and map-finishing operations. Using the dates that we got from the Survey, we assigned and transferred field staff. Now put yourselves in our cartographic shoes by telling our state conservationists that there's been another delay in providing the orthophotos and can you find some other work for your people to keep them busy until we get some? It was difficult. Needless to say, the delay in GS delivery dates affected the SCS soil survey operation adversely. Quite frankly, several of our SCS top staff members wanted to scrap this cooperative program with GS and look for some other means of providing the photographic bases for the soil survey.

The top Topographic Division staff worked with us many hours to develop this cost-share effort into a viable program. I recall one session where several SCS cartographic people and GS representatives of the National Headquarters and the Mapping Centers met at our request. Our problems with the GS delivery were very clearly spelled out. In closing the session I apologized to the GS people by saying "It was not my intent to give you hell." One of the GS Mapping Center representatives said "Perhaps not, but you sure did." At any rate, through our candid discussions and the resulting cooperation and coordination of the GS Mapping Centers and the National Headquarters, GS orthophoto production has been on schedule since March 1978. In fact, SCS has been snowed under by the backlog volume of orthophotoquads received from GS in the last

few months. But we're getting on top of this happy problem.

A few years ago SCS and the Geological Survey and several other mapping agencies realized that there was a need for a map series with a scale between the 1:250,000 quad and the 1:24,000 quad. As a result, the intermediate scale mapping program had its beginning in 1975. The July 1973 the OMB Federal Mapping Task Force Study listed several agencies that were engaged in mapping or having mapping needs and requirements. The mapping within these agencies was being accomplished independently. The maps were not compatible, served no other need, and were costly to the federal government. Under the National Mapping Program the Survey began coordinating the federal program, identified requirements, and began the preparation of intermediate scale base maps at scales of 1:50,000 and 1:100,000 in 1975. Because these maps can be used for a variety of needs by many users and be updated at minimum cost with current aerial photography, the federal sector will have a current product available to immediately respond to user needs.

Now in line with this the demand for national resource data at SCS has increased. These data were being presented to users on various base maps with little uniformity and generally not meeting national map accuracy. Since these maps were not used by other agencies, they were single-purpose products. However, using the accurate, uniform-scale base maps, resource data will be digitized and available for automated mapping procedures and repeated manipulation in providing various inventories and interpretative maps at great cost reduction. The repeatability of use of digitized data by SCS and other agencies, including exchanging of digitized resource data, precludes a duplication of effort from the federal sector and results in a great saving in federal mapping programs.

To date, USGS has completed about 13 percent of the base maps for the counties of the United States. This was under a 50/50 cost share agreement with SCS. We require a county format rather than a quadrangle format. Map coverage of an additional 25 percent of the country is available at appropriate scale for SCS use but will need reformatting from the $\frac{1}{2}^\circ$ by 1° quadrangle unit. The DOI, SCS, BLM, Fish and Wildlife Service, Forest Service, and some other Federal agencies and some States have contributed to this quadrangle effort in the past and it is anticipated they will continue in the future. The

impact of these contributions is that the cost of reformatting to a county format from the existing intermediate scale quadrangle maps is a lot less to us than if we had to start from scratch with the 1:24,000 materials. Commencing in fiscal year 1976 scs has entered into a 50/50 cost share agreement with cs on about 600 counties.

I am pleased to say this: cs production by the Mapping Centers is excellent. We had problems getting this program started but what's past is prologue. Of the 155 counties ordered in fiscal year 1978, only 27 remain to be delivered as of January 1, 1979. In fiscal year 1979 we ordered about 180 intermediate scale base maps from the Survey. The overall effort on these 180 maps is about 45 percent complete at this time and several have already been delivered. scs has programmed about \$1 million annually in this cost share effort.

In conclusion, the scs has the need for base maps of various scales for all its programs. With the increasing demand for com-

patibility of data bases, we require planimetrically accurate base maps of several scales displaying and digitizing thematic resource data for scs programs. In this manner our resource data are multipurpose and are compatible with other agencies' data bases. We consider the cs to be the federal mapping agency. We use all the base maps they provide. The scs and cs, with our cooperative programs for orthophotos, intermediate-scale base maps, and exchange of data on program coordination, have successfully carried out the intent of the omb Federal Mapping Task Force recommendations. scs is pleased with the cooperation and coordination with cs staff, National Headquarters, and the four Mapping Centers but we're most pleased at our ability to cuss, discuss, and resolve our mutual problems. We intend to continue this successful effort for many years to come. And finally, the Soil Conservation Service congratulates the Geological Survey on having achieved a century of progress in mapping.

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