

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

PROGRAM FOR TECHNICAL ASSISTANCE IN THE ANALYSIS OF LAND RESOURCES

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Jointly Funded Program Between the
U.S. Geological Survey and the
Ozarks Regional Commission

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U.S. Geological Survey
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Reston, Virginia
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PREFACE

This report has been prepared to document the goals and achievements of the U.S. Geological Survey's Program for Technical Assistance in the Analysis of Land Resources during the recently completed 2-year demonstration project.

The Program staff wishes to express its appreciation to the many State, sub-State, and local agency personnel who participated in the Program. These people contributed approximately 9,064 man-hours during the 2-year program as follows: providing user information needs during visits from the Program staff (1,000); attending workshops and seminars (3,120); and preparing for and completing 13 test and demonstration projects (4,944).

The Program staff also wishes to acknowledge the efforts and guidance which the Advisory Panel members (see Appendix A) provided during the Program. The Advisory Panel members devoted over 1,500 man-hours (this was in addition to the 9,064 man-hours reported above) attending quarterly meetings, distributing user questionnaires during the first year, arranging agency visits, and distributing and collecting test and demonstration project data. Without their help, the Program would not have been a success.

For their continued support and assistance, the Program staff wishes to thank the staff of the Ozarks Regional Commission.

This technical assistance study was accomplished through a grant from the Ozarks Regional Commission. The statements, findings, conclusions, recommendations, and other data in this report are solely those of the Grantee and do not necessarily reflect the views of the Ozarks Regional Commission.

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ABSTRACT

The Program for Technical Assistance in the Analysis of Land Resources was initiated in October 1978, for the Ozarks Regional Commission States to assist these States with the use of the U.S. Geological Survey land use and land cover and associated map products and other natural-resources data. This report details the work statement which was adopted for the program; the steps and actions taken to achieve the work statement elements; recommendations on the results of visits to State and sub-State agencies¹, and a listing of test and demonstration projects completed during the program.

THE PROGRAM

Established in October 1978, the Program for Technical Assistance in the Analysis of Land Resources was a 2-year demonstration program funded jointly by the Ozarks Regional Commission (ORC) and the U.S. Geological Survey (USGS). Working in concert with the agencies of the member States (Arkansas, Kansas, Louisiana, Missouri, and Oklahoma) of the ORC, the Program has provided technical assistance and training in the use of land use and land cover and associated maps and other natural-resources data as well as geographic data processing procedures available through USGS and other institutions.²

¹ Sub-State agencies refer to the existing multi-county regional planning commission agencies in each of the ORC States.

²The State of Texas became the sixth member State of the ORC in March 1980. However, since it became an ORC member late in the Program its participation was limited. Accordingly, when referring to the ORC States in the remainder of this report Texas will not be mentioned.

PROGRAM NEED

Since 1973, four of the five ORC States have obtained land use and land cover products through cooperative agreements with the USGS (Arkansas, Kansas, Louisiana, and Missouri). The cooperating States have made use of the maps, digital data, and computer programs in various ways. In some cases, primarily due to personnel attrition, the States have had difficulty in maintaining the operational use of the mapped data and computer programs. Those who have used the mapped data or computer programs have encountered problems and often have expressed a desire to more fully utilize the data and techniques available.

Following discussions between the ORC, USGS, and the member ORC States, the Advisory panel members felt that a program designed to provide technical assistance in the use of geographically oriented land resource and related data and to provide the USGS with information on the applicability of their products to "localized" resource planning and management problems was needed. Therefore, on October 1, 1978, the Program for Technical Assistance in the Analysis of Land Resources was established at the U.S. Geological Survey Center Building in Rolla, Missouri. The Program staff consisted of a physical scientist, a geographer/planner, a geographer/computer analyst, and a secretary.

PROGRAM GOALS

The primary goal of the Program was to work with Federal, State, sub-State, local agencies, and private concerns to provide the skills and knowledge necessary to become proficient in the use of the USGS land use and land cover and associated maps, other geographically oriented land resource data, related socio-economic data in graphic or digital form, and computer programs.

The strategies used to achieve the Program's goal included:

- Establish an advisory panel for the Program consisting of Commission, State, and Program members.
- Evaluate participating State agencies' land use and land cover information needs.
- Transfer Geography Program geographic information system software to the computer at Mid-Continent Mapping Center at Rolla, Missouri.
- Prepare curricula for workshops and other information transfer activities.
- Conduct workshops and training sessions.
- Develop test and demonstration projects.
- Conduct the test and demonstration projects.
- Provide technical consultation to users of the land use and land cover mapping information for on-going applications.
- Conduct briefings for public officials and for the general public.
- Prepare reports and information bulletins covering the various functions of the program.

The sections following document the specific Program achievements during the 2-year demonstration program.

STATE ADVISORY PANEL

One of the first tasks undertaken was the establishment of an Advisory Panel for the Program. The panel members were drawn from agencies involved in comprehensive management; geologic investigations and planning; conservation planning; economic development activities; and utilities planning. Although the individual panel membership had changed from that of the original membership, each State was represented by at least two members, the ORC was represented, and each member of the Program staff was also a member of the Advisory Panel. Appendix A lists the Advisory Panel membership as of September 30, 1980.

The Advisory Panel met on a quarterly basis to provide direction to the Program staff on how best to achieve program goals and to appraise recent activities. Their advice was vital to the success of the Program. The meetings were rotated among the ORC States to enable each State to host a meeting. The first meeting was held in Rolla, Missouri in December 1978. Meetings were subsequently held in New Orleans, Louisiana (March 1979), Lawrence, Kansas (June 1979), Hot Springs, Arkansas (September 1979), Oklahoma City, Oklahoma (December 1979), Jefferson City, Missouri (March 1980), and again in New Orleans (September 1980). In lieu of an Advisory Panel meeting in June 1980, the Advisory Panel members attended the Land Resources Data Applications Seminar in St. Louis, June 17 and 18, 1980.

STATE AGENCIES' LAND USE AND LAND COVER INFORMATION NEEDS

At the Advisory Panel's first meeting in Rolla, Missouri, the Advisory Panel members suggested that the most effective method for evaluating agency land resources information needs was for the Program staff to visit Federal, State, sub-State, and local agencies in their own offices.

Accordingly, the Program staff visited approximately 100 Federal, State, sub-State, and local agencies and over 180 land management and natural resource planners in the ORC States between January 16 and June 7, 1979. The majority of the meetings were held during the months of January through March with subsequent meetings to accommodate agencies that were unable to meet with the Program staff during the first series of meetings. The purpose of the meetings was to introduce the agencies to the Program for Technical Assistance and to obtain information necessary to identify desired resources information characteristics and the need for seminars and workshops. Each ORC State Advisory Panel contact (see Appendix A) sent letters to the agencies in their State that they thought would be interested in the Program. The letters were accompanied by a "Resources Information Questionnaire" and invited the agencies to designate a time for a followup meeting with Program staff personnel to discuss their graphic and digital land resources information needs. The State Advisory Panel contacts coordinated and arranged the followup meetings.

The results of the agency visits and the "Resources Information Questionnaires" were reported in the Program's first Annual Report to the ORC (October 1979). In summary, the analysis of the questionnaires

revealed that most of the Federal and State agencies completing the questionnaire collected data for large geographic areas (over 500 square miles) at the county or State level. Most of their data was produced for in house use in report format. Concerning data storage format, most of the data were stored in report format (25 percent) and maps (21 percent). Only 10 percent of the respondents maintained data in a computer-readable format. The analysis also revealed the types of functional agencies that were most receptive to either manual or computer-aided geographic data handling techniques. Three or more State agencies in the ORC region, in each of the functional areas identified below, expressed an interest in manual or computer-aided geographic data handling techniques.

- Statewide Planning Agencies
- Transportation Departments
- Universities
- Water Pollution and Control Agencies
- Soil and Water Conservation Commissions
- Water Resources Agencies
- State Geological Survey Agencies
- Fish and Game Commissions
- Parks and Recreation Departments
- Historic Preservation/Archeological Agencies
- Industrial/Economic Development Agencies

The number of agencies visited in each State and the number of persons contacted were as follows:

	<u>Agencies</u>	<u>Persons</u>
Arkansas	15	25
Kansas	28	54
Louisiana	20	45
Missouri	21	38
Oklahoma	12	18

As noted above, the results of the agency visits were reported in the first annual report to the ORC, which can be obtained upon written request to the Geographic Investigations Office.

From an analysis of the State reports, four major problem areas emerged in relation to acquiring and using data for land resources decisionmaking. The specific problems are numerous and vary in importance from State to State. In general, however, the following problem areas were identified:

1. There was inadequate communication among State agencies concerning the preparation, use or need for land resource management and planning data. The result was duplication of data collection, and, conversely, omissions in data collection.
2. There was a lack of established methodology for collecting land resource management and planning data and, as a consequence, there were problems in defining what data should be collected, how to collect it, and how to analyze the data once collected.

3. State agencies often lacked the necessary fiscal resources to purchase equipment and hire the personnel that would facilitate data collection and analysis. They also often lacked the expertise to utilize new equipment or techniques.
4. Efforts to systematize data collection and handling were frequently fragmented. While most agencies recognized the need for a coordinated and systematic approach to data collection and handling, most interagency efforts along these lines had never materialized or had failed. The reasons for this were numerous. However, the most frequent reason was the lack of a legislative basis for such efforts. Also, from a technical standpoint, it was easier to resolve the problems of a single agency with a specific focus than to resolve the problems of a group of agencies.

These major problem areas inhibited both the quality and flow of information for decisionmaking in land management and natural resources planning in the ORC States.

USER APPLICATIONS SOFTWARE

Originally, the Program staff felt that it would be necessary to transfer the Geographic Information Retrieval and Analysis System (GIRAS) software to the Mid-Continent Mapping Center in Rolla, Missouri. However, following the completion of the agency visits it was realized that the more appropriate short-term strategy would be to undertake the development of user applications programs. As of February 1, 1981, the following user applications software had been developed by the Program staff and utilized in the test and demonstration projects.

1. Software to process manually encoded data.
2. Software to efficiently "overlay" data for different attributes (e.g., soils and land use), allowing data to be added to existing data sets or to create composite data sets from individual computer files.
3. Software to create acreage summary records for use in generating statistical reports.
4. Software to create formatted output showing the cross-tabulation of three or more variables.
5. Software to manipulate the composite map data to identify such specific combinations of data such as land use and soils.
6. Software to generate a mask file which allows the overlay program to extract data from a file for radial search areas.
7. Software to utilize a color graphics display terminal for the production of map images following the retrieval, manipulation, and analysis of the data.
8. Software to link tabular data (e.g., soils characteristics) with mapped data.

In addition, the Program implemented the Information Management on a Grid Cell (IMGRID) system, available from Tennessee Valley Authority, for the Missouri Department of Conservation as a part of a test and demonstration project.

As a result of the Program, the Program staff believes the following software areas deserve future attention.

1. Refinement and better integration of current software.
2. Preparation of documentation for currently available software.
3. Development of an integrated software system based on the existing programs to provide the following capabilities:
 - a. functions for retrieval and analysis of areal data sets;
 - b. functions for interrelating point and line data with areal data sets;
 - c. functions for manipulating digital elevation data in conjunction with point, line, and areal data sets; and,
 - d. functions for interfacing the production of point and line data sets and elevation data from topographic maps provided by the National Mapping Division.

SEMINARS AND WORKSHOPS

As a result of the agency visits and a seminar/workshop questionnaire, the Program staff held three, 2 1/2-day seminar/workshops in Rolla, Missouri, during the summer of 1979. Attendance was limited to 20 registrants to provide individual instruction and, where possible, "hands-on" learning. The seminar/workshops held were: (1) Remote sensing (June 20-22, 1979); (2) Land use mapping (July 11-13, 1979); and (3) Geographic information systems (July 25-27, 1979).

During 1980 the Program staff hosted 30 separate workshops either at Rolla or in a local agency office. The majority (27) were held in conjunction with the test and demonstration projects outlined later in this report. The Program staff expended approximately 600 man-hours in providing this service.

Finally, the Program staff, in conjunction with the ORC, sponsored a 2-day Land Resources Data Applications Seminar in St. Louis, Missouri on June 17 and 18, 1980. Papers were presented by each of the first set of seven State and local agency test and demonstration project leaders outlining the results of their projects. This was followed by an overview of the six test and demonstration projects to be undertaken during the following 4 months.

The afternoon of the second day of the seminar consisted of reports from selected Federal agencies outlining their technical assistance activities and the availability of earth science information.

The seminar attendees heard very positive comments from Mrs. Pat Danner, Federal Cochairman of the ORC, and the ORC's Executive Director, Frank Iuen, on the success of the Program for Technical Assistance over the past 2 years and called on USGS to continue these activities. Rupert Southard, Jr., Chief, National Mapping Division, USGS, delivered a luncheon address in which he explained the reorganization of the Topographic Division, Geography Program, and Publications Division into the new National Mapping Division. In closing, he expressed an interest in continuing some of the activities of the Program for Technical Assistance within the new Geographic Investigations Office.³ The following month

³Effective October 1, 1980, the Program for Technical Assistance in the Analysis of Land Resources became the Geographic Investigations Office.

representatives from USGS and the Ozarks Regional Commission met to outline a cooperative agreement to continue the Program's activities. The thrust of the agreement appears in the summary at the end of this report.

TEST AND DEMONSTRATION PROJECTS

During FY 1980 and 1981 the Advisory Panel members selected 13 test and demonstration projects from among 28 proposals submitted from the State, sub-State, and local agencies in the ORC region. During its quarterly meeting in New Orleans in March 1979, the Advisory Panel defined a good test and demonstration project as one which "is applications oriented in the areas of resource management, land use planning, or other spatially-oriented problems and which could be used in an operational, cost-effective mode by the states in the Ozarks Region." The Advisory Panel members further stressed that successful applicants would have to contribute agency manpower to their projects, prepare a written final report, and present the results of their projects at the applications seminar.

Two sets of test and demonstration projects were completed. The first set of seven projects were selected for implementation at the Advisory Panel's quarterly meeting in Lawrence, Kansas, in June 1979.

The ORC mailed over 300 notices to agencies and organizations in the ORC States calling for test and demonstration project proposals to be submitted to their designated State Advisory Panel contact (see Appendix A). The notice outlined the submission procedures to be used and the characteristics of a test and demonstration project.

Following receipt of the test and demonstration project proposals, the State Advisory Panel contacts forwarded the proposals to the Program staff who made copies available to all Advisory Panel members. At the meeting in Lawrence, the State Advisory Panel contacts presented their proposals to the full Advisory Panel. Following the presentation and discussion, each of the five ORC States rated the projects from A to D as follows:

- A - Project, as submitted, failed to focus on an operational problem-solving technique. Program staff should provide technical assistance to applicant to further develop ideas and objectives.
- B - Requires technical assistance only.
- C - Project is too large for a test and demonstration project and should be considered for expanded test and demonstration efforts.
- D - Project should be undertaken as a test and demonstration project.

The ORC and the Program staff, also rated the proposals. After further discussions concerning projected workload on the Program staff, the Advisory Panel decided to accept the seven best rated proposals for implementation. The proposals selected at that meeting were:

Arkansas

Agency Contact: Mr. Richard Magee, Metroplan, A Council of Local Governments, 100 Main Street, Continental Building, Suite 509, Little Rock, Arkansas 72201, (501) 372-3300.

Title: "Evaluation of Nonpoint Source Pollution in the Saline River and Hurricane Creek, Saline County, Arkansas"

Kansas

Agency Contact: Mr. Kevin Carr, Kansas Department of Economic Development, 503 Kansas Avenue, 6th Floor, Topeka, Kansas 66603, (913) 296-3485.

Title: "Developing a Methodology for Identifying Potential Industrial Sites for Selected Counties in Kansas"

Agency Contact: Mr. Tim Sosinski, Division of Information and Research, Department of Water Pollution Control of Kansas City, Kansas, 701 North 7th Street, Kansas City, Kansas 66101, (913) 371-4375.

Title: "Development and Implementation of a Land Use Classification System for Kansas City, Kansas"

Louisiana

Agency Contact: Mr. Glen Daigne, Louisiana State Planning Office, P.O. Box 444426, Baton Rouge, Louisiana 70804, (504) 342-7410.

Title: "Automated Procedures for Manipulating Digital Soils Association Data"

Agency Contact: Ms. Virginia Van Sickle, Louisiana Geological Survey, P.O. Box G, Baton Rouge, Louisiana 70893, (504) 342-7460.

Title: "Development of a Data Base for Lignite Mining Impact Assessment in Northwest Louisiana"

Missouri

Agency Contact: Ms. Elizabeth Cook, Missouri Department of Conservation, P.O. Box 180, Jefferson City, Missouri 65102, (314) 751-4115.

Title: "Development and Applications of a Geographic Information System (GIS) for Missouri Conservation Lands: A Preliminary Investigation"

Oklahoma

Agency Contact: Mr. Jim Schuelein, Oklahoma Water Resources Board, 1000 Northeast 10th Street, 12th Floor, Oklahoma City, Oklahoma 73317, (405) 271-2555.

Title: "Development of a Methodology to Assist in the Monitoring of Discharges from Active Coal Mines in the Lightning Creek Watershed, Nowata and Craig Counties, Oklahoma"

The procedures for submitting and adopting the second set of test and demonstration projects were virtually identical to the first set. However, rather than using the "A to D" rating system, the Advisory Panel members were asked to rate the five highest projects in descending order. Therefore, at its quarterly Advisory Panel meeting in Jefferson City, Missouri in March 1980, the Advisory Panel considered 14 projects and, after appropriate discussions concerning projected workload on the Program staff, selected six test and demonstration proposals for implementation, as follows:

Arkansas

Agency Contact: Mr. Richard Magee, Metroplan, A Council of Local Governments, 100 Main Street, Continental Building, Suite 509, Little Rock, Arkansas 72201, (501) 372-3300.

Title: "Mapping and Analysis of Land Characteristics to Support Water Resources Planning for the National Urban Runoff Program of the Metroplan Council of Governments"

Louisiana

Agency Contact: Mr. Brad Spicer, Soil Conservation Service, USDA, 3737 Government Street, Alexandria, Louisiana 71301, (318) 473-7840.

Title: "Louisiana Level III Cropland and Pasture Delineation"

Agency Contact: Mr. Wally Belokon, Kistachie-Delta Regional Planning and Development District, Inc., P.O. Box 8076, Alexandria, Louisiana 71306, (318) 487-5454.

Title: "Development of a Process for Identifying Potential Port/Industrial Sites in a River Corridor: A Case Test and Demonstration Project of the Red River"

Missouri

Agency Contact: Mr. Ben Kjelshus, City Development Department
Department, 15th Floor, City Hall, Kansas City, Missouri
64106, (816) 274-1864.

Title: "Mapping of Land Characteristics to Support Solar Access
Mapping"

Agency Contact: Mr. Mike Lear, Jackson County Property
Assessor's Office, Jackson County Courthouse, 415 E. 12th
Street, Kansas City, Missouri 64106, (816) 881-3216.

Title: "Mapping and Computerized Analysis to Support Rural
Property Assessment in Jackson County, Missouri"

Oklahoma

Agency Contact: Mr. Richard Drass, Oklahoma Archeological
Survey, 1335 South Asp, Norman, Oklahoma 73019,
(405) 325-1028.

Title: "Development of a Mapping Overlay Technique for Identify-
ing Potential Archeological Sites in Eastern Oklahoma"

The State Advisory Panel contacts were notified of proposal selections and asked to notify their State applicants of the Advisory Panel's decisions. Proposals not selected for implementation were not dismissed, but were referred to the Program staff for some form of "limited" technical assistance.

The Program staff subsequently contacted each of these agencies to offer some assistance in lieu of undertaking a complete test and demonstration project.

The first phase in the implementation of the test and demonstration projects was the preparation of the work statement. Workshops were scheduled and the tasks, as assigned, were undertaken.

In almost every case it was learned that a task had to be modified as the work progressed. Most often this was due to the lack of some type of natural resources information or physical facilities data (e.g., sewer line or water line location). For example, the Kansas Department of Economic Development wanted to include a "depth to bedrock" overlay with their other map overlays. However, after checking with the Kansas Geological Survey and the USDA, Soil Conservation Service, it was determined that sufficient data did not exist to permit county-wide mapping of this parameter. Therefore, this overlay had to be dropped from preparation.

Following completion of map overlays, computer programs, or other items agreed to in the work statements, the State, sub-State, or local partner prepared a written report outlining the results of their project.

Interestingly, there was no exchange of funds among the participants. The applicants devoted manpower resources to their project, and the Program staff held workshops and provided "on-going" technical assistance and photolab support services and prepared user applications programs. The result, in all cases, was that the applicant acquired complete map overlays for which they were heavily involved in all development phases. Therefore, they could expand the methods and techniques to other geographic areas of their jurisdictions or to similar problem areas.

The results of the first set of test and demonstration project results were presented at the Land Resources Data Applications Seminar in St. Louis, Missouri, June 17 and 18, 1980. Due to the success of this seminar, the Geographic Investigations Office is considering another at which the second set of projects would be presented. Anyone wanting a copy of one of the final reports of a test and demonstration project should make their request directly to the initiating agency noted earlier.

TECHNICAL ASSISTANCE AND ADVICE

One of the most frequently used services provided by the Program staff was technical advice and assistance. During the first year of operation the Program staff maintained a log to document incoming requests. Over 50 requests were received during the first year. Not included among this number were routine requests for map products or other readily available materials or requests which required less than one-half hour to satisfy. (Such requests were turned over to National Cartographic and Information Center for appropriate action.) During the second year the Program staff maintained monthly reports on specialized technical assistance. Requests for assistance tripled over the first year averaging 12 requests per month.

BRIEFINGS

During the 2-year program the Program staff briefed over 200 Federal, State, and sub-State, and local agencies and over 500 people in these agencies. During the first year the Program staff visited over 100 agencies in their offices to discuss their land-resource data information needs.

During the second year the Program staff became more active in providing presentations to local chapters of professional organizations (such as the American Society of Photogrammetry and the American Congress on Surveying and Mapping); manning conference displays; and visiting agencies (upon request) which were not visited previously.

In an attempt to increase the ability to inform potential users of the Program's services, a 35-mm slide program was provided to each of the ORC States.

REPORTS/PROGRAM NEWSLETTER

The first year's activities were fully documented in FY 1979's annual report to the ORC. In addition to that report, the Program staff prepared Advisory Panel minutes for each of its quarterly meetings. These reports may be obtained upon written request to:

Geographic Investigations Office
Mid-Continent Mapping Center
U.S. Geological Survey
1400 Independence Road, MS 232
Rolla, Missouri 65401
(314) 341-0845
FTS 277-0845

As noted above, the Program staff, at the request of the Advisory Panel members, prepared a set of slides with text describing the U.S. Geological Survey's land use and land cover mapping program and the purpose, goals, and objectives of the Program for Technical Assistance in the Analysis of Land Resources. The slide show can be borrowed from the appropriate State Advisory Panel contact noted by an asterisk in Appendix A.

During the second year, three editions of a Program newsletter were prepared. Entitled "The Technical Assistance Grapevine," the newsletter promoted information exchange between ORC agencies involved in the analysis of land resources. In addition to sections prepared by the Program staff on recent and future activities, the newsletter contained a "Can You Help Me?" section which answered frequently posed user questions, and a "Reports from the States" section prepared by the State people reporting on current activities of interest to the ORC States. The newsletters were distributed to over 700 persons throughout the ORC States and the rest of the States in the Mid-Continent Mapping Center region.

SUMMARY

Significant progress was achieved toward the Program's goal to make Federal, State, sub-State, and local users of natural resources data more aware of the data's availability and more proficient in its use. The success of the Program can be attributed to (1) the use of innovative implementation techniques, and (2) the involvement and interest exhibited by Federal, State, and sub-State, and local personnel (approximately 10,500 man-hours).

The innovative implementation techniques, included: (1) the use of a multi-disciplinary Advisory Panel composed of Federal, State, sub-State, and local personnel to guide Program activities; (2) the completion of 13 test and demonstration projects without an exchange of funds; (3) the requirement that the applicant of a test and demonstration project commit manpower resources to the project; (4) the selection of test and demonstration projects that dealt with interstate natural resources problems; and (5) the selection of test and demonstration projects which were transferable to all of the ORC States.

As originally conceived, the ORC believed there was a definite need for a technical assistance program. Accordingly, they provided half of the funding to originate the program with the hope that the USGS would continue these efforts beyond the original 2-year demonstration project if it was determined that the program was successful.

Mr. Rupert B. Southard, Jr., Chief, National Mapping Division, USGS, in his luncheon address to the Land Resources Data Applications Seminar in St. Louis on June 17, 1980, expressed an interest in continuing some of the Program's activities and supported a proposal to reassign the Program staff to the Mid-Continent Mapping Center (MCMC) in Rolla, Missouri for that purpose. Accordingly, on October 19, 1980, the Program staff was reassigned to MCMC as the Geographic Investigations Office. In addition to the reassignment of the Program's staff to MCMC, Mr. Southard signed a cooperative agreement to continue the Program's activities for a 12-month period with the ORC serving in a coordinating role for the Ozarks Region during this period. Although the cooperative agreement requires no additional ORC funding, the overall objectives and rationale of the technical assistance program will be continued beyond the original program agreements through the cooperative efforts of the Commission and the USGS. Specifically, the cooperative agreement calls for the USGS to continue to acquaint State and sub-State resource management people with the capabilities and methodologies of the USGS and for the ORC to continue to provide the USGS with information on the applicability of USGS products to "localized" resource planning and management problems.

Although the Program staff worked with over 500 people in land management, urban and regional planning, and natural resources planning agencies, only a small portion of the Mid-Continent Mapping Center's Federal and non-Federal natural resources data users have been involved. Add to this fact that because of personnel attrition a number of people already trained by the Program staff will or already have accepted positions with other agencies or firms, and it becomes apparent that much work still lies ahead. Realizing this fact, the USGS has made a commitment to continue the Program's activities beyond the original 2-year demonstration project; not only for the ORC States, but for all 14 States in the Mid-Continent Mapping Center region.

APPENDIX A

Advisory Panel Members
to the
Program for Technical Assistance in
the Analysis of Land Resources

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