

WATER RESOURCES AND THE MISSISSIPPI COASTAL ZONE MANAGEMENT PROGRAM

by

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INTRODUCTION

The Coastal Zone Management Program had its formal beginning in October, 1972, with the passage of the Coastal Zone Management Act of 1972, Public Law 92-583. Actual implementation of the law was delayed about one year due to impoundment of funds. The Act contained many provisions two of which we would like to specifically address, Section 305 and Section 306.

Section 305 of the Act provides for annual federal planning grants to the state not to exceed three years. Thirty states and territories joined Mississippi in obtaining such grants during the past year. The objectives of these planning grants are to basically assess coastal resources, both natural and human, pinpoint and resolve use or resource conflicts in the coastal area, coordinate the various programs involving land and water uses directly or indirectly, and establish a system of allocating the land and water resources and uses of the coastal zone.

Section 306 provides for annual administrative grants to be issued to the states and territories to administer federally approved state programs, and address critical coastal zone research needs. It provides for a much higher level of funding compared to Section 305 for the states. Developing and adopting a program that will qualify a state for these funds is the goal of all coastal zone management programs.

A basic recurring thrust of the Coastal Zone Management Act is the federal interest in maintaining and improving the quality of the nation's waters. As an example, the "coastal zone" of a state is closely attuned and must be defined with the navigable waters of the nation and their tributaries. The water oriented thrust of the Act and the experience gained by the Mississippi Marine Resources Council staff in developing the first year coastal zone program form a good base for considering how water resources are being treated in coastal Mississippi and may provide guidance for statewide land use programs that may eventually come into existence.

COASTAL ZONE MANAGEMENT PLANNING NEEDS FOR WATER RESOURCES

The Mississippi Marine Resources Council in considering water resources in the Coastal Zone Management Plan, has been gathering all available data on the water resources of the Mississippi Gulf Coast. Three broad areas are being considered in the inventory: ground water, freshwater streams and lakes, and the saltwater environment. Where information has not been compiled, we have initiated contracts to fill the data gaps.

The completed water resources inventory is intended to furnish answers to some of the questions in the following areas:

Ground water

1. Aquifers

- a. areal extent
- b. quality of water
- c. quantity of water
- d. depth of aquifer
- e. susceptibility to saltwater intrusion, and pollution
- f. maximum potential for ground water yields
- g. principle recharge zones

2. Subsidence

Freshwater streams and lakes

1. Availability of surface water

- a. average annual flow
- b. minimum flow
- c. quality

2. Potential reservoir sites-size of reservoir storage required to provide sustained flows for downstream use

3. Methods available for protecting the watershed areas to ensure potable quality of surface water.

4. Areas susceptible to flooding

- a. 100 year flood
- b. standard project flood

5. Location of existing and projected sewer service

6. Effect of low water flow on the fisheries production in the estuarine systems

Saltwater environment

1. Quality

- a. chemical
- b. coliform counts
- c. suspended sediments
- d. nutrients

2. Areas of erosion and accretion

COASTAL WATER PROBLEMS AND EXISTING INFORMATION

The Marine waters, surface freshwater streams and lakes, and the ground water resources of coastal Mississippi and the previous documentary work on these resources form an interesting, revealing, and disconcerting picture when analyzed in terms of coastal zone management. The gulf coast since 1940 has experienced a phenomenal population growth and today is one of the fastest developing industrial areas in the state. This population growth is expected to continue and has been projected by the United States Office of Business Economics to be over 350,000 by the year 2000.

While growth has been deemed desirable it does create a number of associated problems which coastal zone management is intended to address. The effects of population growth and urbanization as noted by Jens and McPherson (1964) are listed below:

1. Increase in both total water use and per capita use.
2. Increasing development of new water supply sources that may require transportation over great distances.
3. Increasingly frequent conflicts wherein two or more types of water users seek the same supply.
4. Diminished streamflow as a result of diversions of water.
5. Declining water levels and pressure in ground water reservoirs. (Also causing pollution of ground water by leakage from sanitary sewers and possibly saltwater intrusion).
6. Increasing number of artificial recharge projects, for purposes of water supply and flood control.

7. Increase in amount of wastes disposed to streams and possible increase in pollution when wastes are inadequately treated.
8. Increased reuse of waste water in agriculture and industry.
9. Land subsidence.

Today pollution from industrial waste on the gulf coast is not a serious problem except at a few localized areas. However, if industrial plants are not located, designed and managed correctly they could adversely affect the tourist and fishing industries in the near future. Domestic waste discharges have caused problems in several areas of Mississippi Sound and adjacent waters.

There is no paucity with respect to the numbers of existing studies and plans concerning the water resources of Jackson, Hancock and Harrison counties and the means to develop these resources. The subject areas covered by these plans and studies ranged from detailed geological papers to economic development plans. A large number of agencies have been involved in developing these plans and a partial listing of the agencies are shown in Table 1.

We have found there is a general overlapping of the plans, and differences exist with respect to opinions and recommendations. In addition most plans were not regional in nature and did not consider both benefit/cost ratios and environmental considerations. We have found it difficult to make comparisons of the various plans because of the way the data are presented, differences in the age of the studies and the geographic areas covered. Probably the most striking fact noticed after reviewing the various water resources plans is the lack of implementation.

ANALYSIS

As the foregoing indicate, the informational needs of the Coastal Zone Management Program with respect to water resources are at this point extremely practical in nature. The inventory information needed is basic, but it has revealed several items of concern to us with respect to previous research activities within the state that should be considered now, in the early stages of coastal zone management and prior to statewide land use programs or other such comprehensive planning programs.

Our search for coastal water resource information has revealed a number of agencies and groups having an interest in these resources; yet for this general interest, the inventories of water resources are for the most part incomplete, inconclusive, or geographically limited in extent. A more disturbing situation to us in developing the state coastal program is that little in the way of interchange among interested groups appears to be taking place with respect to water resources research.

We have had an extremely difficult time in obtaining information, especially with respect to who is doing what, where. This is important to the coastal zone program for we cannot afford to duplicate work previously done on the same subject and especially with the very tight time frame that exists. It is distressing when considered with the Coastal Zone Management Program, but becomes even more serious when analyzed with respect to the fact that the coastal program is probably only a prototype for statewide land planning activities.

Considering the Coastal Zone Management Program with respect to information needs in the long-term situation leads us to several general conclusions:

1. Users of research information (management types) are not being contacted often enough with respect to their needs.
2. Without a continuing series of contacts with research groups the individuals in management positions will not be in a situation where they firmly know what their actual research needs are (Moseley, 1973).
3. The problem, if not corrected, may get worse for research and inventory funding is going to get tighter, it does not go as far as before, and actual needs are going to be increasing as defined through their relevance to management programs.

There are some good examples of research programs being designed with substantial input from coastal planners, such as the Corps of Engineers, Dredge Material Research Program which is now beginning to produce results that are of significant value to coastal planners.

The development of Mississippi's Coastal Zone Management Program to date has given us what we feel is some insight to use in developing our coastal management research programs. The experience we have gained is valuable because we started from scratch in late 1973 completely in the outside and have spent the ensuing period getting inside the research programs of the state.

With this in mind how will the Coastal Zone Management Program approach its research programs to avoid the problems we have experienced? This is hard to visualize, but a few things may be predicted with some assumptions. First, coastal zone management will probably continue to be practical in nature and its research will be extremely user oriented. In order to do this successfully, one specific thing must be done by the Mississippi Marine Resources Council--communicate. The coastal program must identify users of specific products and those in need of information. Specifically we intend to do the following things:

1. Make a thorough investigation to identify problems requiring research at all levels of management.

Comment: This will involve continuing contact with user

groups regarding their needs. Two way communication is extremely important. Other agencies having an interest should be identified and contacted. Also, a review of proposed research projects should be made with the appropriate agencies and groups to obtain their comments and suggestions. An important fact to keep in mind is that contact should be continual in nature, for needs change, and perceptions are modified. Timing is most critical in coastal management for a decision must often be made within what is usually construed as a short time frame by research standards. For example, a decision on a permit application under the Coastal Wetlands Protection Act must be made within a maximum of 90 days.

2. Keep those most interested in research area or project posted on latest developments in management program needs.

Comment: Benefits can be derived both ways, for something pressing in way of management decisions may be accommodated in ongoing research programs. As an example, work undertaken through a grant from the institute concerning dredged canals in coastal wetlands was expanded to address specific questions that had arisen through administration of the Coastal Wetlands Protection Act by the Mississippi Marine Resources Council. New research may be charted at this time and the findings may be of interest to both the management groups and the research communities. It has been distressing to us in coastal zone management that the majority of research results that may have application to our present management program (Coastal Wetlands Protection Act) have come to our attention via private avenues of communication (professional societies, etc.) and not through interagency means.

3. Disseminate information once work is completed.

Comment: It is important to get research work to those users of such work and to ask for ideas about other new users (Pritchard, 1974). The Coastal Zone Management Program will not solely rely on printed form, but will verbally solicit comments regarding the utility of products. Successes should be advertised and advice should be sought on further work that must be done.

4. Hold periodic reassessment meetings.

Comment: It appears most appropriate that the state coastal zone management entity should sponsor a meeting of those in research and those in management to pinpoint research needs, new groups, progress. Water resources is a large enough area where a start has been made with this type of meeting, but needs and issues should probably be more formally defined. These meetings should be total in nature and should always be trying to expand to get more people involved.

The Coastal Zone Management Program is just now emerging from the strictly inventory stage in terms of research to an analysis impact phase. The research phase of coastal zone management has been shielded up until now. It cannot remain so and must be brought out to obtain the needed inputs and to realize the benefits of the coastal zone programs. This paper is an attempt to start such an interchange of ideas. New types of information are being required everyday for management decisions. For example the following are illustrations of what the Coastal Zone Management Program is considering:

- A. Biological impacts in estuaries of freshwater diversion from coastal streams during low periods.
- B. Bioassay technique for Mississippi for critical life stage of typical marine organisms to test the impacts of waste water discharges.
- C. Upstream limit of tidal influence under ordinary conditions in coastal waters.
- D. Biological impacts of mosquito ditching programs in salt marshes.

With the inventory phase nearing initial completion, the coastal manager needs decision making tools of greater sophistication for the actual management program. The gap between management people and those in research must be bridged if coastal zone management is to be successful in Mississippi or any other state. There is plenty of work for us to do, but much could be wasted if we do not talk to each other.

Why is this important in terms of everyday programs? The Coastal Zone Management Program is the first nationwide program of its type. One of its objectives is that it will provide a common focal point for national and statewide research priorities and needs. By talking now, our end programs will be much more effective and better received with respect to all types of funding.

Table 1

AGENCIES CONCERNED WITH WATER RESOURCES ALONG THE MISSISSIPPI
GULF COAST

Federal

1. U. S. Army Corps of Engineers
2. U. S. Geological Survey
3. U. S. Department of Agriculture
4. U. S. Bureau of Land Management
5. U. S. Environmental Protection Agency
6. U. S. Department of Transportation
7. U. S. Department of Commerce
8. U. S. Park Service

State

1. Mississippi Marine Resources Council
2. Board of Water Commissioners
3. Mississippi State Board of Health
4. Mississippi Geological Survey Board
5. Mississippi Forestry Commission
6. Mississippi Air and Water Pollution Control Commission
7. Mississippi Marine Conservation Commission
8. Water Resources Research Institute
9. Gulf Coast Research Laboratory
10. Mississippi-Alabama Sea Grant Consortium
11. Agricultural and Industrial Board
12. Boat and Water Safety Commission
13. Mississippi Game and Fish Commission
14. Mississippi Park Commission
15. Mississippi Superport Coordinating Office
16. Mississippi Department of Agriculture and Commerce
17. Mississippi Office of Science and Technology

Regional and Local

1. Harrison County Development Commission
2. Jackson County Port Authority
3. Gulf Regional Planning Commission
4. Pat Harrison Waterway District
5. County Boards of Supervisors
6. Southern Mississippi Planning and Development District
7. Pearl River Basin Development Commission

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