APPENDIX B.
DATA AND INFORMATION MANAGEMENT STRATEGY

The objectives of the Data Management Strategy Subcommittee were to:

1. Identify the necessary requirements for a Data & Information Management System (DIMS) based upon a Program Inventory.

2. Compile a draft Feasibility Report for DIMS alternatives, evaluating currently existing systems as they relate to DIMS requirements and constraints imposed by historical data.

3. Choose and specify a DIMS for recommendation by the Management Committee and approval by the Policy Committee.

4. Screen data identified in the Program Inventory for relevance and quality assurance, and incorporate acceptable data and information into the DIMS.

To achieve these objectives the Subcommittee, with the cooperation of the Program Inventory Subcommittee, has:

1. Evaluated the ability of the existing Texas Natural Resources Information System (TNRIS) to function as the DIMS for GBNEP.

2. Compiled a list of potential users of the DIMS.

3. Distributed a questionnaire to identify sources of potentially useful data and determine the information needs of potential users of the DIMS.

4. Investigated the experience of other national estuary programs in developing a DIMS.

The Texas Natural Resources Information System has extensive experience serving as an interface for public access to agency numerical data and remote images and agency access to U.S. Geological Service maps. Not all data gathered by state agencies has been submitted to TNRIS. Expansion of the TNRIS system to serve as the GBNEP DIMS would require acquisition of a minicomputer and a contemporary database management system.

A preliminary list of approximately 100 users of the DIMS was circulated to all participants in the GBNEP to identify other potential users. An insignificant number of additional users resulted. Circulation of the user needs survey resulted in an approximately 40 percent return which indicated that nearly all users were interested in nearly all types of available information.

Each estuary program appears to have chosen a unique route to development of a DIMS. Several of the approaches have proven to be very expensive and none appear to be fully functional to date. The existing EPA Ocean Data Evaluation System (ODES) could serve as a DIMS but it appears to have a complex user interface and outmoded statistical analysis package.

Two central questions quickly developed:

1. Who would be the primary user of the DIMS?

2. How much existing historical data would be incorporated into the DIMS?

It was clear that the public demanded equal access to the DIMS along with anticipated users among agencies and the scientific community. The Citizens Advisory Steering Committee appointed a DIMS subcommittee to ensure that their perceived needs were accommodated. This dual-role presents conflicting needs because public access, although well justified, requires a user-friendly interface to the system. Sophisticated analytical tools, such as statistical packages and geographic information systems, are seldom user-friendly. To facilitate public access, a skilled database manager and analyst would have to be provided, but the Management Committee, the Policy Committee, and EPA were reluctant to fund a GBNEP staff position for a database manager/analyst. It would be possible to establish a contract position for this task but TNRIS, the logical contractor, is unaccustomed to providing service of this nature.

It is clear that a large quantity of historical data is available. How much of this information can be, and will be, utilized in the characterization of Galveston Bay is unknown. Data to be used will have to undergo a rigorous quality assurance and quality control procedure. It seems uneconomical, in terms of both time and money, to acquire and store all of the existing information in a centralized database system. It appears logical that only data which can be evaluated by a rigorous QA/QC procedure, be it historical or newly acquired data, should be incorporated into the DIMS.

The GBNEP staff will not conduct data analyses; no position of this nature has been created. The Scientific/Technical Advisory Committee is unlikely to conduct direct analyses; specific investigations that address priority problems will be contracted to highly qualified specialists. Contractors of this nature will have access to the necessary computer facilities and analytical

tools in order to qualify for the contract. It would be inappropriate to require these contractors to use computer and database management systems provided by the GBNEP. It will be highly appropriate that all contractors be required to provide all data files and analytical output in ODES format for retention by EPA and TNRIS archives.

Since neither GBNEP staff nor S/TAC members will be conducting analyses, and contractors should not be forced to use an unfamiliar computer and database management system, one question remains - who will use a DIMS? An adequate DIMS, comprising a mainframe or minicomputer with substantial magnetic tape or hard disk storage capacity, statistical analysis package, graphics software, and geographic information system (GIS), would cost hundreds of thousands of dollars and not be user-friendly. Therefore, it would not truly be accessible to members of the public. Highly skilled members of the public would likely have access to a microcomputer system and merely require access to data provided on a floppy or micro-floppy disk.

The Data Management Strategy and Program Inventory Subcommittees have concluded that a data management system comprised of the following components will serve the needs of the GBNEP and the public satisfactorily at this time:

1. GALVESTON BAY INFORMATION CENTER - A specific center, physically located at the Texas A&M University-Galveston library, will house a collection of published and unpublished reports and papers, maps, remotely-sensed images, and films/videos concerning Galveston Bay. Members of the public, government agencies, and the scientific community will be served as walk-in, inter-library loan, and telephone-link consumers.

2. GALVESTON BAY LITERATURE SURVEY - An electronic index of published and unpublished reports and papers will be assembled and maintained by the Texas A&M University-Galveston library. It will be accessible to walk-in consumers directly and to remote consumers by telephone linkage. Once assembled, the package will be exportable to other university, community college, and public libraries, thereby broadening accessibility to the user community.

3. GALVESTON BAY DATA INVENTORY - Existing data and information on Galveston Bay will be identified and described by the University of Texas Center for Water Research. The inventory will provide information on how a potential user can access the data but the data will not necessarily be gathered and provided to TNRIS for archive purposes. Data in danger in being lost, and discrete data sets no longer active, would be identified as needing to be added to a central archive. The inventory will be microcomputer searchable and be provided to the Information Center and other localities as needed.

4. COASTAL OCEAN MANAGEMENT, PLANNING, AND ASSESSMENT SYSTEM - NOAA's COMPAS microcomputer-based information system provides easy access to a wide range of coastal resource data and information. The information is provided in many different forms including data, maps, graphs, and hydrologic models. Installed on MacIntosh microcomputers with Hypercard software, the system is user-friendly and will provide the easiest access to Galveston Bay information available to the public. As a stand-alone system, COMPAS will be available at the Information Center, the GBNEP offices, and other locations depending on agency and library interest.

5. TEXAS NATURAL RESOURCE INFORMATION CENTER - Historical data assembled and subjected to QA/QC evaluation, and new data specifically collected, to address priority problems and bay characterization will be ODES-formatted by the contractors and provided to TNRIS for archival purposes. Transformation of data sets to a standard ODES format will facilitate future correlation analysis of independently gathered data.

6. OCEAN DATA EVALUATION SYSTEM - Incorporation of the data into the EPA ODES database will foster regional comparisons of estuarine condition and behavior. It will also permit GBNEP users access to the analytical tools unique to ODES. Submiss-ion of all new data or quality-evaluated data to ODES will permit easy telephone access to the data by users. By using ODES, the GBNEP will not have to create elaborate data stan-dardization, error-trapping, and "scrubbing" procedures which already exist in the ODES protocol.

7. MAP, AERIAL PHOTOGRAPH AND SATELLITE IMAGE INVENTORY - A microcomputer-searchable electronic geographic inventory of all maps, photos, and images of Galveston Bay in the TNRIS collection or elsewhere will facilitate the identification of existing images that document historical trends and character-ize macrophenomena observable from various elevations above the earth. [proposed]