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### III. FISCAL YEAR 1991 PROJECTS

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Projects planned for FY 1991 consist of both continuance of work begun earlier, and conception of new projects. These projects are briefly described below, with detailed technical descriptions available from the Program Office in the form of work scopes and work plans for each project.

#### Coastal Preserves

**Coastal Preserves Establishment.** Christmas Bay and Armand Bayou were designated as Texas Coastal Preserves in February, 1990. The Coastal Preserves effort was undertaken as a two-year Action Plan Demonstration Project under separate funding from the EPA Office of Marine and Estuarine Protection. All Coastal Preserves projects are funded under demonstration funds, except the Regulatory Evaluations. This project involves purchase and installation of monitoring instruments (tide gauges), surveys of boundaries, and placement of signs. Work is to be accomplished prior to September, 1990.

**Coastal Preserve Regulatory Evaluations.** A comprehensive summary of agency regulatory and other activities results from the Regulatory Surveys of Christmas Bay and Armand Bayou, an FY 1990 project. This next step evaluates current regulatory and management effectiveness with respect to strengths and weaknesses, gaps and overlaps in jurisdictions, degree of cooperation, and degree of resource protection. The work will result in changes to improve protection and enhancement of each environment, via the management plan for each area. This project is funded from the base funding grant, rather than demonstration project funds.

**Coastal Preserve Management Plans.** Efforts to draft management plans for Christmas Bay and Armand Bayou will be directed toward preservation and enhancement of water quality, habitat, and living resources. The Plans will be based on the Regulatory Survey and Environmental Inventory projects completed in FY 1990, and will be coordinated with the Regulatory Evaluation project, ongoing. This effort is seen as a pilot-scale opportunity to develop cooperation and consensus among the diverse environmental jurisdictions ultimately involved in implementing the plan, as a prelude to CCMP efforts in the entire estuary.

**Coastal Preserves Management Plan Implementation.** Implementation will address site-specific needs and problems related to water quality, habitat, and living resources. The approach will focus on resource use, including point and non-point wastewater discharges, fisheries, petroleum, and recreation.

**Coastal Preserves Public Participation.** The high degree of public interest in these two areas has already been encouraged by public meetings concurrent with designation of the Preserves. This effort will be continued in FY 1991 with public meetings planned early in the year when results of the Regulatory Survey and Environmental Inventory projects are available, and later to receive comments on the draft Management Plans.

## **Management Assessments**

**History of Galveston Bay Utilization.** The history of the estuary will be researched, focusing on human development of the bay, conservation and management history and resource utilization activities. The purpose of this project is to document the historical context of the Bay prior to recent decades emphasized in all other projects. Old fisheries data, photographs, and anecdotal evidence can reveal much about former estuary conditions; for example the presence of nineteenth century active bay fisheries for sea turtles, tarpon, snook, and hogfish now absent.

**Galveston Bay Regulatory Survey and Evaluation.** Following the Regulatory Survey and Regulatory Evaluation projects for Christmas Bay and Armand Bayou, this project will expand efforts to the entire estuary. Objectives are similar to these pilot studies, but the approach will account for problems identified. Existing regulatory and management activities will be identified and described, followed by a careful evaluation of the effectiveness of these current agency activities. This project will set the stage for identifying management alternatives for the CCMP in FY 1992 and FY 1993.

## **Scientific/Technical Projects**

**Galveston Bay Information Center.** The Information Center was initiated in FY 1990 at Jack K. Williams Library on the Galveston Texas A&M Campus. Work in FY 1990 has been primarily to compile a Galveston Bay Bibliography; work in FY 1991 will emphasize acquisition of a special collection of published and unpublished agency reports, journal articles, maps, films, videos, slide programs, and aerial photos. Establishment of the Information center, and opening the doors to the Galveston Bay user community, will occur in the coming year. Although the Center is funded as a Scientific/Technical Project, and will be an on-line source of information for resource managers in Austin, it is created for the entire Galveston Bay community, and is perceived by the public as the single most beneficial GBNEP project.

**Galveston Bay Ecosystem Conceptual Model.** This project will result in a diagrammatic representation of components of the Galveston Bay Ecosystem and the relationships among these components, as well as simple narrative descriptions of ecosystem structure and function. The Conceptual Model is a qualitative tool to help committee members and the public better evaluate the role and effectiveness of individual projects in contributing to the solution of Priority Problems at the ecosystem level. The Model is expected to help contribute to an integrated approach to characterization studies, but is not intended to be quantified as a simulation model. This project will be undertaken by a GBNEP task force with no expenditure of project monies.

**Trends and Status for Wetlands and Aquatic Habitats.** This study, begun in FY 1990, involves mapping of shoreline and submerged aquatic vegetation (seagrass) habitats based on aerial photo interpretation and field verification. The work includes digitizing of maps for a computer geographic information system. Comparisons are made with previous maps from 1956 and 1979 to determine trends; further investigations determine causes for major trends/losses of critical habitat types. FY 1991 work under this project will focus on digitizing the newest photos, combined with field investigations to characterize habitat to a level of detail corresponding to plant species associations. The project will require additional work in fiscal year 1992.

**Segmentation of Galveston Bay.** Characterization studies, eventual management activities under the CCMP, and design of an effective monitoring program all are served by segmentation (subdivision) of the estuary into smaller units. This project will determine a rationale for segmentation based on physico-chemical, hydrologic, biological, and geopolitical considerations in relation to estuarine management. Consideration will be given to cell geometry in current modelling efforts by the Texas Water Development Board, U.S. Army Corps of Engineers, and Texas A&M University. The project will determine an appropriate scale (segment size) to enable increased resolution compared current segmenting schemes. A primary benefit of segmentation will be for future monitoring of the Bay.

**Point Source Loading Characterization.** Estimates will be made for pollutant loadings to the estuary from major tributaries and permitted point source wastewater discharges. Parameters to be included are selected nutrients and toxic elements and compounds. The primary sources of information will be: 1. Texas Water Commission permit criteria, compliance monitoring data, permittee self-reporting data, and waste-load evaluation studies; 2. Texas Railroad Commission permit criteria and permittee self-reported data (for oilfield produced water discharges), along with existing data from special studies concerning average produced water constituent concentrations; and 3. Texas Water Commission and other available ambient monitoring data (for tributaries). Results of the study will constitute a cumulative loading study of permitted pollutant loading for the bay system.

**Non-Point Source Characterization.** The objective is to determine non-point source pollutant loadings to Galveston Bay from stormwater runoff, emphasizing urban runoff. The problem of non-point runoff is one of the greatest future challenges to effective management of Galveston Bay. Chesapeake Bay studies indicate Washington D.C. runoff alone contributes conservatively up to 5 million gallons of oil and grease per year to the Chesapeake, or, on the order of half the volume of the Exxon Valdez spill each year. The Houston urban area, being larger and more industrialized, may have a greater impact on its smaller estuary. Because the problem is massive and diffuse, simple solutions do not exist. The GBNEP will convene a Galveston Bay Non-Point Source Management Task Force under the oversight of the Management Committee to coordinate with state and federal non-point efforts. This Task Force will spearhead an effort to better define the problem and carry out actions as determined by findings.

**Ambient Water/Sediment Quality Characterization.** Objectives are to characterize the existing water and sediment quality in the Galveston Bay complex, and to identify trends based on a graphical and statistical time series treatment of existing data. Work will screen existing data sets and reports for applicability and reliability prior to analyses. Results will be compared to existing criteria, standards, and designated uses. Problem areas will be identified, and information gaps preventing effective appraisal of ambient water and sediment quality will be identified. Work will be coordinated with the point and non-point source loading investigations (above) to yield recommendations for future management under the CCMP, and future monitoring approaches that can measure water and sediment improvements.

**Living Resource Characterization.** The objective is to determine status and trends in populations of ecologically or economically significant organisms in Galveston Bay. Species will be chosen for which historical (i.e. fishery) data sets exist, or which are critical in the food web. Primary consideration is given to such species as penaeid shrimp, speckled trout, red drum, flounder, and blue crab. Secondary consideration is given to forage fish species, phytoplankton, birds, and benthic organisms. (Seagrasses, salt marsh species, and oysters are considered in other projects). Multivariate and time series analyses will be applied to data sets, with correlations sought between identified trends and possible controlling variables. Critical missing information will be identified for future work.

**Socioeconomics of Galveston Bay Utilization.** The socioeconomics of Galveston Bay utilization will be characterized, including recreational fishing, boating, shipping, wastewater receiving, commercial fishing, land values, oil and gas production, and others. Direct and indirect dollar estimates will be determined for activities based upon best available existing data. Resource values will be estimated for some specific uses, for example value of salt marsh productivity; value of trawl by-catch mortality; value of shellfish lost to harvest due to closures. A written summary will be produced.

## Coordination With Outside Projects

Several key concerns related to the Priority Problems List are not being initiated as separate projects for Fiscal Year 1991. These include freshwater inflow, estuary circulation/hydrodynamics, cumulative impacts from public development projects, dredge material/channalization impacts, and others.

Freshwater inflow and hydrodynamic circulation in Galveston Bay affect salinity dynamics, point and non-point source wastewater impacts, living resources and habitats, and shoreline erosion. Bay circulation and the mixing of fresh and salt water is the dynamic context for most processes and human influences of concern in Galveston Bay.

Freshwater inflow studies are not being initiated now due to an existing cooperative study by the Texas Water Development Board, Texas Water Commission, and Texas Parks and Wildlife Department. Mandated by the Texas Legislature, this study will produce a report within GBNEP time constraints that addresses the freshwater requirements of Galveston Bay and other Texas estuaries. The results of this study will directly apply to management concerns of the Management Conference related to inflow.

Circulation/hydrodynamic studies are not being specifically initiated now due to three circulation/hydrodynamic modelling efforts already well underway by the Texas Water Development Board, the U.S. Army Corps of Engineers, and Texas A&M University. Program coordination with these efforts is being sought. The Texas Water Development Board is closely involved with the GBNEP through membership on the STAC. The GBNEP is coordinating with the U.S. Army Corps through representation by both the Management Committee and STAC on the Interagency Coordination Team for Houston/Galveston Navigation Channels (ICT).

Cumulative impact and dredge material disposal investigations are also being addressed by state and federal agencies involved with design of impact studies for the proposed Houston/Galveston Ship Channel Project, through membership in the Corps Interagency Coordination Team.

Other project coordination is being undertaken to assure GBNEP characterization results reflect all outside studies with management implications. Specific studies on non-point source pollution will be coordinated with the Texas Water Commission and EPA; specific studies on the impact of oilfield produced water in the estuary will be coordinated with the Texas Water Commission and U.S. Fish and Wildlife Service. This coordination is designed to prevent duplication of efforts by the GBNEP. However, each of these concerns could result in specific work funded by GBNEP as information gaps are recognized which are not being addressed by outside projects.

## Public Participation

**Bayline Newsletter.** The GBNEP newsletter will continue to be produced on a quarterly basis. Bayline is produced by the staff, with articles contributed by a variety of organizations and individuals in the bay area. Bayline includes: Management Conference updates, NEP news, requests for public involvement, and information on specific issues that affect the estuary. Bayline will continue to utilize the "theme" approach of highlighting a relevant Bay topic in each issue.

**Publication Series.** The results of most GBNEP projects will be published in a special series and will be made available to conference members and the public. Publications will include technical and scientific reports, planning documents, membership directories, and results of GBNEP work.

**Youth Outreach.** The Education Subcommittee of the CASC will plan educational projects for students. These may include: 1. Water Education Teams (WETs) - GBNEP will sponsor groups of students as they complete a series of water quality tests in the Bay Area, and as they learn about mans' activities and impact on the local environment from a problem-solving perspective; 2. Calendar Contests - students will submit bay-related art work for selection for publications like calendars, posters, and coloring books; 3. Science Fairs - the GBNEP will sponsor special environmental categories and awards for bay-related projects.

**Video Presentations.** A ten to twelve minute video presentation will inform the public concerning the uniqueness of the Bay system; the importance of conserving the Bay; the need to become involved in the Bay's future; and the purpose of the GBNEP. Serving an educational purpose, the video will be used in classrooms to supplement the Speaker's Bureau program, as a resource for persons requesting information about the Bay and the Program. The video is also designed to be viewed with the Educational Display (below) at meetings and expositions.

**Video Public Service Announcement.** PSAs produced in FY 1990 will be followed up with one more in FY 1991. The aim is to reach the general public at its most general, least informed level. The specific topic for this PSA will be determined just prior to production to make use of Public Perception Survey results and needs recognized by the GBNEP.

**Portable Educational Display.** A display backboard and supplementary materials were acquired in FY 1990 for large audience education at various trade shows, festivals, and other exhibits. This project provides for display maintenance (to keep display information current), transportation, and exhibit fees.

**Speaker's Bureau.** Management Conference volunteers and program staff will continue to provide programs for interested organizations in the Houston/Galveston area using the Speaker's Bureau to fill requests for presentations. The Bureau will be coordinated from

the Program Office, with slide presentations, video materials, publications, and equipment made available to the volunteer speakers.

**Citizen's Monitoring Plan.** Citizens from the Bay area will have the opportunity to directly support Galveston Bay management through this plan. A Citizen's Monitoring Committee will be appointed to coordinate with the Texas Water Commission to begin volunteer citizen field monitoring of water quality and other estuary conditions. The data gathered will supplement the existing monitoring data collected by agencies, expanding the amount of information available to managers. Armand Bayou was selected as a pilot project for this effort. Citizen monitoring is seen as a significant component of community involvement in the welfare of the estuary, and this project will expand in future years.

**Public Meetings.** Galveston Bay Public Forum meetings will continue to support interaction between Program participants and the public. Comments received at these meetings will help direct all aspects of the Program.

**Bay Day.** This springtime event is the first of what is hoped to become an annual event for citizens in the Houston-Galveston area. Bay Day is seen a festival in celebration of the bay, as well as a means for highlighting the significance of the estuary and need for wise use. Plans call for a consultant at 50 percent time for twelve months, and will be supported by a Steering Committee, Social Committee, Finance Committee, and Volunteer Committee. A GBNEP staff member will commit 10 percent time to the event in the first year; ultimately the goal is for a growing, self-sufficient event management group.

**Public Information and Education (PIE) Fund.** Monies are to be set aside for innovative Bay-related projects proposed by individuals or groups outside the Management Conference. This project is similar to one successfully undertaken for Puget Sound. Goals are to draw on the creativity of the public, to heighten awareness of the estuary, and to translate public concerns into meaningful actions.

## **Administration**

Administrative activities carried out by the Program staff will continue as described for FY 1990.

Table 4.  
Project Status Table, Fiscal Year 1991

Project	Management Conference Purposes	Products	Date
Coastal Preserves:			
Nomination Packages	1-6	Slides, Maps	2/90
Establishment	1-6	Tide Gauges	8/90
Environmental Inventories	1-2	Reports	8/90
Regulatory Surveys	4-5	Reports	8/90
Regulatory Evaluations	4-5	Reports	12/90
Management Plans	4	Plans	8/91
Management Implementation	5		
Informational Video	4	Video	8/90
Public Participation	4		
Management Assessments			
History of Utilization	4	Report	8/91
Regulatory Survey/Eval.	4-5	Report	8/91
Scientific/Technical			
Data Base Inventory	2,4	Report, Database	8/90
Shoreline Survey	3	Report	8/90
Toxics/Aquatic Organisms	1-3	Report	8/90
Oyster Survey	1-3	Report, GIS	8/90
Information Center	4	Bibliog., Database	8/90
Wetland/Aquatic Habitat	1-2	Report, GIS	8/92
Segmentation	4-5	Report, Map	8/91
Point Source Loading	1-3	Report	8/91
Non-Point/Land Use	1-3	Report	8/91
Ambient Water/Sediment	1-3	Report	8/91
Living Resources	1-2	Report	8/91
Socioeconomics	1,4	Report	8/91
Public Participation *			
Public Perception Survey	4	Survey	8/90
Consensus Building	4	Report	8/90
Bayline Newsletter	4		
Publication Series	4		
Youth Outreach	4	Calendar	8/90
Video Presentations	4	Videos	8/90
Video PSA	4	Videos	8/90
Portable Display	4	Display	6/90
Speaker's Bureau	4		
Citizen Monitoring	4	Plan	7/90
Public Meetings	4		
Bay Day	4		
PIE Fund	4		

\* OMEP Guidance Item 4 also provides for Public Participation

Table 4 (Cont.).  
Project Status Table, Fiscal Year 1991

Project	Cost (K)*		Responsible Organization
	1990	1991	
<b>Coastal Preserves:</b>			
Nomination Packages	15		Bureau of Econ. Geology
Establishment	23.7	27.5	General Land Office
Environmental Inventories	28		Galveston Bay Foundation
Regulatory Surveys	22		Houston-Galveston Council
Regulatory Evaluations	22		Houston-Galveston Council
Management Plans	5	30	Texas Parks and Wildlife
Management Implementation		35.7	Texas Parks and Wildlife
Informational Video	10		Seagrant
Public Participation	1	1.4	Program Office
<b>Management Assessments</b>			
History of Utilization		15	Not Awarded
Regulatory Survey/Evaluation		60	Not Awarded
<b>Scientific/Technical</b>			
Data Base Inventory	57.5		University of Texas-Austin
Shoreline Survey	30		Texas A & M, GERG
Toxics/Aquatic Organisms	140		Texas A & M, GERG
Oyster Survey	80		Not Awarded
Information Center	135	100	Texas A & M at Galveston
Wetland/Aquatic Habitat	40	151	Bureau of Econ. Geology
Segmentation		25	Not Awarded
Point Source Loading		60	Not Awarded
Non-Point/Land Use		125	Not Awarded
Ambient Water/Sediment		100	Not Awarded
Living Resources		125	Not Awarded
Socioeconomics		50	Not Awarded
<b>Public Participation</b>			
Public Perception Survey	15		U. of Houston-Clear Lake
Consensus Building	5.4		U. of Houston-Clear Lake
Bayline Newsletter	8	10	Program Office
Publication Series		54.8	Program Office
Youth Outreach	3	25	Not Awarded (91)
Video Presentations	25.7	12	U. of Hou; 91 Not Awarded
Video PSA	7.5	7.5	Texas Water Commission
Portable Display	1.5	2	Texas Water Commission
Speaker's Bureau	3	2	Program Office
Citizen Monitoring	25	25	Texas Water Commission
Public Meetings	8.5	15	Program Office
Bay Day	4.5	25	Galveston Bay Foundation
PIE Fund	37		Not Awarded

\* All project funds derive from EPA monies matched by Texas general revenue.