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Top 10 Lessons in Watershed Management

Adapted with permission from EPA's Coastlines newsletter, Autumn 1997 (Issue 7.4).

For the past 10 years, the U.S. Environmental Protection Agency (EPA) has overseen the development, operation, and implementation of the National Estuary Program (NEP). And, for about the past 6 years, EPA has been working in partnership with many other groups across the nation to help implement what has been defined as the "watershed approach."

This approach addresses the big picture—the area that drains to a lake or other body of water. It involves working with those who live, recreate, and work within the watershed to solve the major problems of the waterbody. The watershed approach has been embraced by the 28 estuaries that have been incorporated into the NEP and by more than a thousand watershed partnerships that are now listed in the "Know Your Watershed" national database.

Realizing that the people involved in these programs have a lot to share, the EPA recently convened an advisory group consisting of 20 key partners (e.g., River Network, Know Your Watershed, Center for Watershed Protection), who proceeded to brainstorm a list of the top 10 lessons they have learned during their efforts. That preliminary list was circu-

lated and improved with the insights of approximately 100 other watershed practitioners across the country who offered their experiences to help illustrate each lesson.

A major aspect of each local NEP is the development of a Comprehensive Conservation and Management Plan (CCMP), which defines the problems within an estuary, outlines actions necessary to address those problems, and speci-

fies how the plan will be implemented. Many of the estuary programs, like Galveston Bay, have completed CCMPs and are into the implementation phase. NEPs across the nation have comparable experiences, and they benefit from sharing lessons learned. For a free copy of the full report on the Top 10 Lessons Learned, please call 1-800-490-9198 and ask for EPA publication 840-F-97-001. It's also on the Web at www.epa.gov/owow/lessons. ●

The top 10 lessons are as follows:

- 1 The best plans have clear visions, goals, and action items.
- 2 Good leaders are committed and empower others.
- 3 Having a coordinator at the watershed level is desirable.
- 4 Environmental, economic, and social values are compatible.
- 5 Plans only succeed if implemented.
- 6 Partnerships equal power.
- 7 Good tools are available.
- 8 Measure, communicate, and account for progress.
- 9 Education and involvement drive action.
- 10 Build on small successes.

The Galveston Bay Estuary Program and *The Galveston Bay Plan*

The Galveston Bay Estuary Program (GBEP) is a partnership of bay stakeholders currently working to implement *The Galveston Bay Plan*—a Comprehensive Conservation and Management Plan (CCMP) for the Galveston Bay ecosystem. *The Plan* was developed from 1990–1995 as a blueprint for revitalizing and protecting the estuary. As part of the National Estuary Program (NEP), the CCMP was developed by building consensus among citizens, industry, business, development, academia, and government.

NEPs were established by Congress through the Clean Water Act of 1987. Galveston Bay is one of 28 estuaries included in the program. The overall mission of the NEP is to protect and restore the health of estuaries while supporting economic and recreational activities.

State funding for the program is now being provided by an agreement between the Texas Natural Resource Conservation Commission and the Texas General Land Office, as directed by the Texas Legislature. At this time, the U.S. Environmental Protection Agency (EPA) still provides funds for demonstration project work. The GBEP is not a regulatory program. ©

PROGRAM DIRECTOR'S REPORT

Partnerships Promote Progress

Congratulations to all those involved with implementing *The Galveston Bay Plan* and to those participating in the Galveston Bay Estuary Program. The GBEP recently underwent a biennial review by EPA headquarters in Washington, D.C. EPA established the biennial review process in order to allocate its limited funding for demonstration projects. Based on results of the review, the GBEP will receive project funding for an additional two years.

According to reviewers, the process was very valuable for highlighting the program's progress and effectiveness, as well as for providing information to share among estuary programs. The ability to use and encourage partnerships among agencies, industries, and citizens to enhance Bay preservation was highlighted as the GBEP's strongest area. The GBEP is part of a nationwide movement to build on local consensus and seek voluntary partnerships. Partners under *The Plan* are working together to create habitat, reduce nonpoint source pollution, protect wildlife, and educate people about Bay conservation.

The participants who worked to develop *The Plan* envisioned partnering as an important aspect of implementation. Clearly, they were right, since the most successful projects of the GBEP now involve partnerships in project development, implementation, and monitoring as you will note in the project highlights covered on the following pages.

Marilyn D. Browning

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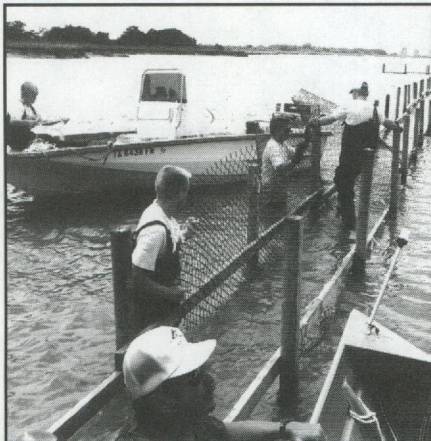
Natural Resource Uses

The Natural Resource Uses Section of *The Plan* deals with issues of habitat and species protection, freshwater inflow, spills and dumping, and shoreline management. The primary goal of this section is to maintain and restore the critical habitats of the Galveston Bay ecosystem. Ensuring fair public use of Bay resources while, at the same time, protecting the habitats critical to a healthy ecosystem, is a complex task.

Project: Combined Restoration of Reef and Wetland.

Sampling from January 1998 indicates a very successful start for a GBEP project to restore critical habitat. Like many sites in the Bay system, an area of shoreline in Dickinson Bay has suffered severe erosion due to wave action and subsidence. A site was chosen in the area for habitat restoration that combines oyster reef creation, marsh restoration, and shoreline stabilization.

Recycled oyster shell from Hillman's Seafood Co. was placed in a constructed "oyster fence" that is approximately 1,600 feet long. The fence keeps the oyster in one location until the reef becomes consolidated from new oyster growth. Shoreward of the reef, cordgrass was planted to restore wetland habitat for wildlife. The



Fencing to hold oyster shell was built to keep the shell in place as it consolidates to form a new reef.

most recent survey indicated that the reef had 80 percent new oyster cover. In addition, sediments appeared to be settling shoreward of the fence, which will aid in the development of more cordgrass cover.

If successful, the reef will provide habitat and reduce the energy of incoming waves, which will in turn reduce erosion along the shore. Contracted to the Natural Resources Conservation Service (NRCS), the innovative project techniques developed here will have bay-wide application to enhance bay resources.

Project: Agencies and Industry Partner to Increase Habitat.

Dredge material from Houston Lighting and Power's (HL&P's) Webster intake canal, located downstream of Highway 3, will provide the submerged soil necessary to create a new marsh along Clear Creek. Members of the GBEP's Natural Resource Uses Subcommittee are providing technical input, and EPA grant funds are going to the Natural Resource Conservation Service for project coordination.

Dredge materials in a water slurry were pumped into a containment area created by a large levee. The dredged sediments are being allowed to dewater (settle), building up the level of the land to a point where wetland plants can grow.

After a period of months, the dredged materials will be compacted, and then marsh grass seeds (provided from the HL&P mariculture lab) will be planted. HL&P's local match is valued at \$50,000. Information gathered from this project will

show new ways of using dredge material for habitat restoration and enhancement in the Galveston Bay system. Corporations can do great things to improve the bay and to help implement *The Plan*.

Project: Community-based Wetland Protection. Wetlands have value, both economic and environmental, and this project is designed to increase community awareness of these values. Wetlands function as habitat for wildlife, filters for pollutants in runoff, and buffers for shoreline. In the Dickinson Bayou area, involved citizens are finding opportunities for wetland protection. Galveston County Master Gardener volunteers have planted two wetland sites in the project area. Employee, civic, and conservation groups have attended educational programs, and workshops are scheduled for teachers, students, Realtors, and local governments. The Sea Grant College Program is the contractor.

Project: Improving Shoreline Management Planning. Continued near-shore development contributes to shoreline erosion, loss of wetlands, increased point and nonpoint source pollution, and reduced public access to the shore. Along Galveston Bay, many regulatory and governmental entities engage in shoreline management activities related to economic and energy development, facility siting, and shoreline access. The main hindrance to effective management of shoreline resources is the fact that no comprehensive system is in place to guide the local planning and decision-making that affect the Bay.

The city of Dickinson, located on Dickinson Bayou, is taking part in this demonstration project to improve local

see "Natural" on next page

shoreline management planning. This project will produce a plan that will serve as a model for other municipalities around Galveston Bay. The project is contracted to the Houston-Galveston Area Council (H-GAC).

Project: West Bay Seagrass Restoration. A contract with the National Marine Fisheries Services (NMFS) allows for the planting of shoal grass (*Halodule wrightii*) in West Galveston Bay. The objective is to compare survival and growth of the seagrass with different grass bed designs, seagrass donor sources, location of seagrass beds, and planting month. A total of 27,648 seagrass plants will be transplanted during late spring and summer of 1998. NMFS will be seeking volunteers to assist in the transplanting process.

Water and Sediment Quality

The Water and Sediment Quality Section addresses storm water management, septic systems, pollution prevention, and wastewater treatment—all priority issues of *The Plan*. Particular attention is given to matters associated with nonpoint source pollution because it is the number one water quality problem in the Galveston Bay area. The GBEP provides a forum for sharing information and coordinating activities through an active Water and Sediment Quality Subcommittee and project task forces.

Nonpoint Source Pollution

One of the most difficult areas of environmental management is control of nonpoint source pollution. This is the

pollution leached from thousands of residential yards, filling stations, septic tanks, driveways, parking lots, industries, farms, and other sites of everyday human activity. Residential gardening and lawn care, car washing, storm sewer dumping, dockside activities, construction practices, and agricultural runoff can all introduce potentially harmful contaminants to Galveston Bay.

Water samples show the presence of toxicants, sediment, bacteria, and nutrients in runoff water from both urban and rural areas. In Galveston Bay, the loss of wetland areas has further reduced the ability of runoff water to cleanse itself naturally as it proceeds to the Bay. Outlined below are two projects currently funded by the GBEP that implement nonpoint source pollution prevention actions found in *The Plan*.

Project: Inspection and Information for Problem Septic Systems.

This GBEP project—contracted to the Galveston County Health District (GCHD), Consumer and Environmental Health Department—provides (1) voluntary inspections of septic systems and (2) information to help owners of problem systems. To date, the project has involved several clusters of homes in the Dickinson Bayou watershed. More than half of the septic systems surveyed were identified as failing.

A model education program was developed to provide septic systems owners with information on proper care and preventive maintenance. This program provided local residents a record folder, a septic system quiz, a brochure outlining

why septic systems fail and the related health concerns, and a leaflet outlining alternative household cleaning solutions. Community meetings were held to discuss project results, to explain options available to owners, and to receive their feedback as a part of this local effort. Residents with septic problems are genuinely concerned about the water quality in their local bayous and the potential health risks posed by failing septic systems.

Project: Pollution Prevention Advice for Small Businesses. The goal of this project is to reduce pollution that can be carried from small business sites (like machine shops, automobile service bays, and marinas) to the Bay during a storm. The GBEP contracted with the Galveston County Health District, Pollution Control Department, to provide

on-site environmental assessments for small businesses to identify areas of operation contributing nonpoint source pollution. The business receives a pollution prevention report, detailing modifications that can be made to reduce pollution at its source. To date, 70 percent of the

recommended modifications have been made, revealing the high potential for success working with small business owners Bay-wide.

Point Source Pollution

Unlike the nonpoint sources of pollution described above, *point sources* come from a single pipe or discharge point. For the past 30 years, point source pollution from large municipal and industrial facili-



Information is shared with Dickinson Bayou residents experiencing septic system problems.

ties has been closely regulated under federal and state water pollution control laws. However, some point sources are ongoing pollution problems, such as sewage by-passes and overflows, illegal storm sewer connections, and poorly operating small wastewater treatment plants.

Project: Advising Small Wastewater Treatment Plant Operators.



This in-ground sewage treatment plant, which can serve about 50 homes, was one of the more interesting facilities sampled during the project.

Numerous small “package plants” provide wastewater treatment services to some of the urban and suburban areas of the watershed. Many of these plants function improperly because they do not receive the necessary maintenance. To address this pollution problem, the GBEP contracted with the Harris County Pollution Control Department (HCPCD) to conduct a demonstration project that provides technical assistance to operators experiencing problems with their treatment plants. A product of the project, a technical assistance pamphlet that includes recommendations for process control and names to contact for assistance, will be a handy tool for operators.

As part of this project, effluent monitoring samples were collected from 28 small wastewater treatment plants (<1MGD) located within the White Oak Bayou watershed. The major problem observed was improper management of solids, which led to violations of standards for both total suspended solid and ammonia. The project also evaluated current compliance monitoring programs, including those of the U.S. EPA, TNRCC, city of Houston, HCPCD, and GCHD. This project helps coordinate efforts among these units of government to improve the effectiveness of compliance monitoring and enforcement in the Galveston Bay watershed.

As a continuation to the findings in this project, the GBEP is contracting with the Gulf Coast Waste Disposal Authority (GCWDA) to conduct a project that demonstrates regionalized sludge management as a way to improve compliance/monitoring and to increase operational efficiency of small wastewater treatment plants.

Monitoring and Research

The Monitoring and Research Section is working to develop the Galveston Bay Regional Data and Information Management System, to continue to improve the GBEP Web site, to create a Geographic Information System (GIS) clearinghouse for Bay monitoring data, to direct the State of the Bay symposium, and to seek funding for Bay research.

Project: Galveston Bay Geographic Information System (GIS).

This project addresses a current problem of the Regional Monitoring Program—results from different monitoring programs, carried out by different agencies, are not easy to compile for ecosystem analyses. Agencies maintain different databases and report formats, acquisition of data can be time-consuming, and no centralized data management system is currently available to report on overall trends.

As a first step in managing this situation, the GBEP has contracted with the Houston-Galveston Area Council to develop a Data and Information Management System (DIMS) for Galveston Bay. Long-term, the goal is to develop a centralized Geographic Information System (GIS) Clearinghouse, which will provide public access to all Galveston Bay monitoring data and will ensure the long-term integrity, storage, and accessibility of data collected by the Galveston Bay Regional Monitoring Program.

Project: Public Access to Galveston Bay Data and Information.

As *The Plan* is implemented, the public must have access to data and information in an understandable format. This project builds upon the work of the Galveston Bay Information Center (GBIC), located at Texas A&M at Galveston and funded at its inception (and currently) by the GBEP.

The GBIC has worked to serve the data and information needs of the Galveston Bay community for many years. The GBIC provides specialized research services, archival access, a special Bay Bibliography, and much more. This project provides timely access to current and historical data and information for on-site and remote users, using the Internet. The GBEP Web site (<http://gbep.tamug.tamu.edu>) contains links to the GBIC and to other information mentioned above. ●

Survey Reveals Attitudes on Environment in Bay Area vs. Statewide

Based on findings from the 1996 Texas Environmental Survey conducted by Stephen L. Klineberg, Department of Sociology, Rice University

The Department of Sociology at Rice University, working with Telesurveys Research Association of Texas, has conducted a statewide scientific survey of environmental concerns every two years since 1990. A representative sample of 1,001 Texans from across the state participated in the basic survey conducted in Spanish or English in November and December 1996. The interviews, lasting an average of more than 18 minutes, focused on a variety of questions relating both to environmental concerns and to political issues.

Background of the Survey

Approach. The survey measures the extent of environmental concern by asking respondents to

- evaluate the seriousness of pollution at the local, state, and global levels;
- choose explicitly between protecting the environment and other important considerations, such as enhancing jobs and economic growth or reducing taxes and the size of government; and
- indicate their own participation in a variety of pro-environmental activities.

By repeating most of the questions from the surveys conducted in 1990, 1992, and 1994, the 1996 survey provided a uniquely revealing analysis of the way the views of Texans have been changing on these consequential issues.

Supporting Organizations. The most recent statewide survey was supported by the Southwestern Bell Founda-

tion and Rice University's Energy and Environmental Systems Institute. The Galveston Bay Estuary Program and Galveston County Health District made it possible to expand the survey with additional "oversample" interviews with Bay area residents.

Participation by the Galveston Bay Estuary Program (GBEP). The GBEP contributed funds in 1996 to the Texas Environmental Survey to increase the number of citizens surveyed in the Galveston Bay area (counties of Brazoria, Chambers, Galveston, Harris, and Liberty) and to add questions addressing high-priority issues for our area. By supporting this established survey, the GBEP benefited from the data gathered in past surveys as well as from comparisons between residents of the Galveston Bay area and the state as a whole.

Survey results provide perspective on how the public views environmental issues. This kind of information can be very helpful to the staff of the GBEP, the Galveston Bay Council, its subcommittees, and the many project task force members who are working to implement *The Galveston Bay Plan*. They use the information to set priorities and determine the scope of various projects and program activities.

Findings from the Bay Area

Mistaken Impressions about Bay Quality. While most measures of water quality in Galveston Bay have found it to be getting better over the past decade, less than one-fifth of those living closest to the

Bay recognize the improvement. By 30 percent to just 18 percent, the respondents were much more likely to believe that pollution in Galveston Bay is getting worse rather than better; another 33 percent thought it had stayed about the same.

Education Needed on Nonpoint Pollution, Seafood Safety. The data clearly point to the potential importance of public education in helping community residents come to a more accurate understanding of the nature and causes of pollution. The improvements that have occurred in the quality of Galveston Bay in recent years have resulted primarily from control over "point sources" of pollution. The most serious pollution problems that remain to be addressed come from "nonpoint sources."

Nevertheless, by 61 to 24 percent, Bay area residents overwhelmingly believe that pollution in the Bay is mainly caused by point sources (such as industrial and municipal discharges) rather than by nonpoint sources in the combined effects of individual behaviors (such as runoff from private land use, city storm drains, pollution from cars, litter, and lawn-care products).

People clearly underestimate the role of nonpoint sources in contributing to the pollution of Galveston Bay. Through public education, we can address this issue and work with the community to reduce the pollution that currently results from the everyday activities of thousands of individuals.

Education is also needed in the Galveston Bay area to help people form an accurate answer to the question, "Are the fish safe to eat?" In the survey, a plurality of 45 percent of Bay area residents

were convinced that the fish, oysters, and shrimp from the Bay are safe to eat. But more than one-third (38 percent) thought Bay seafood was unsafe.

This survey finding sheds new light on the need for development of a Seafood Consumption Safety Program in Galveston Bay, a current project of the GBEP with the Texas Department of Health. In actuality, blanket generalizations (in either direction) about seafood from the Bay cannot serve as a reliable basis for deciding whether a particular kind of seafood from a particular location is safe to eat at a given time. Instead, what's needed is widespread, frequent sampling of seafood quality, and an accurate and timely method of communicating results to the public.

Local Support for Initiatives. The surveys indicate that Bay area residents are generally in favor of new community initiatives to control pollution.

- They were more likely than other Texans (by 66 percent, compared to 58 percent statewide) to agree that "there should be stricter limits on new housing built in the wetlands or beachfront areas of Texas."

- By 58 to 32 percent, local residents were decisively in favor of "spending more public funds to buy additional land surrounding Galveston Bay in order to set aside more protected areas as nature preserves or parks."

- A strong majority of 73 percent were in favor of paying an additional 25¢ on their monthly water bill, for new storm sewers to prevent polluted runoff from spilling into local waterways.

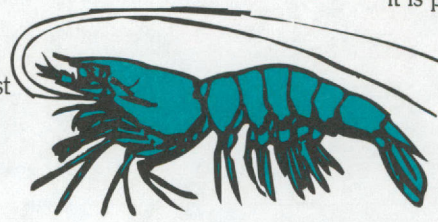
Comparison with Statewide Attitudes. Respondents from the Bay area counties evidenced far more concern about the local environment than others in the state (see the accompanying graph).

- Respondents from the five counties were significantly more likely than others in the state to assert that air

pollution (35 percent), water pollution (28 percent), the management of hazardous wastes (25 percent), and exposure to dangerous substances (24 percent) are "very serious" problems in their communities.

- the comparable proportions for the rest of the state were 18 percent (air pollution), 22 percent (water pollution), 16 percent (hazardous wastes), and 14 percent (dangerous substances).

- The Galveston Bay respondents were also more likely (by 53 percent, to 47 percent in the rest of Texas) to advocate additional spending on the environment.



of the Bay region are more environmentally sensitive than other Texans not because of who they are but because of where they live and what they do. If they are more concerned about water pollution, it is primarily because they

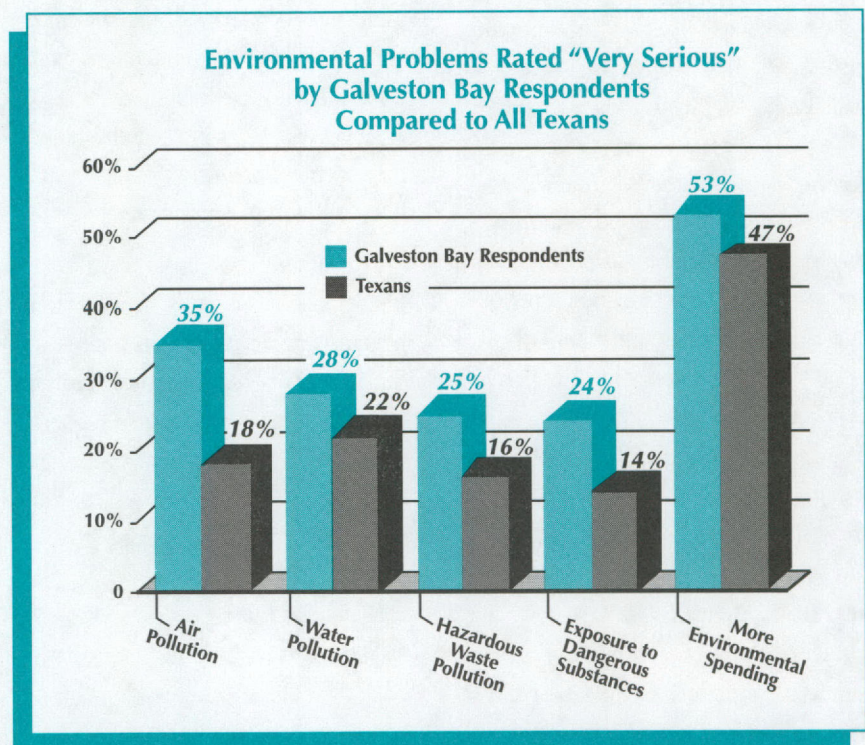
live near the Bay and because of the importance of the Bay for the local economy. The survey also showed that respondents who lived in a ZIP code that borders on the Bay expressed higher levels of concern about local pollution than did those from the same counties who lived farther away.

Not surprisingly, the respondents who lived nearer to Galveston Bay were more likely to report that they had often visited the Bay and gone boating or fishing in the past year. They were more likely to believe that pollution in the Bay had improved in the past decade and that its seafood was safe to eat. Even though they more often

Analysis: Differing Levels of Concern and Activity

Location is Key to Concern. It is evident from the survey that the residents

see "Survey" on page 9



Partners Announcements

Habitat Conservation Blueprint (HCB)

This spring the Galveston Bay Foundation (GBF) will host a series of public meetings at various locations around the Bay to present the Habitat Conservation Blueprint (HCB). The HCB is an inventory

of approximately 200 sites in the Bay area with conservation and/or restoration needs and site-specific strategies to address these needs.

Bay-area residents who attend the meetings will help determine which site strategies have the most public interest and support. The next stage of the project will match high-priority strategies

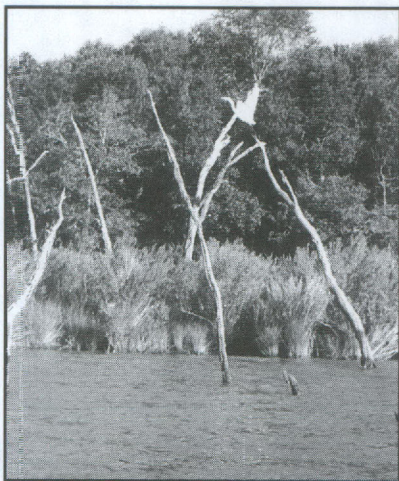
with the resources necessary to see them accomplished. This project was made possible by funding from the Pew Charitable Trusts, the Houston Endowment, the Galveston Bay Estuary Program, the U.S. Fish and Wildlife Service, and the Texas Coastal Management Program. In-kind contributions provided by Environmental Systems Research Institute and TCI Cablevision. For more information about the GBF or the HCB, call (281) 332-3381, or check the Web site, www.galvbay.org.

Draft Plan Circulated for Corpus Christi Bay

In December 1997, the Management and Policy Committees of the CCBNEP (Corpus Christi Bay National Estuary Pro-

gram) approved a draft of the Coastal Bend Bays Plan for public comment. More than 350 people representing over 100 organizations have been hard at work to reach a common understanding of the resource management issues that face the bays and estuaries of the Texas Coastal

Bend. The plan should be completed in September 1998. To obtain a copy of the draft Bays Plan, contact the CCBNEP at 6300 Ocean Drive, Suite 3300, Corpus Christi, Texas 78412, or call (512) 908-3420.



Over 33,000 acres of estuarine wetlands have been lost in Galveston Bay. The HCB contains specific plans for restoring habitat in various Bay sites. Community interest will determine priorities for sites to be restored.

interested in voluntary initiatives to conserve, restore, or create coastal wetlands. It provides (1) information on the role of local governments in coastal wetlands management and (2) tools they can use to keep wetland systems intact.

The handbook could be of interest to municipalities, counties, conservation and reclamation districts, ports and navigation districts, river authorities, and regional councils of governments. To request a copy, contact Claire Randle; phone: (800) 85-BEACH or (512) 475-2330; E-mail: claire.randle@glo.state.tx.us

The Gulf of Mexico Foundation

The Gulf of Mexico Foundation is a nonprofit 501(c)(3) corporation whose

mission is to promote and facilitate conservation of the health and productivity of the Gulf of Mexico and its resources in its entirety as a dynamic ecosystem. This mission is pursued through education, public awareness, research, support of other conservation programs, and leadership programs.

The foundation is seeking the names and addresses of individuals who would like to receive its quarterly newsletter, *The Gulf of Mexico Monitor*. Initial issues of the newsletter are funded by a grant from The Meadows Foundation of Texas and are free of charge. Send your name and address to: Gulf of Mexico Foundation, Inc., 5403 Everhart, #51, Corpus Christi, Texas 78411. Visit the Web site at www.sci.tamucc.edu/gmf.

Sharing Our Gulf—A Challenge for Us All

This conference is funded by the Texas Sea Grant College Program, and will bring together the diverse individuals and groups living and working around the Gulf of Mexico for candid discussions of some of the most challenging resource-use questions facing the Gulf today.

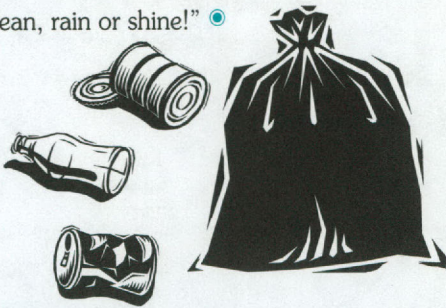
Sessions will include Status Reports: How We Use the Gulf; TEDs, BRDs, and the Fisheries; Pollution and Hypoxia; Fish for Everyone?; Strandings, Trash, and Beaches; and Marine Education: What Works? Each session's panel will include representatives with diverse backgrounds and opinions, but the meat of the discussion will come from what is prompted by questions from the audience.

Sharing Our Gulf will be held June 10-12 at the George Bush Presidential Conference Center on the Texas A&M University campus. Information can be obtained by writing to: Texas Sea Grant

College Program, 1716 Briarcrest, Suite 603, Bryan, Texas 77802, or by accessing the "conferences" link of the Texas Sea Grant home page located at <http://texas-sea-grant.tamu.edu>. Everyone is encouraged to attend.

Adopt-A-Beach Spring Cleanup

Mark your calendar and invite your friends to join you for the Adopt-A-Beach Spring Cleanup, April 25, 9:00 a.m. to noon. The Texas General Land Office is sponsoring the event, and you can get all the details by calling (800) 85-BEACH, or visit the GLO Web site at www.glo.state.tx.us for cleanup sites, coordinators, and more details. "We'll clean, rain or shine!" ●



Special Announcements

State of the Bay Symposium/Call for Preliminary Abstracts

Sharing information is key to the wise management of Bay resources. Every two years, the Galveston Bay Estuary Program (GBEP) holds a State of the Bay Symposium. The next one is scheduled for January 28-29, 1999 at Moody Gardens in Galveston. This event provides a forum to share results of Bay studies; to promote interaction among researchers, managers, and the public; and to improve our understanding of estuarine problems in need of solutions. Information from the symposium helps GBEP characterize the health of the Bay and evaluate research priorities.

The GBEP is soliciting both oral and poster presentations dealing with current research in Galveston Bay. Following is a list of topics considered a priority for the symposium.

- Toxics
- Nutrients
- Living Resources
- Bay User Community
- Freshwater Inflows
- Sediments
- Habitat
- Valuation

Contact the Symposium Coordinator for information about submitting a preliminary abstract:

Galveston Bay Estuary Program
711 W. Bay Area Blvd., Suite 210
Webster, Texas 77598
281-332-9937

Internet: <http://gbep.tamug.tamu.edu>

see "Announcements" on back page

Survey continued from page 7

recognized that Bay pollution had gotten better, the respondents who lived near the Bay were also more likely to be concerned about water pollution in general.

Pro-Environment Activities Similar across State. Despite their greater environmental sensitivity, the residents of the counties surrounding Galveston Bay are somewhat less likely than other Texans to act on those concerns. The percentages of respondents from elsewhere in Texas who reported that they have engaged in pro-environmental activities were consistently, if only slightly, higher than among residents of the five-county area. (Pro-environmental activities

include, for example, recycling, contributing to an environmental organization, participating in a local environmental project, and avoiding the purchase or use of environmentally damaging products.)

The data also show, however, that the respondents from the Bay area were much less likely to report that they live in neighborhoods with either curbside recycling (37 to 52 percent) or a "household hazardous waste disposal site" (31 to 38 percent). Despite fewer resources, Bay area residents are thus involved to almost the same extent as other Texans in pro-environmental behaviors, suggesting a stronger overall commitment to environmental protection.

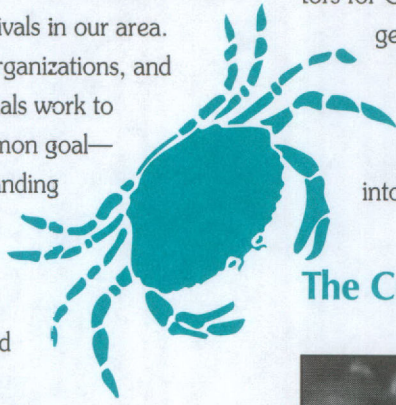
When asked about their involvement in an activity potentially damaging to the environment, there were no differences

between Bay area respondents and those from elsewhere in Texas; and both groups claimed high levels of environmental responsibility. Of the 31 percent who said they had changed their motor oil in the past year, 75 percent disposed of the used oil by taking it to a service station or other recycling facility; only 12 percent admitted throwing it out with the trash or dumping it in the yard.

Public Perceptions of Environmental Problems Facing Galveston Bay: Findings from the 1996 Texas Environmental Survey has been published. Additionally, findings were presented at the last State of the Bay Symposium, and an abstract was published in *Proceedings, State of the Bay Symposium, III*. Free copies of these publications are available through the GBEP office. ●

BAY DAY—Annual Festival for Galveston Bay

The Galveston Bay Foundation and the Galveston Bay National Estuary Program partnered in 1991 to produce the first BAY DAY festival. Eight years later, the event has grown to be one of the most popular family festivals in our area. Many industries, organizations, and committed individuals work to accomplish a common goal—to put on an outstanding family event that highlights Galveston Bay's many resources and diverse uses.



Scavenger Hunt

Become a Galveston Bay Sleuth! Kids ages 5 to 12 search among festival exhibitors for Galveston Bay facts. The Scavenger Hunt, which has become a BAY DAY tradition, is coordinated by GBEP. This free game is loads of fun: more important, it turns kids into "estuary enthusiasts."

The Crab Cottage



Texas Parks and Wildlife showed off live alligators in the Crab Cottage, always a BAY DAY favorite.

Mark your calendars now for the next BAY DAY—June 13, 1998. The event offers a wonderful setting for exhibitors and vendors. BAY DAY is also great service opportunity for volunteers—individuals, youth groups, and adult organizations. If you would like to be a part of this fabulous event, or if you simply need more information, contact: Galveston Bay Foundation, BAY DAY Producer, 17324-A Highway 3, Webster, Texas 77598. Phone: (281) 332-3381. Visit the foundation's Web site at www.galvbay.org.

Highlights from BAY DAY '97

Exciting displays by the diverse users of Galveston Bay showcase the many cooperative efforts to preserve and enhance the Bay. Historical exhibits, nature exhibits, live animals, and industrial innovations combined with arts and crafts booths made the BAY DAY Festival tents fun and informative for the entire family. Read on to find out more about the educational experiences from BAY DAY 1997, which will be bigger and better in 1998.

A special kids presentation tent features fun and exciting Galveston Bay activities. Fascinating presentations for kids of all ages include live turtles, alligators, a great horned owl, local snakes, fish-tagging demonstrations, and more! Bill Oliver, folksinger and environmental troubadour, brought wonderful music to the tent. The cottage, new in 1997, was brought to BAY DAY by the GBEP, University of Houston-Clear Lake Environmental Institute, and Houston Lighting and Power.

Wading through Wetlands at Sylvan Beach

Houston Lighting and Power (HL&P) employees built a 30' x 30' wetland for the visitors at the BAY DAY '97 Crab Cottage. Kids of all ages enjoy this "hands-on, bare-feet" exhibit. Visitors first encounter the wetland's perimeter made of California bullrush, reaching close to 8 feet. They venture into 8-inch-deep water and make their way into the freshwater marsh area with cattail and square-stem spike rush.

Visitors wade through the exhibit, encountering the two most common Bay plants—smooth cordgrass and marsh hay cordgrass. They come to understand the characteristics of these plants and how the dense root structure holds the soil, controls erosion, and filters runoff. Docents lead interactive, science-based discussions about the variety of plants and animals found in an estuarine ecosystem.



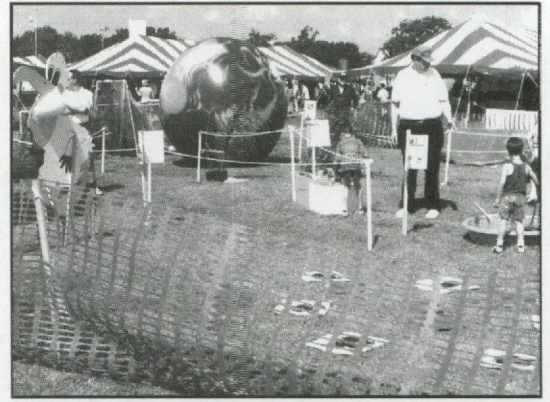
A highlight at BAY DAY, HL&P's Wading through Wetlands offers science-based discussions about the variety of plants and animals found in an estuarine ecosystem.

People who wade through this exhibit leave with a knowledge of wetlands plants and animals. More important, they have a true understanding of how wetlands function, why they are important to us, and how to help preserve these natural areas.

Little Critters Go into Galveston Bay

Enron Corporation brought the Obstacle Course to BAY DAY in '97 with

the help of the Port of Houston Authority and GBF staff. In this activity, kids pretend to be a Bay creature as they maneuver through a course that included a large pipe for the "Baytown Tunnel," a hopscotch game played on pictures of lily pads and frogs, and a "trawl crawl" through a shrimping net. Dodging bird eggs on the "beach," picking up sea shells, and choosing trash items to recycle introduces little ones to human impacts on the delicate Bay ecosystem. ●



Pretending to be Bay creatures, kids learn all about the Bay at Enron's Obstacle Course.



Wetlands Conservation Award

Eddie Seidensticker, resource conservationist with the U.S. Department of Agriculture's Natural Resources Conservation Service, was recipient of the 1997 EPA Regional Administrator's Environmental Excellence Award for Wetlands Protection. Specializing in wetlands and coastal erosion for the entire Texas Coast, Eddie is a pioneer in the restoration and creation of coastal marshes. Coordinator and advisor for numerous projects in the Galveston Bay area, Eddie's latest accomplishment is cultivating and planting wetland vegetation on the Beneficial Uses Group Demonstration Marsh at Atkinson Island. This 220-acre project was the largest single marsh-creation project on the Texas coast.

The Atkinson Island habitat-creation project was accomplished with the help of cooperative agreements with USDA/Natural Resources Conservation Service, USDA/AmeriCorps, the National Corporation for Public Service, the Port of Houston Authority, and Houston Lighting and Power. Eddie provided leadership and technical support for the plantings and for ongoing monitoring. He has been or is currently involved in the planning, creation, and monitoring

of 20 sites in the Galveston Bay Area. Eddie was nominated by the GBEP for this distinguished award.

Governor's Award for Environmental Excellence

Norm Uhl's "Save Our Streams" news segments won statewide recognition in the media category of the 1997 Governor's Award for Environmental Excellence (a program currently known as the Texas Environmental Excellence Award).

A local environmental task force, which included GBEP, supplied information for the series. The task force also contained private citizens, the Harris County Pollution Control Department (HCPCD), and other units of state and local government. Norm was nominated by the GBEP and HCPCD.

The video segments cover nonpoint source pollution, sewage treatment, water conservation, trash in the waterways, composting, Bay-friendly gardening, and habitat restoration. The videos will be distributed as a series of lessons in a pilot project starting this year, with funding provided by DuPont's LaPorte Plant. ●

Announcements continued from page 9

Visit us on the Internet at
<http://gbep.tamug.tamu.edu>.

GBEP Can Help with Grants

The Galveston Bay Estuary Program can now assist organizations supporting *The Galveston Bay Plan* in their search for suitable grant funding. GBEP can help if you need:

- Information on a particular grant program (objectives, deadlines, etc.)
- Information on which grant programs are likely to support your projects
- Advice on how to write a grant proposal (narrative and financial)
- Information on grant partnering

For more information, call 281-332-9937. ●

For information on how to receive *Bay Line*, to request a list of GBNEP technical publications, or for additional information about the Galveston Bay Estuary Program, call (281) 332-9937. Information may be faxed to GBEP at (281) 332-8590.

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Galveston
Bay



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