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Winter 1995

Galveston Bay Management Conference

Pipeline Breaks Impact Water Quality: **Oil and Water Still Don't Mix**

By Frank S. Shipley



Houston Chronicle Photo

Major flooding in Harris, Montgomery and Liberty counties this fall caused ruptures in five major pipelines which spilled thousands of gallons of flaming gasoline and heating oil into the San Jacinto River. Quick action by the Emergency Response Team indicated huge improvements in the spill response capability for Galveston Bay.

Over the last hundred years or so, oil and the Houston economy have formed a mixture unique to the culture of this part of Texas. However, oil and the waters of Galveston Bay don't mix so easily, and when oil gets into the bay from various sources, problems result. With a huge volume of oil and other petrochemical products being transported in the bay, manufactured on its shorelines, or burned to produce energy in the bay region, this issue has emerged as an important element of *The Galveston Bay Plan*. What do we know about oil in Galveston Bay, and what does *The Galveston Bay Plan* propose to do about this issue?

Oil and grease washing off the land to Galveston Bay in a single year amounts to four million gallons or approximately 40% of the Exxon Valdez disaster.

Six of the top ten problems affecting Galveston Bay include aspects related to petroleum-related compounds as toxic contaminants. Some of these contaminants are present in sediments and living organisms in portions of the bay, causing concerns for both the ecological health of the system and the health of humans who consume fish or shellfish taken from contaminated areas. We know something about the origin of the contaminants as well, as a basis for taking action to solve the problems.

(continued on page 6)

NOTES FROM THE CHAIRMAN

The Galveston Bay Plan:

A Sea Change for Galveston Bay

On December 14, 1994, it was my pleasure to request a vote of final approval from the Policy Committee for *The Galveston Bay Plan*. Unanimously, and with considerable enthusiasm, the Committee endorsed this unprecedented initiative to assure Galveston Bay remains clean, healthy, and productive for future Texans.

We've come a long way to reach this point. We began our work in a setting in which industries, resource agencies, and environmental groups rarely talked to one another concerning key bay prob-

lems which affect all of us. In agreeing on these problems, carrying out the science to define their underlying causes, and—most importantly—in hammering out more than eighty initiatives to solve them, our working relationships have drastically changed.

The change has been one for the better, and sound public policy has been the result. In reading over the dozens of endorsements received for *The Galveston Bay Plan* during the course of public review, I was struck by the tremendous diversity of the organizations and individuals who care about the bay and agree that *The Plan* is the next step to maintain this vital resource. Endorsements have been received from municipalities such as the City of Houston, from industry leaders, and from conservation organizations, including the Audubon Society and the Galveston Bay Foundation. This support, I believe, reflects consensus, not compromise.

The Galveston Bay Plan is both scientifically based and democratically crafted. As we begin to implement its provisions, I anticipate a continuation of the partnerships and cooperation that have been the hallmark of the program—indeed this is a key theme of the future work laid out in *The Plan*. As we await final federal approval by the Administrator of EPA, I extend my sincere thanks to everyone who has been involved in this worthwhile endeavor.

Rodney Ellis

TNRCC Photo by Wayne Baker



Senator Rodney Ellis is joined by members of the GBNEP Policy Committee and other Management Conference representatives in approving *The Galveston Bay Plan* and in recommending Final Approval by EPA. Front row, from left, Myron O. Knudson, Water Division Director, EPA-Region 6; Senator Ellis; and Laura Koesters, Deputy Director, TNRCC. Back row, Glenda Callaway, Past Chairman, Galveston Bay Foundation; Terry Hershey, Commissioner Texas Parks & Wildlife Dept.; Charles Miller, past president, Greater Houston Partnership; and Charles W. Jenness, Chairman, Texas Water Development Board. They were joined by Dr. Frank Shipley, GBNEP Program Director.

**REPORT
POLLUTION**
1-800-3
OUR BAY

Brazoria, Chambers, Galveston, Harris, and Liberty Counties
Texas Natural Resource Conservation Commission

1995 Bays 'N Bayous Trash Bash Will "Put The Pinch On Trash!"

It's spring clean-up time and former Houston Oiler Coach Bum Phillips is inviting you to put on your grubbies, grab a big sack and join his clean-up team on Saturday, March 25.

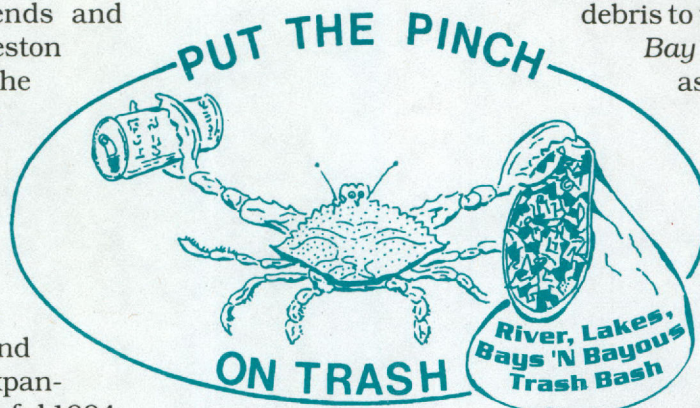
On that morning, friends and neighbors of our Galveston Bay watershed will join the clean-up effort all the way from Lake Conroe to the north, down to the Texas City Dike in the south.

The 1995 Bays 'N Bayous Trash Bash, River and Lakes Clean-up is an expansion of the highly successful 1994

San Jacinto River Clean-Up which drew more than 5,000 people. This year, the project has grown to seven major sites with several satellite locations. TNRCC is a co-sponsor of this event with participation by The Galveston Bay Program (GBP), Texas River & Lakeshore Cleanup Section (Austin) and the Region 12 office (Houston).

Sites for the 1995 Trash Bash include Lake Conroe, Lake Houston, the Houston Bayous (Brays, Buffalo and White Oak), the San Jacinto River at the

San Jacinto State Monument and Battlefield with a satellite cleanup at the Brownwood Subdivision in Baytown, Armand Bayou, Dickinson Bayou, and at the Texas City Dike. These are all watersheds of Galveston Bay which contribute debris to the estuary. *The Galveston Bay Plan* has identified debris as a significant problem in the Bay System.



At most sites, the day will begin with registration at 8 a.m. with trash pickup to begin at 9. Local radio stations will be on hand at several locations to cheer participants on and many sites

will host mini-environmental fairs. At noon, trash bashers will be entertained and served a free hot dog lunch. Prizes for the "What Is A Watershed?" art and essay contest being held in area schools will be awarded at this time.

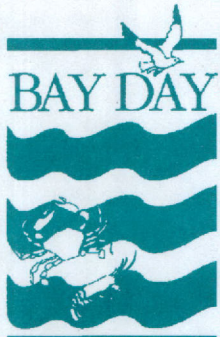
Put Saturday, March 25 on your calendar now! Then recruit your Scout troop, school club, civic organization, neighborhood group, or industry team to sign up. Help "Put The Pinch On Trash!"

FOR REGISTRATION INFORMATION AND SITE LOCATION MAPS, PLEASE CALL 1-800-64-TEXAS

1995 Trash Bash Sponsors:

- Armand Bayou Nature Center
 - Browning Ferris Industries
- City of Houston, Parks & Recreation Department
 - Clean Houston
 - Dickinson Beautiful
 - E.I. DuPont, La Porte
- Environmental Protection Agency
 - EXXON Companies
- Galveston Bay Foundation
 - Galveston Bay Program
- Galveston County Health District
- Gulf Coast Waste Disposal Authority
 - Harris County, Precinct One
 - Houston Canoe Club
- Houston-Galveston Area Council
 - KILT/KIKK Radio
 - KLOL-FM Radio
- La Marque/Texas City Chamber of Commerce
 - Montgomery County EMS
 - Oxychem
- Phillips Petroleum Corporation
- San Jacinto River Association
- San Jacinto River Authority
- Texas Natural Resource Conservation Commission
 - Texas Parks & Wildlife Department
 - United States Forest Service
 - Waste Management, Inc.

Bay Day Festival '95 Takes Flight June 9-11



at Sylvan Beach

Bay Day Festival '95 will literally soar this year with the addition of an Air Show to the already fun-filled agenda of bay-related activities, food and toe-tapping music by "Asleep at the Wheel".

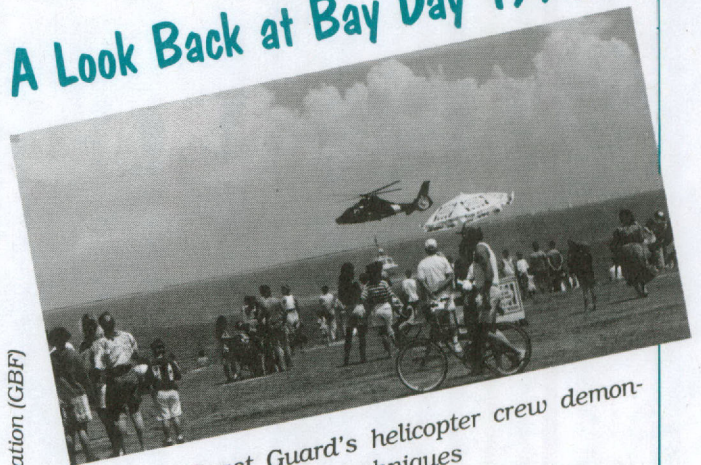
Mark your calendar now for June 10 and 11. Festival Days at Sylvan Beach in La Porte will feature:

- * air show & stunt flying
- * waterfront exhibits
- * scavenger hunt for kids
- * helicopter rescue demonstrations by the U.S. Coast Guard
- * fire-fighting demonstrations by a fire boat
- * gig races
- * barbecue cook-off
- * ASLEEP AT THE WHEEL on stage
- * regatta
- * kayak and canoe races
- * a carnival
- * nature exhibits
- * arts & crafts
- * food
- * fishing derby for kids
- * FIREWORKS!

Festivities will kick off with a dinner dance on the evening of June 9 from 7 to 10 p.m. at the Sylvan Beach Pavilion. Bay Day Festival activities will be held from 11 a.m. to 10 p.m. on Saturday, June 10, and Sunday, June 11 with "Bay Lights," from 8 to 10 p.m. on Saturday featuring a concert and fireworks. Sunday, activities will be from 12 noon to 7 p.m.

Plan now to bring the whole family! The Bay Day Festival was co-founded by the Galveston Bay Foundation and the Galveston Bay National Estuary Program and is sponsored by numerous Bay area businesses and organizations. Call 332-3381 for information.

A Look Back at Bay Day 1994



The U.S. Coast Guard's helicopter crew demonstrates air-sea rescue techniques



Armand Bayou Nature Center makes nature come alive with exhibits of creepy crawly things



Breezes off of Galveston Bay cool music lovers who gathered around the bayshore stage

- Photos by Galveston Bay Foundation (GBF)

Smooth Cordgrass:

Wiry Soldier in the Fight Against Erosion and Loss of Marine Habitat

By M.A. Bengtson, Public Participation Director

Slender green leaves of smooth cordgrass bend gently in the breeze. The northwest shore of a cove in Taylor Bayou is now lined with this hardy marsh dweller. The tall spikes of *Spartina alterniflora* mirror the healthy stands of cordgrass growing along the cove's southeast shore.



— Photo by GBF

Smooth cordgrass along the shoreline of Taylor Bayou provides safe habitat for juvenile finfish and shellfish, in addition to reducing the effects of erosion.

Mother Nature has done her thing.... with a helping hand from a large group of dedicated volunteer grass-planters.

Grasses were planted on the southeast shoreline almost two years ago as an experiment in habitat restoration. These plants have matured and naturally reseeded themselves on the

opposite shore with seeds carried across on the bayou's waters. Score one for this unbeatable partnership with nature by people who care.

For the past 40 years, the Galveston Bay System has lost more than 33,000 acres of salt marsh habitat to subsidence, development, pollution and hurricanes. This habitat for juvenile fish, shrimp and crabs is vital to maintaining the species available for the catching by sport fishermen and the commercial fishing industry. Recognition of this and the drafting of initiatives to deal with it is the number one priority in the *Galveston Bay Plan*. It is now spurring action to reclaim some of those acres through habitat restoration on an ever-increasing scale.

What began as a cooperative experiment by the USDA's Marine Advisory Service's Bob Nailon and Eddie Seidensticker of the Soil Conservation Ser-

vice (now the Natural Resources Conservation Service), is now proving out.

GBNEP and EPA underwrote a grant to continue with the cordgrass project, which plays a key role in estuarine systems by providing nursery areas for finfish and shellfish and plays a major role in the prevention of shoreline erosion. These salt marshes provide refuge and food for marine life and substrate utilization by other organisms.

The Galveston Bay System has lost more than 33,000 acres of salt marsh habitat...over the past 40 years.

From this modest beginning, the planting of smooth cordgrass moved into a broader spectrum with the involvement of the Galveston Bay Foundation and its volunteer citizens and students. With a grant from GBNEP and others, the Foundation began plantings in Taylor Bayou, Armand Bayou, Clear Creek, Anahuac National Wildlife Refuge, the San Jacinto River, Trinity Bay and Seabrook Slough.



— Photo by GBF

Students from Galena Park High School, after studying the effects of erosion and the need for habitat restoration, were given some hands-on experience in cordgrass planting by the Galveston Bay Foundation

(continued on page 9)

Oil and Water Still Don't Mix (continued from page 1)

We Have Met the Enemy and He is Us

Dumping of used motor oil is a common practice in many neighborhoods in the Galveston Bay Watershed. When oil is dumped down a storm drain it pools there until the next rain (sometimes the dumper mistakenly believes it goes to a treatment plant). Then, along with any paint solvents, antifreeze, or other toxic dumped materials, rainwater flushes the oil to the nearest bayou, and from there, it's a straight shot to the bay (see Winter 1993 *BayLine*).

No one knows how much oil gets dumped this way, but it's a lot. Some of the poor water quality and oil sheens in urban waterways no doubt result from this kind of dumping. This is illegal, and recent legislation has set up a used oil recycling fee added to the cost of motor oil, which helps pay for programs administered by the Texas Natural Resource Conservation Commission to encourage private sector recycling activities.

While estimates of the volume of oil purposefully dumped are impossible to obtain, better information is available concerning the total wash-off of oil from streets, parking lots, and other residential and urban surfaces. Incredibly, the oil and grease washing off the land to Galveston Bay in a single year with average rainfall amounts to about four million gallons, or on the order of 40 percent of the *Exxon Valdez* disaster.

Oiled Marshes and Other Spill Problems

Spills of oil and other toxic materials are a more clear-cut, but equally significant problem facing Galveston Bay. Crude oil spills (for example the

Apex barge collision) characteristically place sensitive marsh habitats at risk, and can result in Texas Department of Health closure of the entire bay system for seafood harvesting, due to introduction of toxic compounds. Following the *Exxon Valdez* spill, new spill prevention and response legislation was passed at both the federal and state

levels. For Galveston Bay, this means local spill response capability has dramatically improved in recent years.

The first real test of the new spill response capability came with the flood and pipeline rupture disaster of October 1994. Several pipelines on the banks of the San Jacinto River were undermined by the record flood waters, ruptured, and caught on fire. Response activities began within hours (as opposed to several days for some previous disasters). The Clean Channel Association (a new local industry response cooperative) and the Marine Spill Response Corpora-

tion (a federally-initiated response organization) both deployed equipment under the direction of the U.S. Coast Guard On-Scene Coordinator. For the first time ever, enough equipment and manpower was available quickly on the scale necessary to respond to a major spill disaster.

Still at issue (and a topic addressed by *The Galveston Bay Plan*) is the need for an improved process of assuring environmental damage is effectively remediated by the responsible party. In the past, projects to compensate for spill damages have not been approached from a system-wide



Houston Chronicle Photo

Emergency Response crews organized by the Clean Channel Association, an industry spill cooperative, quickly deployed booms to contain much of the oil which did not ignite.

Oil in Galveston Bay: Galveston Bay Plan Actions

Hydrocarbons in Galveston Bay figured significantly in the creation of the following Galveston Bay Plan actions:

Enhancement of Wetlands Spill Damage Activities:

- SD-1 Promote planning to facilitate natural resource damage assessments
- SD-2 Identify simplified procedures for damage assessment for small oil spills
- SD-3 Facilitate effective restoration of Galveston Bay's natural resources damaged by spills
- SD-4 Facilitate spill cleanup by advance shoreline characterization
- HP-3 Inventory degraded wetlands and fund remedial measures
- HP-4 Implement a coordinated, system-wide wetland regulatory strategy

Water and Sediment Quality

- WSQ-1 Reduce contaminant concentrations to meet standards and criteria
- WSQ-2 Determine sources of ambient toxicity in water and sediment
- WSQ-3 Establish and adopt sediment quality criteria

WSQ-4 Perform Total Mean Daily Load studies for toxics

WSQ-5 Support Clean Texas 2000 Pollution Prevention Program

Non-Point Sources of Pollution

- NPS-1 Implement storm water programs for local municipalities
- NPS-2 Perform pilot projects to develop NPS Best Management Practices
- NPS-3 Identify and correct priority watershed pollutant problems
- NPS-4 Establish residential load reduction programs
- NPS-7 Establish roadway planning to minimize NPS effects
- NPS-8 Implement NPDES Storm Water Program for area industries

Point Sources

- PS-6 Issue NPDES Coastal General Permit or eliminate harm from oil field discharges

Protection of Human Health:

- PH-1 Develop a seafood consumption safety program

perspective, and red tape has made this process slow and inefficient. *The Galveston Bay Plan* calls for streamlining this process, better coordination among resource agencies, and advanced identification and ranking of wetlands for potential remediation projects.

In our current culture, we can't deny the benefits provided by petroleum. To deny the importance of oil in Houston, Texas, would be particularly unrealistic. But we have learned a lot about the negative effects of hydrocarbons when they end up in places where they don't belong. This has engen-

dered *Galveston Bay Plan* actions to prevent oil from getting into the bay, and actions to better respond when accidents happen.



NOTES FROM THE DIRECTOR

What Went Into the Building of The Galveston Bay Plan?

Not long ago, a public official asked me what went into creation of *The Galveston Bay Plan*. In pondering this question, I envisioned the spirit of volunteerism, the numerous meetings, the size of the budget, the productive partnerships, and the substantial time sacrifices of unpaid participants which made *The Plan* possible. But in thinking back over the last six years, I realized I had never really taken stock of all the resources that were sunk into *The Plan*. So here is a quick accounting of our work.

The six official Governor/Federally appointed committees and their task forces met a total of 267 times, with each meeting involving an advance agenda, mailing of information, and follow-up activities. About 100 individuals made up the committees; about 150 individuals constituted the task forces. This was the working core of the program, and members from essentially every interest or organization relating to Galveston Bay served without payment or travel reimbursement from the program. In meetings alone, this represents about 124,000 hours contributed by participants.

The program convened 35 formal public meetings and hearings to guide *Plan* development, and staff and members of the Management Conference completed 161 public speaking engagements. In the critical final year of *Plan* development I counted 79 speeches and media interviews on my personal calendar.

Staffing and program expenditures totaled slightly over \$7 million dollars over five years, about three-fourths of which was federal funds. This represents about half a million staff hours. If volunteer hours were counted at a standard rate, their value to the program was an additional approximately \$3.1 million.

About 45 major technical reports were published, as well as the State of the Bay book (see announcement in this newsletter) and *The Galveston Bay Plan* itself (which evolved through seven drafts). The program's educational display reached nearly a half million individuals from all walks of life. This issue of *Bay Line* is number 19.

Above all, and not evident in the numbers alone, is the high level of personnel commitment and dedication demonstrated by those involved. On behalf of the program, my sincere thanks go out to all of you who had a role in shaping the public policies that will affect the Bay for years to come.

What does this investment mean for the future of Galveston Bay? Projects such as *The Galveston Bay Plan* seem subject to two kinds of risk. First, there is what I call the Concord Fallacy. In building the transatlantic Concord supersonic jet, there came a point where it was clear to everybody involved that the benefits would never exceed the mounting costs. But the fact that so much money had already been sunk into the work, combined with the flashy appeal of the technology and the very idea of reaching London from New York in a few short hours, drove the project to completion in spite of underlying reality.

Second—and particularly relevant to environmental policy—is the Blue Sky/Dusty Shelf Syndrome. Someone with a good idea legislates a program to encourage planning for great achievements. It is reasoned that if the planning is good enough, the implementation will follow. Resources and people are brought to bear, but through over-emphasis, planning somehow becomes the end in itself, and the real work is never carried out. Lining the dusty shelf are the findings of many a special commission and the reports of many a program, each one laying out carefully constructed schedules and (sometimes brilliant) strategies. Once in a while, someone working on a new plan dusts off one of the old plans, and realizes we all just traveled in a circle.

The Galveston Bay Plan is neither a Concord jet, nor was it crafted in the blue sky to be dead upon arrival on earth. Substantial human and dollar resources were expended, indicating the high importance placed on Galveston Bay as a highly productive state and national resource. Until now, most time and money have been expended for planning, not implementation. But in creating *The Plan*, I sensed a perspective shared by the partners, an attitude that this was real work being carried out for a real purpose. With public resources at a premium, the benefits of proposed initiatives were measured against reality, with the intent to carry them out. The partners who created *The Plan* had no use for a new government program born out of mere momentum; neither did they have any appetite for seeing their very real personal investment in the process wasted on a report created in the sky but destined for the shelf. Galveston Bay is a real resource, and its effective future management, under *The Galveston Bay Plan*, should be just as real.

—Frank S. Shipley

State of the Bay Book Now Available

The *State of the Bay: A Characterization of the Galveston Bay Ecosystem* is now available through the Greater Houston Partnership at cost plus tax and shipping.

State of the Bay is a book published by GBNEP which chronicles the results of many bay studies accomplished over the past five years.

It includes about 230 pages of text, photos, maps and graphics, many of which are in color. The information should be useful to consultants, students, academicians, maritime companies and anyone who is interested in up-to-date scientific data and a comprehensive summary of the condition the bay and its ecosystem.

The State of the Bay: A Characterization of the Galveston Bay Ecosystem

Please send _____ copies to:

Name _____

Address _____

City State Zip Code _____

To order: Mail to Publication Sales at the Greater Houston Partnership,
2 Allen Center, 1200 Smith, Suite 700, Houston, Texas, 77002.

Phone number: 713/651-2104

Mail order cost: \$23.82 (tax, postage and handling). Copies may also be picked up
at the GHP office main desk for \$18.94 (with tax).



Smooth Cordgrass: Wiry Soldier (continued from page 5)

Volunteers and students were trained to do the planting. A community service team from Union Carbide, 50 strong, rallied to build temporary wave barrier fences strung with cargo netting to protect the newly-planted grass from wave energy until it could become established. In places where the wave energy is excessive, a double line of fencing was built and filled with brush to slow the rush of water created by boat wakes. The Foundation has planted four acres of a commitment to plant nine. The other five acres will be finished in the planting season, which begins this spring.

With the launching of the AmeriCorps program in September, habitat resto-

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-Photo by GBF

Volunteers from Union Carbide set posts and string cargo netting on temporary wave barrier fences to protect newly-planted cordgrass from wave action in Armand Bayou

Publication List

of the Galveston Bay National Estuary Program

The following publications are available to the public at no charge. You may obtain these at one of the offices listed below.

Galveston Bay National Estuary Program

711 West Bay Area Boulevard
Suite 210
Webster, Texas 77598
Phone: 713-332-9937

Galveston Bay Information Center

Texas A&M University, Galveston
Jack K. Williams Library
P.O. Box 1675
Galveston, Texas 77553
Phone: 409-740-4703

Report Publication Series

Proceedings: Galveston Bay Characterization Workshop	Feb. 1991	GBNEP-6
Christmas Bay Environmental Inventory	Mar. 1991	GBNEP-7
Armand Bayou Environmental Inventory	Mar. 1991	GBNEP-8
Christmas Bay Regulatory Survey (out of print)	Mar. 1991	GBNEP-9
Armand Bayou Regulatory Survey (out of print)	Mar. 1991	GBNEP-10
Fiscal Year 1992 Work Plan	Aug. 1991	GBNEP-11
Shoreline Survey Unpermitted Discharges to Gal. Bay (out of print)	Aug. 1991	GBNEP-12
Armand Bayou Regulatory Effectiveness Study	Dec. 1991	GBNEP-13
Christmas Bay Regulatory Effectiveness Study	Dec. 1991	GBNEP-14
Characterization of Nonpoint Sources and Loadings (out of print)	Jun. 1992	GBNEP-15
Wetland Plant Communities, Gal. Bay System	Mar. 1992	GBNEP-16
Fiscal Year 1993 Work Plan	Aug. 1992	GBNEP-17
Segmentation Development for Gal. Bay	May 1992	GBNEP-18
Characterization of Selected Living Resources in Gal. Bay	Jun. 1992	GBNEP-19
Toxic Contaminant Characterization of Aquatic Organisms in Gal. Bay	Jul. 1992	GBNEP-20
Characterization of Selected Public Health Issues in Gal. Bay	Aug. 1992	GBNEP-21
Ambient Water and Sediment Quality of Gal. Bay	Aug. 1992	GBNEP-22
Proceedings: The Second State of the Bay Symposium - Feb. 4-6, 1993 (out of print)	Feb. 1993	GBNEP-23
Environmental Management Inventory of Gal. Bay	Oct. 1992	GBNEP-24
Recreational Fishery By-Catch in the Gal. Bay System	Nov. 1992	GBNEP-25
Galveston Bay Bibliography	Apr. 1993	GBNEP-26
Framework for Action: Galveston Bay Management Evaluation	Jan. 1993	GBNEP-27
Dredge and Fill Activities in Galveston Bay	Apr. 1993	GBNEP-28
Non-Fishing Human Induced Mortality of Fisheries Resources in Gal. Bay	May 1993	GBNEP-29
Sediment Quality Assessment Survey of Galveston Bay	May 1993	GBNEP-30
Trends and Status of Wetland and Aquatic Habitats in the Gal. Bay System	Apr. 1993	GBNEP-31
Fiscal Year 1994 Work Plan	Aug. 1993	GBNEP-32
Probable Causes of Trends in Selected Living Resources	Sept. 1993	GBNEP-33
Trawling Bycatch in the Galveston Bay System	Aug. 1993	GBNEP-34
Sources & Distribution of Bay Debris in the Galveston Bay Estuary	Aug. 1993	GBNEP-35
Point Source Loading Characterization of Galveston Bay	Sept. 1993	GBNEP-36
The Economic Value of Improving The Environmental Quality of Galveston Bay	Jun. 1994	GBNEP-38
Galveston Bay Data Inventory	Dec. 1991	GBNEP-40
A Conceptual Model of the Galveston Bay Ecosystem	Oct. 1993	
DRAFT-The Galveston Bay Plan; A Comprehensive Conservation & Management Plan	Apr. 1994	—
The State of the Bay: A Characterization of the Galveston Bay Ecosystem, is available at cost through the Greater Houston Partnership. See Page 9.	Mar. 1994	GBNEP-44

Videos

<i>Balancing Act</i> (Armand Bayou and Christmas Bay)	Oct. 1990
<i>Oyster Harvesting and Conservation in Galveston Bay</i>	Oct. 1991
<i>Conflicting Uses of Galveston Bay</i>	Oct. 1991
<i>The Galveston Bay Ecosystem</i>	May 1992
<i>Will Galveston Bay Go Down the Drain?</i>	Feb. 1994

Special Publications

Galveston Bay Area Residents' Handbook—a guide to responsible lawn care, household cleaning, automobile and boat care, and proper maintenance of septic systems and other issues to be considered by residents living in the 5-county area.

Composting Wheels—an easy to use "wheel" with helpful information about home composting projects to enrich your lawn and garden without using chemicals that are hazardous to the environment.

GBNEP Publication Series Distribution

These libraries should have complete sets on file:

Bureau of Economic Geology Library,
The University of Texas at Austin

College of the Mainland Library
Texas City, Texas

The Fondren Library
Rice University, Houston, Texas

Texas & Local History Department
Houston Public Library

Life Sciences Library
The University of Texas at Austin

Marine Science Institute Library
The University of Texas at Austin

M.D. Anderson Library
The University of Houston Libraries

Medical Sciences Library
NASA-Johnson Space Center

Neumann Library
University of Houston—Clear Lake

Pasadena Public Library, Pasadena, Texas

Rosenberg Library, Galveston, Texas

Sterling C. Evans Library
Texas A&M University, College Station, Texas

Sterling Municipal Library, Baytown, Texas

School of Public Health Library
University of Texas Health Science Center, Houston

The following libraries began receiving GBNEP publications in January, 1993, and may not have complete sets. They will receive all future publications.

Brazoria County Library System libraries:
Main Library, Angleton, Texas
Alvin, Texas Branch Library
Pearland Branch Library

Brazosport College Library
Lake Jackson, Texas

Chambers County Library System, Main Library
Anahuac, Texas

Juanita Hargraves Memorial Branch Library
Winnie, Texas

West Chambers County Branch Library
Mont Belvieu, Texas

GET INVOLVED

Yes! I would like to be involved in the Galveston Bay National Estuary Program.

- Please put me on the mailing list for the Galveston Bay National Estuary Program Information Letter "Bay Line" and other Galveston Bay information

Name _____

Address _____

City _____ Zip _____

Daytime Phone Number _____ Evening Phone Number _____

I would like to help with special projects: _____

I am currently a member of these environmental, civic, or business organizations: _____

Smooth Cordgrass: Wiry Soldier

(continued from page 9)

ration in our Bay System took another major step forward. AmeriCorps, a federally-funded program similar to the old Civilian Conservation Corps of the Depression Era, is now tackling the restoration problem on a fulltime basis. Based at Houston Lighting & Power's Cedar Bayou plant (Baytown), this program is targeted at restoring 220 acres of marshland at Atkinson Island with two varieties of cordgrass, *alterniflora* (smooth cordgrass) and *patens* (marsh hay).

Through the winter months, student participants in the AmeriCorps project have been collecting seeds, growing young plants in a greenhouse, then transplanting them to ponds at Cedar Bayou. By spring, the stands of cordgrass will be fully-developed and ready for transplanting.

Dr. Frank Shipley, GBNEP Program Director, said, "These efforts at habitat restoration have proven that the planting of cordgrass to rebuild habitat is not only viable, the plantings have a high survival rate of 85-96%. Habitat restoration will be a major focus of *The Galveston Bay Plan* as we move into the implementation phase of our program. Just as the public and private sectors...industry, government and conservationists...worked together successfully to develop *The Galveston Bay Plan*, these groups are already working cooperatively to protect the future of the Galveston Bay System."



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Editor - M. A. Bengtson,
Public Outreach Coordinator
Design and Printing - TNRCC

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