

Project Update 2007

US Army Corps of Engineers
Galveston District

Index

<i>Addicks and Barker Dams</i>	34
<i>Aquatic Plant</i>	10
<i>Barbour Terminal Channel</i>	26
<i>Brazos River Floodgates</i>	15
<i>Brazos Island Harbor Channel</i>	29
<i>Brownsville Border Patrol Station</i>	11
<i>Continuing Authorities Program</i>	32
<i>Corpus Christi Army Depot</i>	22
<i>Cedar Bayou</i>	38
<i>Clear Creek</i>	16
<i>Colorado River Locks</i>	16
<i>Channel to Harlingen Maintenance</i>	23
<i>Channel to Victoria</i>	26
<i>Chocolate Bayou</i>	25
<i>Corpus Christi Ship Channel</i>	30
<i>District Map</i>	9
<i>Ellington Field</i>	13
<i>Emergency Management</i>	41
<i>Freeport Harbor Project</i>	21
<i>Galveston District</i>	5
<i>Galveston Ship Channel</i>	25
<i>Greens Bayou</i>	38
<i>Gulf Intracoastal Waterway</i>	17
<i>Gulf Intracoastal Waterway, High Island to Brazos</i>	18
<i>Gulf Intracoastal Waterway, Port O'Conner to Corpus Christi</i>	17
<i>Gulf Intracoastal Waterway, Vicinity of Port Isabel</i>	19
<i>Houston Ship Channel</i>	23
<i>Houston Ship Channel Maintenance</i>	24
<i>Mouth of the Colorado</i>	31
<i>Mouth of the Colorado Maintenance</i>	31
<i>Matagorda Ship Channel</i>	27
<i>Matagorda Ship Channel Maintenance</i>	28
<i>National Hurricane Study Program</i>	39
<i>Nueces River Basin</i>	13
<i>Neches River Salt Water Barrier</i>	13
<i>Packery Channel</i>	14
<i>Port Isabel Water Storage</i>	12
<i>Raymondville Drain</i>	37
<i>Regulatory Program</i>	40
<i>Sabine Neches Waterway</i>	25
<i>Section 211 -- Harris County Flood Control District</i>	36
<i>Sims Bayou</i>	37
<i>South Main Channel</i>	37
<i>Studies</i>	10
<i>Texas City Ship Channel</i>	20
<i>Wallisville Lake Project</i>	31



**US Army Corps
of Engineers**
Galveston District



With its rich heritage in Texas history and an organizational life span of more than 125 years of activity in Texas, the Galveston District, US Army Corps of Engineers, has played an important and impressive part in the economic well being of the Texas Gulf Coast. The Galveston District performs its civil works mission, contributing to the area's metropolitan and rural life, its congenial mixture of industry and natural environment, its abundant wildlife, and its coastal attractions. Waterborne commerce on the 1,000 miles of deep and shallow draft channels totals more than 300 million tons annually.

Almost entirely coastal in nature, the Galveston District encompasses the entire Texas coast from Louisiana to Mexico — 50,000 square miles, 47 counties. Its length, measured along the coast is about 400 miles and it extends inland about 100 miles. It includes the major metropolitan area of the fourth largest city in the U.S., Houston.

With its nearly 400 dedicated professionals and an annual budget of \$200 million, the Galveston District works to carry out its missions of navigation, flood damage reduction and hurricane-flood protection, while its regulatory office works to protect the nation's wetlands and navigation channels. The district's emergency management office works closely with FEMA when a disaster occurs effecting the nation and its population. In addition, the district has a major real estate responsibility.

The district is deeply involved in the Corps' national mobilization responsibility, focusing on military mobilization and preparedness which can be brought into play in event of major hostilities.

To better serve the public, the district has satellite offices in Port Arthur and Corpus Christi. An extension of the district regulatory office is also located in Corpus.

HISTORY

The Galveston District was established in 1880 to conduct river and harbor improvements along the Texas Gulf Coast, including construction of jetties to make Galveston Channel navigable. These same jetties today stand guard over the entrance to Galveston Bay, the largest estuary on the Texas coast which accounts for 67 percent of Texas oyster landings and 35 percent of Texas recreational fishing. The Galveston jetties are the longest in the world, 35,587 feet.

Following the 1900 hurricane that killed more than 6,000 as it hit Galveston Island, the citizens of Galveston, both city and county, formed a board of engineers to find a means of protection from a like storm. Heading the board was Gen. H. M. Robert, former Chief of Army Engineers who had at one time served as a captain at the district headquarters in Galveston. The Robert Board submitted its

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report on Jan. 25, 1902 and from this sprang the present day seawall. While the district was not engaged in its first construction, it built the later extensions that lengthened the seawall to its present length of 10.04 miles. The seawall, with at least part of it more than 100 years old, today protects the gulf face of the island from wind and wave action.



Shallow draft traffic through Texas waterways.

Completed by the district in the 1940's, the Gulf Intracoastal Waterway (GIWW) remains a vital lifeline for waterborne commerce and links the twelve Texas deep-water ports and the Texas coastal communities to the nation's inland waterways system. Texas tops the list of states for waterborne commerce. Latest figures show 502 million tons of commodities carried on Texas waters during 2004. A shallow draft channel 125 feet wide by 12 feet deep, the Gulf Intracoastal Waterway provides 145,000 jobs in Texas and pumps \$20 billion annually into the Texas economy.

The 1960's through 1980's saw the district involved in the construction of hurricane flood protection systems. Freeport, initiated in 1965 and completed in 1980, stands guard around 42 square miles of the city of Freeport and the Dow Chemical complex. Port Arthur started construction in 1966 and finished in 1984. It protects 76 square miles of developed urbanized and industrial areas with associated petrochemical complexes from a hurricane storm surge and significant rainfall with levees and a series of pumps. The Texas City project started construction in 1962 and finished in 1987. Included within this project are 36 square miles of highly developed urban and industrial areas including the cities of La Marque and Texas City along with associated petrochemical complexes from a hurricane storm surge of 15 feet. Sixteen miles of levees, 1.3 miles of concrete floodwall, drainage structures, a tide control structure and two pump stations are elements within the project.

The Houston/Galveston Navigation Project was undertaken in the 1980's and is very near completion today. Once completed, both ship channels will be 45 feet deep and the Houston Ship Channel will expand to 530 feet wide. The project is also an environmental winner with the addition of nearly 5,000 acres of new marshland over the life of the project. This includes a 12-acre bird island, restoration of Goat Island and Redfish Island, erosion protection for the mainland, an offshore habitat for sea life and 118 acres of oyster reef. An addition to the original project was the construction of barge lanes along the deep water channel, adding to the safety factors of the project.

The above is but a brief sketch of history, but makes apparent the importance and value of the work of Galveston District.

NAVIGATION

Navigation through America's rivers, harbors and deep and shallow draft waterways is a major mission for the Galveston District. Waterborne commerce, essential to our nation's transportation

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Dredge Glenn Edwards, largest hopper in the US.

system and economic vitality is not underplayed in the district. Approximately half of the district's budget is spent on the maintenance and safety of the waterways along the Texas Gulf Coast.

The District is responsible for nearly 1,000 miles of channel spanning the Texas coast. Navigation improvements such as deepening and widening waterways for the safe and expeditious accommodation of commercial ship and other watercraft are a top priority. Other improvements are accomplished by the construction of jetties or entrances. Locks along the Gulf

breakwaters to protect harbor and inlet Intracoastal Waterway at the crossings of the Brazos and the Colorado rivers help protect the shallow draft barges from the dangerous currents that exist there.

Corps contract dredges are constantly at work keeping the vital marine arteries open. Galveston District's annual dredging, more than 40 million cubic yards, if placed on one city block, would create a mountain 14,000 feet above sea level.

Ocean-going ships carry cargoes ranging from cotton to automobiles to petroleum along deep draft channels. Ports of Beaumont, Port Arthur, Orange, Galveston, Texas City, Houston, Freeport, Corpus Christi, Point Comfort, and Brownsville are their ports of call in Texas: all are within Galveston District.

REGULATORY

Wetlands protection, with no net loss of the valuable nurseries for fish and wildlife, is a major goal of the Galveston District. The Corps also carries the responsibility of permitting structures in the navigable waterways of the United States.

The District, through its permit procedures, ensures that economic development in coastal areas can move forward while minimizing the impact upon the ecological balance. Wetlands are vital as barriers to storm caused erosion as well as being nurseries for fish and waterfowl. Proper permitting prevents wetlands from being destroyed.

The Corps regulates activities in the waters of the United States, including wetlands and in all
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Cattle egret in flight over wetlands.

navigable waterways and tributaries. A Department of Army permit is required for such work.

Galveston District's regulatory office issues more than 1,000 permits each year which proves it to be one of the busiest regulatory offices in the Corps of Engineers. Their goal is to balance economic prosperity with environmental sustainability.

ENVIRONMENTAL

Through its permit procedures, the Galveston District ensures that economic development of coastal areas can move forward without upsetting the delicate ecological balances. However, as important as these actions are, other actions by the District also provide ecosystem restoration and protection.

The Corps may carry out aquatic ecosystem restoration and protection projects if a environmental quality is improved, if it is in the public interest and is cost effective.

Restoring and protecting the natural winter habitat for the migrating whooping cranes earned the Galveston District the Chief of Engineers Design and Environmental Award. The project covered a 31-mile stretch of the Gulf Intracoastal Waterway in Aransas and Calhoun Counties, of which 13 miles are located within the Aransas National Wildlife Refuge. This project not only protected the winter home of the endangered birds from erosion through the use of articulated concrete mats, but also refined and improved an ingenious use of geotextile tubes for use as a breakwater. Both mats and tubes allowed sea-grasses to remain intact near the shoreline. In addition, 1,600 acres of marshland will be created from the material dredged over the next 50 years.

Environmental improvement and protection are a consideration in every project handled by the district, from operations and maintenance of the waterways to flood damage reduction projects such as Sims Bayou in Houston. Sims Bayou, running through urbanized Houston to the ship channel, has been hailed as an environmentally sensitive project that sets the standard for flood damage reduction projects. The plan of improvement consists of an aesthetically pleasing, environmentally sensitive design beginning at the mouth of the bayou at the Houston Ship Channel. The plan includes 19.3 miles of channel enlargement, rectification, and erosion control. Environmental quality measures include saving and transplanting many trees, planting new trees, creating wetlands, and developing in-channel ponds. The flood control project is currently under construction. It is scheduled to be completed in 2010. Harris County Flood Control District (HCFCD) is the non-Federal sponsor.

FLOOD DAMAGE REDUCTION

Protecting citizens and property along the Texas coast from flood damages is a priority for the Galveston District.

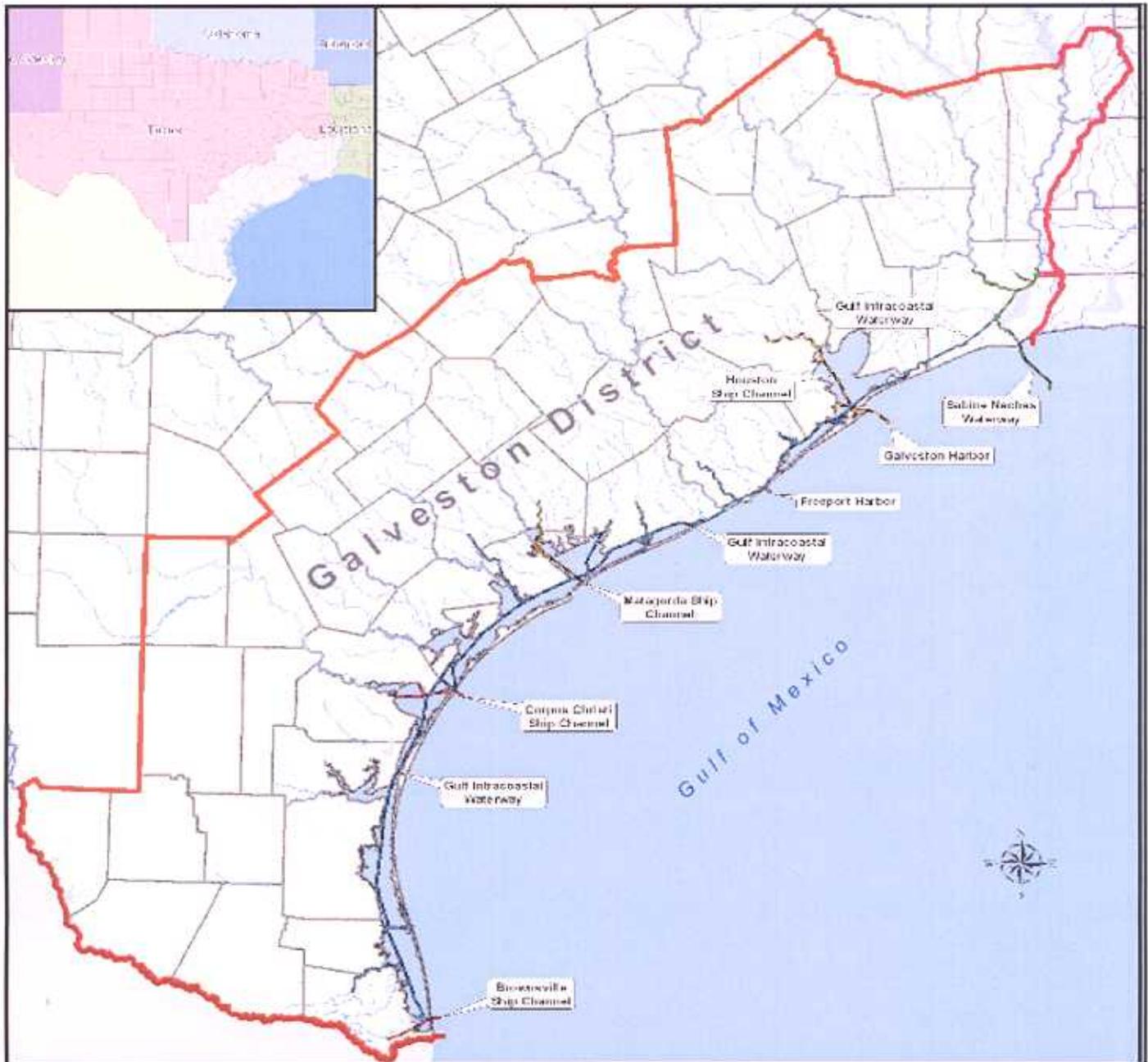
Flood damage reduction projects prevent or reduce flood water damages in Texas' low-lying coastal areas, flood-prone river valleys and further inland bayous that can quickly become raging torrents during heavy rains. The active measures of deepening, widening, and channelizing of the natural water courses to move floodwaters out quickly and efficiently has saved millions in flood damages over the years. The District employs both structural and non-structural methods to avoid damage caused by flooding.

Partnering with the Harris County Flood Control District, protection is provided to millions of homes and businesses. The "bayou city" is made better by projects such as those on Sims Bayou, Brays Bayou, Buffalo Bayou and its tributaries, Little White Oak Bayou, Carpenters Bayou, Cypress Creek, Greens Bayou, Addicks and Barker retention reservoirs, the Clear Creek Project, and others.

Up and down the coast, the District is involved in protecting property and people. The Guadalupe

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Map of Galveston District.

River area, south of Victoria, has felt the benefits of the District's flood damage control policy. Projects are being worked toward for the Lower Rio Grande Basin, Raymondville Drain, South Main Channel in Hidalgo and Willacy counties, and the Arroyo Colorado.

In addition, the District is charged to do regular inspections on completed projects operated and maintained by local interests. The hurricane flood control projects at Texas City, Freeport and Port Arthur are on the list of projects to be inspected. This year, the three systems passed inspection with minor to no repairs required.

EMERGENCY RESPONSE

When help is needed before, during and after a disaster, such as a tropical storm, flooding of other such natural disasters, the Galveston District responds quickly and begins working with the Federal Emergency Management Agency (FEMA).

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When Hurricane Rita hit southeastern Texas in September, 2005, the District, led by Col. Steven Haustein, quickly set up a regional field office staffed by Corps personnel, coming from 37 Corps organizations including districts, division and headquarters. Two supplemental agencies, Army Military Command and the Department of the Interior also sent people.

Most of the missions were concluded by May 2006. The District saw the delivery of 180 trucks of water and 127 trucks of ice: had provided 289 generator sets: seen 20,871 temporary roofs installed: had removed debris from 18 counties and the Alabama-Coushatta Reservation: and, leased 3,642 trailers to homeless families. The last mission, demolition of condemned homes, kept Corps workers in the Beaumont area until June, 2006.



Collecting debris following Rita.

In addition, the District keeps sandbags on hand to pass to governmental entities in case of flood threat.

SUPPORT FOR OTHERS

In addition to its own many civil works programs, the Galveston District works with other government agencies.

The Department of Homeland Security's Immigration and Customs Enforcement, for the past ten years has been an active customer of the District. Much of the work performed by Galveston District has been done at the Port Isabel Detention Center. Master planning, construction of facilities including dormitories, an armory, a maintenance building, a segregation unit and an exercise yard, along with other small projects, have all been handled through the Galveston District.

Three primary structures the Customs and Border Protection will use as its new headquarters are complete. Rio Grande City, McAllen and Edinburg have new sector headquarters as their population grows along with the expanded mission of what was once called the Border Patrol.

New Studies

The Corps of Engineers is prepared to begin reconnaissance studies of the Lower Sabine Basin and the Lower Brazos Basin, to identify needs and opportunities in the areas of Water Supply, Flood Damage Reduction, Ecosystem Restoration, Water Quality, Fish and Wildlife enhancement. The efforts will be a collaborative effort between the local, State, and Federal agencies and authorities looking at all project purposes on a holistic watershed approach.

--Richard Tomlinson

Aquatic Plant Control

Galveston District administers and manages the Corps of Engineers Aquatic Plant Control program in partnership with the State of Texas, Texas Parks and Wildlife Department. The Federal program is cost shared 50/50 and allows for the removal of invasive aquatic plants by chemical, biological, and mechanical means from public bodies of water within the State of Texas.

--Richard Tomlinson



Work for Others

Brownsville Border Patrol Station

Contractors broke ground in November 2006 on a highly anticipated facility that will allow Customs and Border Protection use of 54,472 net square feet of administrative offices, detention spaces, support and maintenance. The complex is sited on the south site of FM 511 and East of Old Alice Road in Brownsville, Texas.

The new Brownsville Border Patrol Station will house the existing Brownsville Border Patrol Station staff. The station design is based on 350 agents and 20 civilians for a total of 370. The distribution of male to female staff is 330 to 40, respectively. The



RCP placing at main parking lot

detention area, sized for 220 males, 36 females, 16 juveniles, four isolation cells and 16 processing stations of which four are "stand up" IDENT stations.

The station will accommodate the Patrol Agent-in-Charge, Assistant Patrol Agent-in-Charge, Field Officer Supervisors, Supervisor Border Patrol Agents, Special Operations Staff, Detention Enforcement Supervisor and two outside offices for agency personnel, as well as the associated support personnel.

The Army Corps of Engineers, Galveston District is administering the design build project. The project was awarded as a single contract to Sundt Construction and the total cost of this facility is more than \$20 million. The estimated occupancy is 10 March 2008.



Drill pier work in large February at the Brownsville site.

-- Bruce Briggs\Earnestine Brown-Roach

Work for Others

Port Isabel Water Storage Tank, Clearwell and Waterline Replacement

The Port Isabel Detention Center (PIDC) is a United States Immigration detention facility located in Los Fresnos, Texas. The PIDC is expected to undergo significant growth in both the number of detainees and employees at the site. The current number of 800 detainees and 400 employees will increase to the projected facility capacity of 2000 and 804, respectively. As a result, the water demands and wastewater loads will also increase, thus modifications to the PIDC water and wastewater systems are needed.



Compaction of subgrade for Clearwell

The water system assessment, and design of the new water tank and design of the replacement distribution

lines, was accomplished by the Architect-Engine (A-E) firm of Malcolm Pimie.



Installation of Line 1 of the water line improvements

U.S. Army Corps of Engineers, Galveston District advertised the design-built contract for Project among three large MATOC contractors as a low bid solicitation. The construction contract includes the construction of the elevated water storage tank and associated site work and structures in the base bid, and four priced options.

The construction contract was awarded to Carothers Construction in September 2006. The total contract cost is \$5,348,000. Carothers started work in November 2006. We anticipate completion of the project in January 2008.

-- Bruce Briggs/Earnestine Brown-Roach



Work for Others

Ellington Airfield

U.S. Army Corps of Engineers, Galveston District construction project at Ellington Airfield, Houston, Texas, exceeding \$30 million is in progress. The design and construction of the 2,500 member two story facility for the joint use by the Army, Navy, and Marine Reserves, the Armed Forces Reserve Center (AFRC) was awarded to SpawGlass Construction.



Power screeds finishing concrete surface of floor slab.



Concrete placement for building slab; vapor barrier and rebar seen.

The A-E firm for this design build project is Gensler. Gensler completed the 100% Foundation and Building design in October 2006.

Spaw Glass started construction in November 2006 and is scheduled to complete construction March 2008.

-- Bruce Briggs/ Earnestine Brown-Roach

Neches River Saltwater Barrier

The project is located just below the confluence of the Pine Island Bayou and the Neches River and provides for a permanent taintor-gated saltwater barrier structure, a navigation gate consisting of a single pair of sector gates, and an earthen overflow dam in the Neches River. The project is 100% operated and maintained by the local sponsor, Lower Neches Valley Authority.

The purpose of the project is to protect the municipal, industrial, and agricultural water supply of Southeast Texas from salinity intrusion.

A 1974 WES report concluded that 75% of the salinity in the Neches River is attributed to the 40' deep navigation project to Beaumont and 25% is due to water withdrawals by the local sponsor. A 1996 Corps reevaluation of the project resulted in a May 1997 decision by the ASA (CW) that the project go forward

as a navigation mitigation project, with 75% Federal/ 25% Non-federal cost sharing. Operation and maintenance of the project is cost shared at 75% Federal/25% Non-federal.

-- Ronny Beesley

Nueces River Basin Study, Texas

The Galveston District and Fort Worth District are partnering on a Feasibility Study to look at Ecosystem Restoration improvements in the Nueces River Basin in partnership with 5 local sponsors, City of Corpus Christi, San Antonio Water System, Nueces River Authority, Guadalupe-Blanco River Authority, and the San Antonio River Authority.

--Richard Tomlinson

Packery Channel



Construction of the North Padre Island Storm Damage Reduction and Ecosystem Restoration Project was authorized in WRDA 99. Local sponsor for the project is the City of Corpus Christi, Texas.

The construction contract was awarded to Luhr Bros., Inc. and King Fisher Marine Services, LP, a joint venture on July 30, 2003, in the amount of \$21,375,044. The completion date for the project was extended due to repair of damages to ongoing construction caused by Hurricane Emily in July and Hurricane Rita in September 2005. The project was officially dedicated on Oct. 6, 2006. Although the contractor left in October, some storm damages remain to be fixed.

The project consisted of dredging an opening from the Gulf of Mexico to Corpus Christi Bay providing tidal exchanges to improve the aquatic habitat in Corpus Christi Bay and the upper Laguna Madre. Dredged material is being placed on the beach south of the channel and restoring approximately 7,500 of beach to a width of 250 feet minimum. The restored beach will provide protection to the eroding foundations of the existing seawall south of the channel. Much of the beach was in place prior to Hurricanes Emily and Rita keeping the seawall from sustaining any damages.

The main channel (Reach 1) is 122 feet wide at a depth of -14 feet MLT. The shoreline slopes are protected by

concrete cellular mats to a depth of -2 MLT. The secondary channel (Reach 2) running from Texas Highway 361 north to the Corpus Christi Bay is 80 feet wide at a depth of -8 feet MLT.

The project is in a highly sensitive environmental area with submerged aquatic grasses and nesting areas for the piping plover and Ridley turtle. The Mollie Beattie Wildlife Habitat area borders to the east of Reach 2.

Extensive environmental

coordination was conducted with the US Fish and Wildlife Service and the Texas Parks and Wildlife Service during the feasibility phase of the project to make the project environmentally acceptable to the resource agencies and the general public. Mitigation for the project was completed in January 2006 through a contract by the Coastal Bend Bays and Estuaries Program for construction of eight rock groins to protect the eroding shoreline of Shamrock Island, a primary bird habitat in Corpus Christi Bay.

-- Carl Anderson

Work for Others

Corpus Christi Army Depot, Naval Air Station Corpus Christi, Texas

Bath Tub Roof -- Project consists of approximately 10,000 sf of structural steel false canopy roof over an existing depressed roof area known as the "bath tub" and replacement of two adjacent roof areas (approximately 6,000 sf) with a bitumen roof membrane system. The construction contract was awarded to Jimmy Closner & Sons Construction Co. Inc. in the amount of \$1,409,358.04. Construction was completed in February 2007.

-- Carl Anderson



Brazos River Floodgates



Brazos River Floodgates

The Brazos River Floodgates are located approximately 5 miles southwest of Freeport, Texas, between mile marker 400 and 401, measured west of Harvey Locks, LA on the Gulf Intracoastal Waterway. The Brazos River Floodgates consist of two floodgates, each having two sector gates that have a horizontal clearance of 75 feet. Floodgate No. 13 is located on the GIWW east of the Brazos River and Floodgate No. 14 is located on the west side of the river. The floodgates are operated 24 hours per day, 365 days a year.

The purpose of the floodgates is to aid navigation crossing the Brazos River and to control silting at the intersection of the GIWW and the Brazos River.

Commercial statistics show 22,547 tows, carrying 40,901,000 tons of cargo passing through both floodgates in 2006, along with 11,099 recreational vessels. Under authority of Section 216 of the 1970 Flood Control Act, a reconnaissance study (905(b)) was completed in 2003 to determine the need and advisability of modifying the configuration of the crossing

to reduce traffic accidents and delays. The study concluded that widening of the facilities and moving them away from the river was potentially feasible and that it is in the federal interest to conduct a more thorough feasibility level study.

Due to shortage of study funds and because the towing industry recommended that the Colorado River crossing be studied first, no additional feasibility study has been started for facilities at the Brazos River crossing.

-- Ronny Beesley



Brazos River Floodgates

Colorado River Locks

The Colorado Locks are the first operating locks in the state of Texas and are located approximately 0.5 mile south of Matagorda, Texas, between Mile 441 and 442, measured west of Harvey Locks, Louisiana, on the Gulf Intracoastal Waterway. The Colorado River Locks consist of two locks that measure 1,200 feet long and 75 feet wide. Lock No. 11 is located on the GIWW east of the Colorado River and Lock No. 12 is located on the GIWW west of the river. Each lock consists of four sector gates, two at each end, and each lock chamber can accommodate tows up to 1,180 feet in length. The locks are operated 24 hours per day, 365 days a year by US Army Corps of Engineers personnel. The West Lock is accessible only by boat.

The purpose of the locks is to aid barges and other waterborne traffic in crossing the Colorado River during periods of high water flow in the Colorado River. When

normal river conditions exist, the locks are used as floodgates to prevent excessive tidal action and silting in the Intracoastal Waterway.

There were a total of 22,049 tows carrying 39,348,000 tons of cargo passing through the two locks in 2006 along with 36,218 recreational boats.

Under authority of Section 216 of the 1970 Flood Control Act, a reconnaissance study (905 (b)) was completed in 2003 to determine the need and advisability of modifying the configuration of the crossing to reduce traffic accidents and delays. The study concluded that widening the facilities and moving them back away from the river is potentially feasible, and that it is in the federal interest to conduct a more thorough feasibility-level study. This study has been put on hold pending receipt of funds. -- Ronny Beesley



Intersection of the GIWW and the Colorado River, looking west.

US Army Corps of Engineers -- Galveston District



Gulf Intracoastal Waterway

The Gulf Intracoastal Waterway (GIWW) in Texas extends from a point on the Sabine River near the town of Orange, Texas to Brownsville, Texas a length of about 423 miles. With over 58 million tons moving annually on the Texas portion of the GIWW, it is equivalent to the country's fourth largest port. The GIWW provides a conduit along the Texas coast for goods to reach various destinations with its many connecting tributary channels and several terminal and barge mooring facilities. There are also two navigation facilities on the GIWW that provide floodgate and lockage operations for waterway users.

Existing project: The GIWW is authorized at 12 feet deep (below mean low tide) and 125 feet wide. Maintenance of the GIWW is ongoing and consists mainly of dredging. Regional Sediment Management along the GIWW is paramount to maintaining the waterway. The Galveston District is proactive along the GIWW with 30% of available dredged material placement areas designated as beneficial use areas.

Maintenance: FY '06 maintenance costs were approximately \$26 million dollars. These costs were unequally divided between maintenance dredging and floodgate/lock facility operations. The lion's share of the operating budget goes toward maintaining the 423 miles of the GIWW for navigation purposes. The Galveston District is expected to spend near \$31 million dollars in

FY '07 to maintain the waterway. Even with this amount, an additional \$42 million dollars is needed just to bring the channel to authorized depths. This funding shortfall has severely limited the ability to take care of customers and the waterway. Being creative and prioritizing obligations for the most efficient use of the limited funding available appears to be the new adage for maintaining federally authorized navigation channels.

-- Karl Brown

GIWW – Port O'Connor to Corpus Christi (GI- Feasibility Study)

The study area includes approximately 79 miles of the Texas section of the main channel of the Gulf Intracoastal Waterway (GIWW), extending from Port O'Connor to the Kennedy Causeway at Corpus Christi Bay. The purpose of this study is to evaluate operational problems and address environmental concerns along this reach of the waterway. Thirty-one (31) miles of this reach of the waterway are within the critical habitat of the endangered whooping crane. This segment has been addressed under a separate feasibility study for the Aransas National Wildlife Refuge, and is therefore excluded from consideration. Navigational difficulties caused by frequent shoaling at various locations within the remainder of this reach, traffic congestion near Port O'Connor, and the lack of navigational aids and mooring facilities have been previously identified by users as areas of concern.

Due to funding limitations, the feasibility study is currently limited to the Port O'Connor moorings and Corpus Christi reroute. The feasibility study for these areas is ongoing with an interim draft report scheduled for completion in 2007. The portion of the feasibility study on the Victoria Wye will be initiated upon receipt of additional federal funding.

-- George Alcala



Matagorda Swing Bridge

GIWW High Island to Brazos

The study area includes approximately 85 miles of the Gulf Intracoastal Waterway (GIWW) in Galveston and Brazoria Counties, from High Island, Texas, to the Brazos River. Tonnage transported along this section of the GIWW totaled nearly 50 million tons in 1994, with petrochemicals as the major commodity shipped.

Some of the problems identified by users along this reach include difficulties negotiating the two 90-degree bends west of the Highway 124 bridge at High Island causing steerage problems for tows, making it difficult for even one way traffic; high shoaling rates and associated transit delays at Rollover Pass; the area at Sievers Cove experiences periods of high wind and current causing navigation problems due to the limited clearance between the GIWW and placement area #41, limiting the barges ability to compensate. Problems also arise at the Texas City Channel (west wye) with it being too narrow, often shoaled, difficult to find and to navigate during high winds or strong currents.

Waterway users often continue to the intersections of the Texas City Channel and the GIWW before turning towards Texas City creating an unsafe condition due to currents as tows maneuver a 120 degree turn into a congested area used by ocean-going, deep draft vessels; the cut through Pelican Island provides the last protected area for eastbound traffic before crossing the Galveston causeway. Tows often stop during fast moving currents and high winds, causing congestion at this mooring facility as vessels wait for safe passage through the Galveston causeway.

Additionally, moored barges often extend out into the channel making passing through the area difficult requiring extreme care. Additional moorings are needed west of the Galveston causeway, as during periods of high winds, tows must push onto the bank in the sheltered area near Greens Lake and wait, sometimes for several days.

The four miles between Cow and Halls bayous are areas of serious erosion where shoaling often reduces the channel width, limiting traffic to one way. The problem is compounded by cross currents.

Investigations to identify potential solutions to resolve the navigation issues along this reach of the GIWW have been divided into two interim feasibility studies. The first study is the GIWW – High Island to Brazos River, Texas study.

The study addressed potential improvements to the waterway between Rollover Pass and West Bay.

The GIWW – High Island to Brazos River Interim Feasibility Report was completed in December 2003. However, the project is not yet authorized for construction.

The second interim study, the GIWW – High Island to Brazos River Realignment Interim Feasibility Report, will include continued evaluation of navigation improvements in negotiating two 90-degree bends near High Island; difficulties negotiating a double “S” curve near Freeport; difficulties negotiating the intersection with the Chocolate Bayou Channel; and developing long range disposal plans.

FY 2007 funds are being used to complete the plans and specifications for the Pelican Island Moorings and Texas City Wye modifications.

The State of Texas is the non-Federal sponsor of the GIWW and continues to maintain a high interest in the waterway because of their responsibility to provide dredged material disposal areas. The GIWW is designated as part of the Nation’s Inland Waterway System, and qualifies for 50-50 cost sharing from the Inland Waterways Trust Fund for construction of navigation improvements.

An initial appraisal of the entire 423-mile Texas Section of the GIWW was completed in November 1989. The reconnaissance study, completed in February 1995, concluded that modifications to the existing GIWW were economically feasible.

-- George Alcala

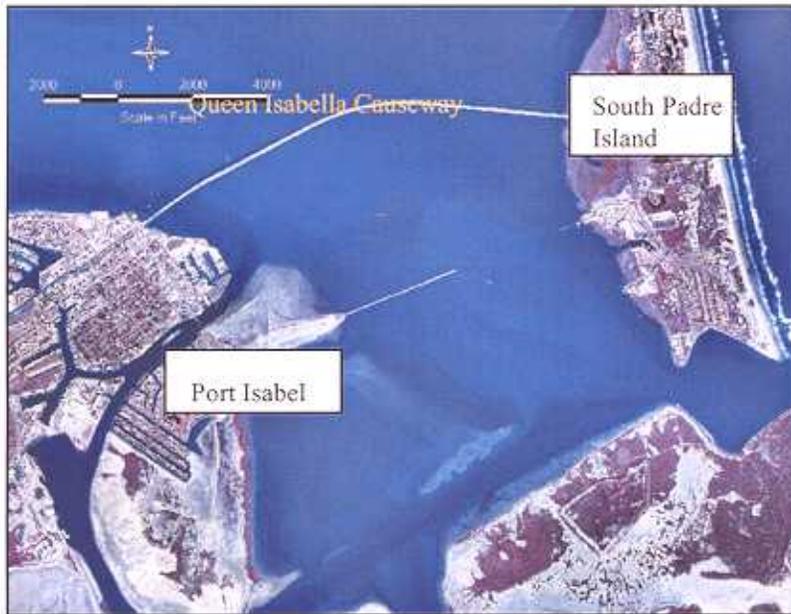


Traffic on the GIWW.



Navigation

GIWW – VICINITY OF PORT ISABEL, TEXAS



span, resulting in eight deaths and a major economic setback for the people and businesses that depend on access to South Padre Island for their livelihood. Cameron County, along with a number of other local entities, is interested in a possible realignment of the GIWW so that it no longer passes between the waterfront of the City of Port Isabel and Long Island, but instead travels directly from the point where it crosses underneath the Queen Isabella Causeway to the point at which it intersects the Brownsville Ship Channel.

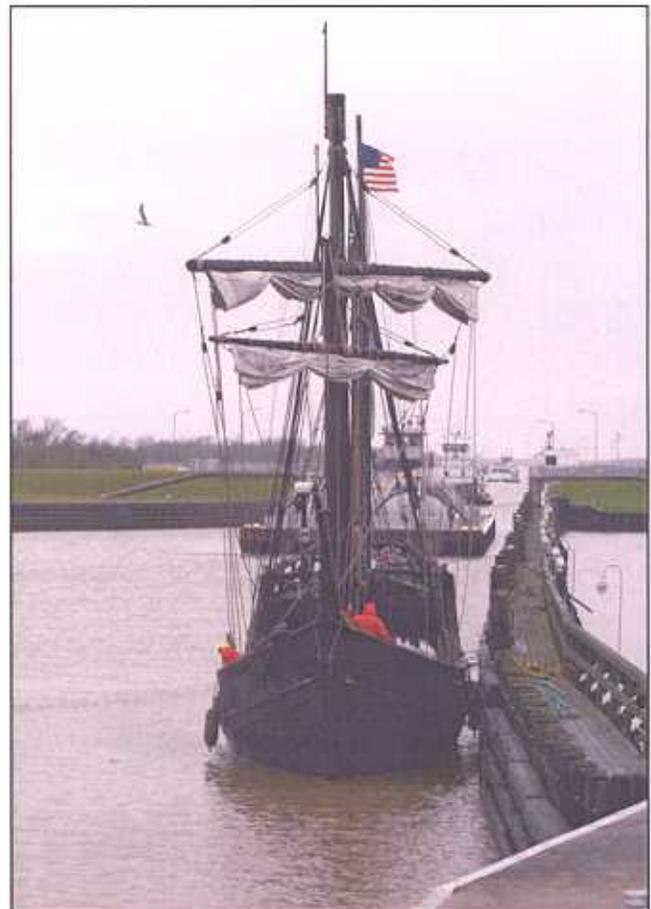
The feasibility study will investigate the existing channel to determine if any safety issues exist with the current alignment and evaluate alternative routes, if necessary. The project is 100 percent federally funded.

-- George Alcalá

The Port Isabel navigation project is an existing navigation project located on the lower Texas coast between the Queen Isabella Causeway Bridge at Port Isabel and the intersection with the Brownsville Ship Channel. The existing project is a 12-foot by 125-foot channel transiting the Laguna Madre and passing under two bridges at Port Isabel before joining the Brownsville Ship Channel. The GIWW at Port Isabel is an important waterway for transporting petroleum products, especially fuel, to support the extensive agriculture based economy of the Rio Grande Valley.

The Lower Laguna Madre is shallow, averaging approximately 4.6 feet deep, and, including the South Bay and La Bahia Grande complex, contains approximately 180,000 acres. In the Lower Laguna Madre, seagrasses cover approximately 118,000 acres of bottom, or slightly more than 65 percent of the total bottom. The project site is located at the southern end of the Lower Laguna Madre in the vicinity of Mexiquita Flats, a shallow (2-3 feet deep) area of grassbeds. Isolated stands of mangroves occur in the area. South Bay contains the only natural oyster beds in the Laguna Madre system.

On September 15, 2001, a barge collided with the Queen Isabella Causeway and collapsed portions of the



Nina replica plus three tows on the GIWW

Texas City Ship Channel

The Texas City Channel is a Federal deep-draft navigation project serving the Port of Texas City in Galveston County, Texas. It consists of a main channel connecting a turning basin at the port to the Gulf of Mexico through Bolivar roads, a part of the Houston Ship Channel (HSC). The main channel is 40 feet deep, 400 feet wide and about 6.8 miles long. The turning basin is 40 feet deep, 4,253 feet long, and ranges from 1,000 to 1,200 feet wide. An Industrial Canal, 40 feet deep and 300 to 400 feet wide extends 1.7 miles southwestward from the south end of the turning basin. The Texas City Channel is protected from cross currents and shoaling by the Texas City Dike, which consists of a pile dike 28,200 feet long, parallel to and north of the channel; and a rubble-mound dike, 27,600 feet long, along the southerly side of the pile dike. The 40-foot channel was completed in June 1967. The Water Resources Development Act (WRDA) of 1986 authorized deepening the Texas City Channel to 50 feet and widening it to 600 feet. However, it was never constructed. In 2001, the Non-Federal Sponsor of the project, the City of Texas City, requested to study deepening the channel to 45 feet while maintaining the current width.

In 2004, the Port of Texas City handled over 65 million short tons of crude oil, petroleum products and chemical products and was ranked the ninth largest port in the U.S. The primary purpose of the Texas City Channel project is to improve the navigational efficiency and safety of the existing waterway for movement of commerce and national security needs. An environmental opportunity also exists through the utilization of dredged material beneficially. Recreation demands and needs of the area may also be addressed by using dredged material to enlarge the beach areas north of the Texas City Dike.

In January 2007 a Draft General Reevaluation Report (GRR) and Environmental Assessment (EA) were released for public review and comment. The report recommends deepening the Texas City Turning Basin and Texas City Channel from the Turning Basin to the channel junction with the HSC to -45 ft MLT. A total of



Texas City Ship Channel

approximately 4.8 million cubic yards of construction and maintenance grade material would require three separate dredging contracts to complete. The work is estimated to begin in 2008 and be complete by 2010.

Fiscal Year 2007 funds are being used to complete the GRR, which is scheduled for approval by the Assistant Secretary of the Army for Civil Works in FY07. Construction plans and specifications are being initiated and construction funds are being sought for FY08.

-- Sharon Manzella Tirpak

Maintenance

Texas City Ship Channel

The Texas City Ship Channel consists of a 40 ft deep navigation channel 400 ft wide that extends from Bolivar Roads in the Galveston Entrance Channel 7.3 miles into the Port of Texas City. The project includes a 2.1 mile Industrial Canal and Turning Basin that houses the facilities of the Port of Texas City. A rubble-mound dike extends along the northerly side of the channel that is a popular recreation site for the public.

The Texas City Ship Channel requires maintenance dredging every two years. Maintenance requirements for FY07 include two contracts for placement area management to de-water and to build the levees. In FY08, a full dredging of the channel and turning basin is anticipated.

The City of Texas City is the local sponsor for this project. The Port of Texas City is ranked 9th of the Leading U.S. Ports in 2004, reporting 68 million tons of cargo shipped in that year.

-- Cindy Burke



Navigation

Freeport Harbor Project

The Freeport Harbor project is located along the mid to upper Texas coast, and is formed by the improvement of the Brazos River, Texas, from the mouth about 6 miles upstream to Freeport, Texas. It provides for a 47 foot deep, 400 foot wide entrance channel; 45 foot deep, 400 foot wide main channel; 45 foot deep, 750 foot diameter turning basin; a 45 foot deep, 1200 foot diameter Brazos Port Turning Basin; a 45 foot deep, 1200 foot diameter Upper Turning Basin, 36 foot deep, 200 foot wide Brazos Harbor channel; and 36 foot deep, 750 foot diameter Brazos Harbor turning basin.

The local sponsor, the Brazos River Harbor Navigation District, is interested in examining the feasibility of improvements to widen and deepen the existing deep draft navigation channel and to determine the Federal interest in expanding the reach of the navigation channel to the Stauffer Channel and turning basin. The Brazos River Harbor Navigation District signed a Feasibility Cost Sharing Agreement (FCSA) in July 2003.

Widening and Deepening

Freeport Harbor is an important port for imported petroleum products, exported petrochemicals, and general cargo. The existing channel is not sufficiently deep to fully load the existing tanker fleet serving Freeport Harbor. Further, the 400-foot wide entrance and main channels limit Freeport Harbor to one-way traffic for all vessels and daylight-only operation for larger vessels.

The light-loading, one-way traffic, and daylight-only operation result in significantly higher cost to users than would be experienced if the harbor were enlarged and deepened.

FY 2007 funds are being used to continue the feasibility phase of the study on the deepening and widening of the deep draft navigation channel. This will include an environmental baseline study; cultural resources study; geotechnical and structural design; preparation of an economic appendix; and an initial real estate plan. FY 2007 funds will be used to continue feasibility phase of the study to include preparing engineering appendix; real estate gross appraisal; environmental impact analysis; and initiate draft feasibility report and advanced draft environmental impact study.

-- Mike Bragg



Maintenance

Freeport Harbor

The Harbor is a 45-foot channel and one of the top deep-draft ports in the nation, ranking no. 24 in 2003. Maintenance requirements include annual dredging of the entrance and jetty channel, primarily performed in the fall/winter, and maintenance dredging of the inside harbor channel on a 3 year recurrence. The entrance and jetty channel work is performed with a hopper dredge with placement in an offshore site. Inner harbor work is typically accomplished by cutterhead dredge, with material deposited in upland confined placement areas. The port is pursuing further improvement to as much as 60 feet depths for its petroleum transits. Freeport Harbor is also moving forward with LNG development. In addition to the substantial petroleum and chemical products, other major commodities include bananas and rice. Dredging the entrance channel will cost \$4,400,000 to complete including hydrographic surveys, placement area surveys, and maintenance dredging in FY07. An additional amount of \$2,020,000 could be used for dredged material placement area management activities. Failure to maintain this project to a reliable depth will cause interruptions to vessel traffic to one of the largest petrochemical complexes on the Gulf Coast. Economic Impacts of \$7.06 billion annually and produced approximately 30,000 jobs. Many of the industries at the port maintain "just in time" inventory levels and interruption in supply will result in temporary plant closures having negative effects on local and national economies.

-- Ronnie Barcak



Mouth of the Colorado

This project is located in Matagorda County, Texas, and includes a shallow-draft navigation channel between the Gulf Intracoastal Waterway (GIWW) and Gulf of Mexico, entrance channel with jetties, harbor and turning basin, diversion dam and connecting channel, recreation, Parker's Cut dam, and an oyster cultch. Construction was completed in 1991.

-- Mike Bragg

Maintenance

Mouth of the Colorado

The Mouth of the Colorado River project consists of an entrance channel authorized at 15 feet deep and 200 feet wide with jetties to protect the entrance in the Gulf, a 6.5 mile navigation channel, 12 feet deep and 100 feet wide, and a harbor and turning basin adjacent to the Gulf Intracoastal Waterway, and two recreation areas. Diversion features consist of a 3.1 mile long channel with a 20 foot depth and a 250 foot width to divert the flow of the Colorado River into Matagorda Bay, a diversion dam and navigation connecting channel, closing of Tiger Island Channel, and creation of an oyster cultch in Matagorda Bay. Maintenance dredging in FY07 has

been postponed and all efforts are being geared towards implementing a long-term solution to address the shoaling of the Entrance Channel. The Federal channel is currently shoaled to less than 2 feet and is an extreme navigation hazard to all users unfamiliar with the tide and project conditions. The project sponsor, counties, and local governments rely heavily on the recreation fishing industry and commercial/recreational aspects of sport fishing that the Federal project provides. Without access to the Gulf, all supporting entities will experience severe economic hardship results. The long-term solution being sought is construction of a new east jetty, estimated at \$18M to initiate/construct, along with a \$5M dredging requirement. The effort is not included in the FY08 President's Budget, but is firmly supported by the Sponsor, Users, and their Congressional Representatives through specific directive legislation being contemplated. FY07 funds will be utilized to initiate towards completion all engineering and environmental clearances to implement. Implementation awaits completion of all required documentation, approvals, and appropriation of sufficient funds.

-- Ronnie Barcak



Mouth of the Colorado showing the silting which has occurred.

US Army Corps of Engineers -- Galveston District



Navigation

Houston Ship Channel

The Houston Ship Channel widening and deepening improvement portion of the Houston-Galveston Navigation Channels (HGNC) Project was completed and has 45-feet of water available since June 14, 2005. This does not complete the project. Although the Entrance Channel and the Houston Ship Channel (HSC) have been dredged to the new width and depth the project still has a long way to go before it is complete.

Project Location

The Houston Ship Channel is a 54.0 mile long deep draft (45') waterway which extends from Bolivar Roads near Galveston, Texas, north through Galveston Bay, the San Jacinto River, and Buffalo Bayou to a Main Turning Basin at Houston, Texas. The project also includes a 6.5 mile long shallow draft reach. The Light Draft Channel extends upstream of the Main Turning Basin.

The second portion of this project involves improvements to the Galveston Channel. These improvements are presently being developed with the Port of Galveston (PoG) and a Limited Reevaluation Report will be prepared to summarize the changes for the Galveston Channel since the HGNC project was

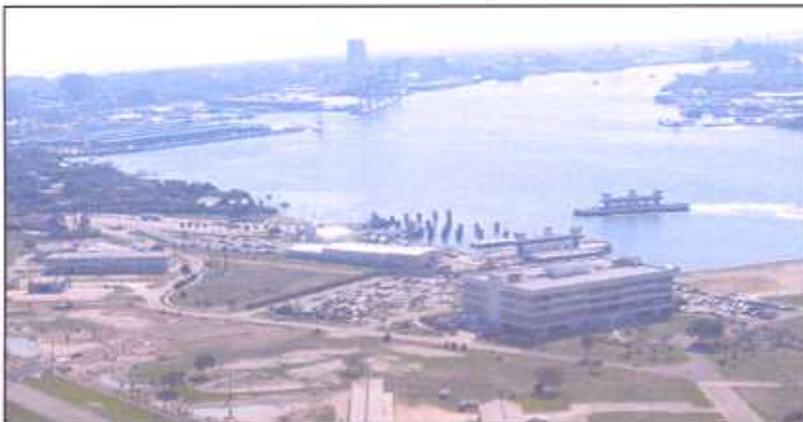


Barbours Cut

authorized for construction. A Project Cooperation Agreement (PCA) is being negotiated with the PoG.

The PCA lays out the project cost sharing and how it will be operated and maintained. The PCA, together with the LRR, will be submitted to the Assistant Secretary of the Army for approval. Once the PCA is signed by both parties, plans and specifications can be developed to perform the construction.

The improvements to the 14.4 miles of Entrance Channel and the Houston Ship Channel (26.0 miles across Galveston Bay and 13.0 miles in the Bayou Reach) began the start of the creation of numerous beneficial use sites that include the construction of offshore beneficial use berm, bird islands, saltwater marshes, and other habitat for a variety of inhabitants. Over the economic life of the project approximately 4,250 acres of saltwater marsh will be constructed along with two bird islands and two islands for various types of habitat. In addition, barge lanes were



Galveston Ship Channel

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constructed on each side of the ship channel from Galveston to Morgans Point.

An offshore berm has been constructed using the dredged material from the Galveston Harbor Channel and from other reaches of the Houston Ship Channel in Galveston Bay. This berm was constructed by controlled placement of the material dredged by hopper dredges or by scows filled by a bucket dredge.

Two bird areas in Galveston Bay, one an island and the other area at the northern end of Redfish Island, both six acres in size, have been constructed. These areas contain open beach areas and vegetation to provide the habitat of the numerous waterfowl using the areas. In addition, two additional islands are being constructed in the landlocked reach of the Houston Ship Channel that will provide a destination for local residents to use for recreation and also provide habitat for the birds.

Saltwater marshes are being constructed at three locations in Galveston Bay. At each of these locations, constructing containment levees with the stiffer material that is being dredged from the channel is forming cells. The cells are being filled with the softer dredged material. The capacity of these cells is presently being sized to contain the material estimated to be dredged from the initial construction and during the maintenance of the channel over the first twenty years of project life. Additional capacity in the form of cells will be added in future years and will be considered to be deferred construction. Over the economic life of the project it is estimated that 4,250 acres of saltwater marsh will be constructed.

The initial dredging of the Houston Ship Channel is complete. On June 15, 2005 the channel was opened for 45-foot vessel traffic. This however does not complete the construction of the authorized project. Additional capacity in the Galveston Bay reach still needs to be constructed to provide capacity for the maintenance dredging that will occur over the 50 years of project life. The completed project does give the Port of Houston a competitive edge in the import and export of goods and keeps the port competitive.

-- Dalton Krueger

Maintenance

Houston Ship Channel

This navigation project is located in the vicinities of Houston, Pasadena, Deer Park, Jacinto City, Galena Park, and La Porte in Galveston and Harris Counties, Texas.

The Port of Houston is ranked the #2 port in the Nation with over 200 million tons annually transported on the channel mainly supporting the petrochemical industry. Safe and efficient commercial navigation is of national interest, as the value of cargo shipped through the Houston Ship Channel is estimated to over \$76,000 million.

Total employment effects attributable to the Houston Ship Channel are estimated to be 478,610 jobs. This estimate includes direct, indirect and induced employment effects of the project. The total personal income effects attributable to the Houston Ship Channel are estimated to be \$20,103 million. Total business sales attributable to the project are estimated to be \$117,390 million. These estimates include direct, indirect and induced income effects of the project.

\$13,225,000 has been allocated for the FY 2007 budget. With this money the reaches of Exxon to Carpenter's Bayou and a reach south of Redfish will be dredged. Money will also be used to rehabilitate the Houstract Stimson Placement Area and to perform DAMP activities at Alexander Placement Area.

-- Captain Michael Raymo



The hopper dredge, Glenn Edwards, in the entrance channel.



Navigation

Sabine Neches Waterway

The Sabine Neches Waterway is a federally constructed deep draft channel, which serves the Ports of Port Arthur, Beaumont, and Orange, Texas. The existing waterway consists of a jettied entrance channel, 42 feet deep and 500 to 800 feet wide, from the Gulf of Mexico; a channel 40 feet deep and 400 feet wide to Beaumont via the Neches River; and a channel 30 feet deep and 200 feet wide to Orange via the Sabine River.

Galveston Ship Channel

The project is a 14.4 mile deep draft channel that extends from deep water (45'x800') in the Gulf of Mexico through a jettied entrance channel (45'x800') to Galveston Bay near Port Bolivar. From this point, the channel portion extends up to 43rd Street in Galveston, Texas (40'x1125').

In 2005, the Port of Galveston was ranked 11th in the nation for total tonnage of combination type vessels. From the port, two cruise terminals are also operated.

\$2,600,000 has been allocated for the FY 2007 budget. With this money, the Corps will award a hopper dredge job during the summer of 2007 to address critical shoaling along the inner harbor channel. This maintenance dredging will continue to prepare the channel for the Construction General deepening project for an improved 45 foot deep channel in the near future.

--Captain Michael Raymo

Chocolate Bayou Channel

The Chocolate Bayou Channel is a Federally authorized, 8.2 mile long channel which traverses Chocolate Bay connecting industries at the northwest end of the bay with the Gulf Intracoastal Waterway. The channel, currently maintained at a 12-foot depth (MLT) by 125-foot wide, is primarily used for transportation of crude petroleum and petrochemical products.

The maintenance dredging frequency is every four years. This project provides a management plan that will utilize maintenance material from dredging the channel, over a 20-year period, to create and enhance approximately 560 acres of marsh and bird-nesting habitat within the Chocolate Bay area.

Dredging of the project to full authorized dimensions occurred in FY07; next dredging anticipated for FY10. Three chemical companies provide 5,200 jobs directly tied to this project and 22,000 jobs tied indirectly to Chocolate Bayou. Failure to maintain this project to a reliable depth will compel the user to severely reduce operations, resulting in workforce layoffs. According to IWR published statistics, the value of cargo shipped from Chocolate Bayou in 2004 was \$400,000,000.

The study is investigating navigation modifications up to the Port of Beaumont to improve the efficiency and safety of navigation on the waterway. Current study depths range from 48 to 45 feet and widths up to 800 feet. Currently, the costs and benefits to construct are being evaluated in an effort to determine the NED plan. The report is expected to be complete in December of '08.

-- Byron Williams

Maintenance -- Sabine Neches

This navigation project is located in the vicinities of Beaumont, Port Arthur, Orange, and Sabine Pass in Jefferson and Orange Counties, Texas, and Cameron and Calcasieu Parishes, Louisiana. The Sabine-Neches Waterway (SNWW) is a 79 mile deep draft (40') ship channel which extends from the 42-foot contour in the Gulf of Mexico through a jettied channel to Port Arthur, to Beaumont via the Neches River Channel, and to Orange via the north part of Sabine Lake and continues via the Sabine River Channel.

The Port of Port Arthur is ranked the #8 port in the Nation and is the Nation's #1 port in regards to number of vessel calls transporting crude oil. The SNWW has been designated a Strategic Waterway, supporting approximately one-quarter of the military cargo shipping to support Operations Enduring Freedom and Iraqi Freedom. Safe and efficient commercial navigation is of national interest, as the value of cargo shipped through the SNWW is estimated to be over \$40,000 million. Total employment attributable to SNWW are estimated to be 306,391 jobs. This estimate includes direct, indirect and induced employment effects of the project. The total personal income effects attributable to SNWW are estimated to be \$12,869 million. Total business sales attributable to the project are estimated to be \$75,150 million.

\$7,972,000 has been allocated for the FY 2007 budget. With this money, the Port Arthur Canal, Turning Basin and Junction area will be dredged. Work on the rehabilitation of Placement Area 11 and continued dredging on the Lower Neches River will also take place in 2007.

-- Captain Michael Raymo



Barbour Terminal Channel and Turning Basin

This project is located in the vicinities of Houston, Pasadena, La Porte, and Shore Acres in Harris County, Texas. The Barbour Terminal Channel and Turning Basin is a 1.7 mile long deep draft waterway that extends from the Houston Ship Channel at Mile 26.3, west across Galveston Bay.

Annually, over 10 million tons of cargo travel through the channel with an estimated value of over \$27 million. Total employment attributable to Barbour Terminal Channel are estimated to be 17,590 jobs. This includes direct, indirect and induced employment effects of the project. The total personal income attributable to Barbour Terminal Channel are estimated to be \$739 million. Total business sales attributable to the project are estimated to be \$4,314 million. These estimates include direct, indirect and induced income effects of the project.

During Fiscal Year 2007, Barbour Terminal Channel and Turning Basin will be mined for clay material to construct levees on Spillman and Atkinson Placement Areas. This will require dredging the channel to depths of 51 and 54 feet in some areas.

-- *Captain Michael Raymo*



Barges on the Channel to Victoria.

Channel to Victoria, Texas

The Channel to Victoria project is not scheduled to receive funding in fiscal year 2007. However, current project funds are sufficient to complete remaining project work. These funds will be used to complete the technical and general public reports for the Buckeye Knoll archeological site and to identify, design, and construct an alternate environmental mitigation feature at the Guadalupe Delta Wildlife Management Area (GDWMA). Completion of this work will enable closure of the project.

-- *Enrique Villagomez*

Maintenance

Channel to Victoria

The Channel to Victoria project provides a 34.8 mile shallow draft channel extending from its junction with the Gulf Intracoastal Waterway, across San Antonio Bay through a landlocked section east of the Guadalupe River and ending at the turning basin near the City of Victoria. The Channel to Seadrift project provides a 2 mile shallow draft channel from the Channel to Victoria northeasterly and ending at the turning basin at Seadrift. Dredging the lower and middle reach is scheduled for FY07; cost is \$3,120,000. Another \$2,950,000 could be used in FY07 to further address bank erosion and drainage concerns along the inland portion of the Project. Dredging the Upper Reach and addressing bank erosion and drainage is needed in FY08. Erosion of the banks and failure of existing drainage features add significant material to the channel, requiring further dredging. It is conceivable that addressing the bank erosion and drainage features would significantly reduce the future dredging requirements and provide a much

more efficient level of service. Failure to maintain this project to a reliable depth will compel users to restrict cargo loads causing economic losses. In 2004 the Port of Victoria handled 5,711 barges accounting for 2,045,878 short tons of cargo. Chemicals, fertilizers, sand and gravel comprise the largest inbound/outbound cargos from the port. The Port of Victoria has recently signed a memorandum of agreement with the Port of Houston for a container on barge project between the two ports. Maintaining the waterway for this 81st ranked port is vital for the local economy.

-- *Ronnie Barcak*



Navigation

Matagorda Ship Channel and Jetties

Because of limited federal funding for the project's feasibility study in FY 2006, the project slowed to a stop in January 2006. Then, Corps headquarters issued guidance to the Galveston District directing the study be converted from a general investigations study (GI) to an operations and maintenance (O & M) funded project. The project is on track now for actual rehab work to commence within the next few years.

The "good news" for the navigation district is that, due to this change to an O & M project, the cost sharing requirement for the original project is dropped and the rehabilitation work will be at 100 percent federal expense. As first envisioned, the stabilization project would have been cost shared between federal funds and the local sponsor, the Calhoun County Navigation District. Under the new guidelines, the local sponsor no longer continues to pay a portion of the cost.

The Matagorda Ship Channel carries more than 12.7 million tons of cargo annually and is rated as the fiftieth busiest waterway in the United States. It handles a wide variety of commodities, most of which are specialized, and/or hazardous material that depend on some of the most unique port facilities in the United States and located only at the port of Port Lavaca/Port Comfort. Major companies in the region indicate that in the event of jetty failure and closure of the channel, they would not, or could not economically relocate their



Matagorda Ship Channel

facilities to other ports in the United States. Some indicated they would not attempt to stay in the U.S.

Located in Calhoun and Matagorda counties, 120 miles southwest of Galveston and 80 miles northeast of Corpus Christi, the Matagorda Ship Channel, handling both deep and shallow draft traffic, passes through a man-made cut at the western end of Matagorda Peninsula. The existing Matagorda jetty entrance channel is 38-feet deep, 300 feet wide and about 4 miles long.

The channel entrance is guarded by 6,000 foot long dual jetties reaching into the Gulf of Mexico.



Project area at the jetties.

The jetty system, built in 1963-1964, was designed to be self-cleaning. That is, it was expected that currents would keep maintenance dredging at a minimum. Surveys now indicate depths are approaching 100 feet in some areas, which if left unabated, would ultimately affect the stability of the jetties.

Through recent core borings done by the Galveston District, indications are that the scouring has stabilized due to the cohesiveness of the material at the bottom of the channel.

On the backside of the west jetty, some damage has occurred since the jetties were first built. Many of the large cover stones have been displaced, indicating that the jetties have been breached in the past, due primarily to storm surge, wave action. All of which threaten the integrity of the jetties and potential closure of the navigation channel.

— George Alcalá

Cedar Bayou, Texas

The Chambers County Cedar Bayou Navigation District and the Corps of Engineers are completing a Feasibility Study and Environmental Impact Statement to improve 8 miles of navigation channel along Cedar Bayou to the dimensions of 10 feet deep by 100 feet wide. The design phase is underway in 2007 and construction in 2008 and 2009.

--Richard Tomlinson



Industry towers over the tree lined banks of Cedar Bayou.

Maintenance

Matagorda Ship Channel

The Matagorda Ship Channel is a 36-foot deep-draft Federal Channel ranked no. 50 in the Nation in 2004. Maintenance requirements have increased over the years, primarily because of the growth of utilization. Maintenance dredging typically has been on a 2 year recurrence; however, dredging needs have been identified and performed on an annual basis for the upper reach. Maintaining the deep draft channel to 36 feet will cost \$5,367,000 in FY07 to complete including hydrographic surveys, placement area surveys, maintenance dredging, and related investigations into high shoal areas. High shoal rates occur in the upper reach and must be 'redredged' before contract completion; remaining funds in FY07 will be used to investigate the increased sedimentation Phenomena; the severe scour existing at the Entrance Channel Jetties, and develop plans to incorporate future viability of the Federal Channel. FY08 requirements include maintenance dredging, analyses of upper reach shoaling, and entrance channel design; the proposed President's Budget is \$8,713,000. Economic losses arise when project depth is unavailable. Industry fully utilizes their 36 feet depth transporting 12.5 million short tons of cargo.

Maintenance

Cedar Bayou

Cedar Bayou is an important high-use shallow draft channel off the Houston Ship Channel leading to Baytown, Texas. The improved portion of the channel extends from its junction with the Houston Ship Channel near Mile 25 eastward across Galveston Bay to the mouth of Cedar Bayou to a point 3 miles upstream. The project dimensions are 10 X 100 feet.

The last maintenance contract was completed Jun 02. The dredging frequency for this project is about three years. This is a shallow draft channel with a low national priority; therefore, funding has not been provided for maintenance dredging in the last five years. It is an important shallow draft navigation channel adjacent to the Houston Ship Channel and Bayport Ship Channel, and it supports heavy barge traffic to facilities owned by Koppel Steel, Gendal United Steel and Bayer Corp. An 8-mi extension of the Federal channel is planned, and funds in the amount of \$4,530,000 will be needed to clear the 6 mi of existing Federal channel that connects the new work to the Houston Ship Channel.

-- Cindy Burke



Navigation

Brazos Island Harbor Channel Improvement Project Feasibility Study

The Port of Brownsville is located on the south Texas coast near the U.S. - Mexican border. The project consists of enlarging the existing Brownsville Ship Channel by deepening the entrance and jetty channel, the lower section of the main channel to a depth of up to 55 feet and the upper section of the main channel and turning basin to a depth of up to 45 feet. The primary purpose of the feasibility study is navigation.

The Port of Brownsville is the only deep draft port available to the industry along the U.S. - Mexico border. Brownsville is primarily a bulk commodity port covering both liquid and dry cargo handling. Current vessel sizes associated with the increased use of container vessels has resulted in inefficient utilization of the Port of Brownsville. The increased traffic is a direct result of NAFTA (North American Free Trade Agreement) in that a majority of the increased commodity traffic is to meet industrial needs in Mexico.

In 2002, Brownsville was the nation's second largest in-transit harbor by volume. Total tonnage on the Brazos Island Harbor increased from 1,829,000 tons in 1992 to 4,741,000 tons in 2002; a difference of 2,912,000 tons. In addition to traditional vessel traffic, there is a need for increased channel dimensions in order to serve offshore rigs presently operating in the U.S. Gulf Coast. The operational draft of the newer rigs ranges from 45 to 63 feet.

The most recent deepening was authorized by the Water Resources Development Act of 1986. Project construction was completed in 1996. The proposed study will address the feasibility of deepening the entrance and jetty channel (2 miles) to up to 48 feet, deepen the lower 9 miles of main channel to up to 48 feet and deepen the upper 7 miles of main channel and turning basin to up to 45 feet.

The study area encompasses the entire Brazos Island Harbor and surrounding region. The entrance channel is located offshore of Cameron County, Texas, in the Gulf of Mexico and ends at the Port of Brownsville Main Harbor in the City of Brownsville. The existing channel is 42-foot deep (plus 2-foot over-depth) by 300-foot wide entrance channel for a distance of 2.5 miles converging

to a natural water depth of 44-feet in the Gulf of Mexico; a 42-foot deep by 250-foot wide by 14.8 miles long channel within the inland segment of the waterway; a 42-foot deep by widths varying from 325 to 400 feet at the turning basin for a length of 5,200 feet; and the final segment of the Brownsville Turning Basin at a depth of 36 feet and a width of 1,200 feet.

The feasibility study will also investigate potential restoration opportunities of over 6500 acres of tidal marsh habitats, as well as brush habitat with the Bahia Grande in collaboration with federal and state agencies. Marsh restoration associated would provide feeding, breeding, and wintering habitat for colonial and migratory water birds and provide connective habitat to the Atascosa National Wildlife Refuge. Anticipated completion of the study is June 2010.

— Carl Anderson

Maintenance

Brazos Island Harbor

The project is located in the vicinities of Port Isabel and Brownsville in Cameron County, Texas. Provides deep draft access from the Gulf of Mexico through a jettied entrance channel to Brownsville, and a side channel and shallow draft Fishing Boat Harbor near Port Isabel. The project is 22.8 miles in length. The authorized depths are 42 feet for the main channel and 44 feet through the jetties and outer bar. The FY 06 Brazos Island Harbor Main Channel to Turning Basin job was awarded December 2005, however, due to unpredictable critical shoaling in the Jetty Channel, it has been postponed until additional funding is made available. Dredging of the Inside Jetty Channel took place in March 2007.

— Alicia Rea

Corpus Christi Ship Channel Improvement Project

The Corpus Christi Ship Channel is a federally constructed deep-draft navigation project serving the ports at Harbor Island, Ingleside and Corpus Christi in Nueces County, Texas. The existing project consists of approximately 35 miles of channels; a jettied entrance channel 45 to 47 feet deep and 600 feet wide from the Gulf of Mexico, the Corpus Christi Ship Channel with a depth of 45 feet and a width of 400 feet, and a branch channel referred to as the La Quinta Channel with a depth of 45 feet and a width of 300 feet. The five year average tonnage carried on this project is 64 million tons.

A feasibility study was begun in June 1999 to improve the existing channel to efficiently accommodate larger vessels of 100,000 DWT and greater that are frequently using the existing channel facilities. A Chief's report was signed in June 2003 culminating the feasibility phase of the project. Current efforts on the project are preparing the first set of plans and specifications for construction of the La Quinta Channel extension.

The improved channel design provides for deepening the entrance channel to 52 to 54 feet, deepening the Corpus

Christi Ship Channel to 52 feet and widening the channel across Corpus Christi Bay to 530 feet and extending the La Quinta Channel 1.4 miles at a depth of 39 feet and 300 feet wide. The local sponsor, the Port of Corpus Christi Authority, has acquired a permit to construct a container terminal at the end of the extended La Quinta Channel. Barge lanes, 200 feet wide, with a depth of 12 feet will also be constructed on each side of the Corpus Christi Ship Channel across Corpus Christi Bay. Three beneficial use sites will also be constructed with dredged material to improve the aquatic habitat in the bay. Estimated cost of the channel improvements is \$172,940,000. Project is currently awaiting construction authorization.

-- Carl Anderson

Maintenance

Corpus Christi Ship Channel

The Corpus Christi Ship Channel consists of an entrance channel 47 ft deep and 600 to 700 ft wide, and a navigation channel across Redfish Bay and Corpus Christi Bay 45 ft deep and 400 ft wide, leading to the Inner Harbor of the Port of Corpus Christi. The project includes the La Quinta Channel, a spur channel 5.7 miles in length and 45 ft deep. Mooring facilities (45 X 200 X 5,300 feet) are located across the channel at Ingleside. The project also provides a shallow draft channel to Port Aransas, the Jewel Fulton Canal, and the Rincon Channel.

Maintenance requirements for FY07 include the Entrance Channel and the reach across Corpus Christi Bay from the LaQuinta Channel to Beacon 82. A shoal in the Rincon Channel near the US 181 bridge will be added to this job. FY08 requirements include the reach across Redfish Bay from the Inner Basin to the LaQuinta Channel and the Inner Harbor where the Port facilities are located.

The Port of Corpus Christi Authority (POCCA) is the local sponsor for this project. Ranked 6th of the Leading U.S. Ports in 2004, 76 million tons of cargo moved through the Port in that year. The Port of Corpus Christi is a Strategic Deployment Seaport for U.S. military forces.

-- Cindy Burke



Corpus Christi Ship Channel



WALLISVILLE LAKE PROJECT TRINITY RIVER AND TRIBUTARIES



Wallisville headquarters and locks.

The Wallisville Lake Project, located on the Trinity River approximately half way between downtown Houston and Beaumont, Texas, and bisected by Interstate 10, is a major contributor in the providing of safe and sustainable drinking water to the City of Houston and others through salinity control on the lower Trinity River.

The Wallisville Lake Project was first conceived in the 1950's and authorized in 1962, as a 20,000 acre water supply reservoir and salinity control project contained behind a concrete dam with a crest elevation of four feet above sea level. Work began on the project in the late 1960's but was halted in 1973 by a federal injunction for environmental reasons.

After an intensive review of the project by the Corps and modifications to the manner in which the project was to achieve it's goal of salinity control, permission was given to resume construction in the mid 1990's with completion of the project in 1999. The changes made to the project were significant. No longer was there going to be a 20,000 acre pool located behind a dam with a 4 foot crest. The revised project now protects the 20,000 acres of brackish and fresh water marsh, bottom land hardwood swamp, and cypress swamp for the protection of the fish and wildlife species associated with the project and provides for recreation opportunities consistent with the protection of the natural resources while still providing for salinity control.

Previous to the construction of the Wallisville Lake Project, the Trinity River Authority's Lake Livingston was required to release up to 1,000 cubic feet of water

per second in addition to the needs of the downstream users in order to prevent salinity intrusion up the river during times of drought. During the first full year of operations in 2000, a savings of water valued at \$9,000,000. was realized because Lake Livingston was no longer required to release additional water which then could be made available to the fresh water users. The value of this saved water has and will continue to increase as Houston and the surrounding communities grow and switches from ground water to surface water.

With the modification to the project, the Corps now had a unique opportunity to manage the diverse natural resources of this valuable habitat while providing recreation opportunities for the vast population of southeast Texas. Through careful planning and coordination with local, state, and federal agencies, the Corps has developed opportunities for the public to get up close and personal with the environment in ways that were not available in the past while still maintaining the integrity of the environment.

The Corps has entered into agreements with Chambers County for the operation of a Corps constructed recreation area on the banks of Lake Charlotte located on the east side of the project and the construction and operation of a second park on the west side of the project. In addition, the Corps operates a recreation area and a visitor center adjacent to and in association with the salt water barrier, navigation lock, and field office. This area offers fishing opportunities, boat ramps and picnic facilities. Through the development of the J.J. Mayes Wildlife Trace, a driving and walking nature trail complex, the Corps has also provided a unique opportunity for the public to experience the natural habitats associated with the lower Trinity River. The 3.5 mile driving nature trail allows the public a birds eye view of the marsh areas while the walking trails and board walks allows the public to be at eye level with the wildlife of the marsh and riparian habitat along the Trinity River. These facilities were completed in spring of 2002. Additional trails, boardwalks, overlooks and even a marked canoe trail are planned pending the availability of funds over the next few years.

-- Richard Long



Continuing Authorities Program

The Continuing Authorities Program establishes a process by which the Corps of Engineers can respond to a variety of water resource problems without the need to obtain specific Congressional authorization for each project. This decreases the amount of time required to budget, develop, and approve a potential project for construction. The Galveston District currently has nine CAP projects which require a wide diversity of technical experience in solving problems associated with shoreline and streambank erosion, navigation, flood control, and environmental restoration. Two projects are just completing construction, one is beginning, and six remain under study. Under this program the Corps is authorized to construct small projects within specific federal funding limits, which range from \$500,000 to \$5 million. The total cost of a project is shared between the federal government and a non-federal sponsor at varied cost share percentages.

University of Texas Marine Science Institute (UTMSI) Section 206

Wetland restoration features will be constructed on 2.6 acres located on the UTMSI campus. In addition, approximately 1600 feet of dunes will be created. A broad range of estuarine habitat types will be constructed by removing several feet of the existing surface materials to achieve the target elevation contours necessary to support target communities. The creation of a number of diverse habitats, including open water, submerged aquatic vegetated shallows, low and high marsh, sand flats and upland islands and dunes, will allow for use of the area by several fish and wildlife species, including fishes, invertebrates, reptiles, small mammals and birds. Open water and marsh surface habitats will be constructed to resemble natural marsh systems in the area with undulating surfaces, high and lows, and a main channel with tributaries. The marsh system will be connected to the surrounding tidal waters to provide daily tidal exchange by installing two 36-inch culverts that will be completely submerged. The total project cost is an estimated \$2,100,000.

Combining efforts for the job were The University of Texas Board of Regents, U.T. Marine Science

Institute and the USACE Galveston District. The local sponsor was responsible for 25% of costs. Phase two of the project was awarded January 30th, 2006 and is expected to be completed in April 2007. Project Manager Byron Williams says, "It's been quite an accomplishment to award this contract given the financial restraints. But, the Corps and the non-Federal Sponsor exercised an abundance of patience and determination to get the job done."

Bessie Heights (Section 204)

Bessie Heights Marsh, an immense, freshwater marsh ecosystem that had deteriorated through subsidence of the land and the resulting intrusion of salt water, is on its way to returning to the unspoiled ecosystem of its former days. Combining efforts for the job are Jefferson County Waterway and Navigation District, the US Fish and Wildlife Service, National Marine Fisheries Service, Texas Commission on Environmental Quality, the Texas Parks and Wildlife Department and the USACE, Galveston District. The marsh is located approximately two miles east of the Neches River in Orange County, Texas, in an area owned by the Texas Parks and Wildlife Department. The problems of Bessie Heights Marsh, which had lost nearly 90 per cent of its original emergent marshes and regarded as a critically reduced habitat by the Texas Commission on Environmental Quality, was brought to the attention of the Corps in February, 2001. "The lower Neches River delta has experienced the

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Newly planted bailey marsh.





Material placement for future marsh.

“We enclosed the area, shoring up some of the existing levees to provide for a drainage to the north toward a marsh terracing project belonging to the Texas Parks and Wildlife Department. This allowed the terraces to capture any silt runoff from Bessie Heights,” said Schmidt. Some planting has already been done on the levees, he said. TPWD will continue to monitor the site and when the acreage has dewatered and settled enough for plants to exist, more planting will be done.

most significant, contiguous loss of coastal marsh of any location in Texas,” wrote Richard Seiler of TCEQ in a letter received by the Corps. The Bessie Heights marsh loss of wetlands can be traced to an altered water and salinity regime and to subsidence induced by the extraction of groundwater, oil and gas. These factors, combined with an increase in sea level, played a major role in the loss of marsh in the Bessie Heights Marsh.

The middle reach of the Sabine-Neches Waterway is the source of the material used for this beneficial use of dredged material/marsh restoration project. Galveston District performs maintenance dredging in this area on an average of once every seven years. The next cycle was already set for February 2003.

The District went to work and factored the dredging cycle and the desperate need for the marsh’s improvement into a Section 204, Continuing Authorities Project. Section 204 provides for protection, restoration, and creation of aquatic and wetland habitats in connection with construction and maintenance dredging of an authorized project.

Approximately 651,000 cubic yards of dredged material were pumped into an approximate 71-acre tract of the Bessie Heights marsh area. “It’s a win-win situation for everyone,” said Volker Schmidt, the Corps’ project manager. “The sponsor, the local community, the resource agencies and the Corps benefited from the renourishment actions.”

“Paula Wise and Volker Schmidt had quite a challenge in getting the project through the CAP program process and environmental assessment approval”, said Tim Few, who himself worked to get the TCEQ water quality certification and approval to use the adjacent TPWD marsh terrace area to complete settling out of suspended solids.

Providing a key for success through active participation in the design and construction, with assistance in field observation and assessment of the work were Mike Rezsutek, Andy Tirpak and Jim Sutherlin of TPWD.

Total project cost, according to Schmidt, was \$1.2 million. This was split 75/25 between the federal government and the project sponsor, Jefferson Waterway and Navigation District.

— Byron Williams



Gator tracks in new marsh.

ADDICKS AND BARKER DAMS AND RESERVOIRS

BUFFALO BAYOU AND TRIBUTARIES FLOOD CONTROL PROJECT, TEXAS

Addicks and Barker Dams and Reservoirs, located on the far west side of the City of Houston, is the anchor to the Buffalo Bayou and Tributaries Flood Control Project, which provides flood damage reduction to the metropolitan Houston area. Constructed in the mid 1940's, these two projects, located adjacent to each other on the upper watershed of Buffalo Bayou, serve as detention basins designed to collect excessive amounts of rainfall and release that rainfall down Buffalo Bayou at a controlled rate that prevent s flooding in downtown Houston and the urban areas west of downtown.

In 2005, it is calculated that, through the operations of Addicks and Barker Dams and Reservoirs for flood water storage, over \$387,000,000 in flood damage prevention was realized in the areas downstream of the dams. This is a cumulative total of over \$2,998,000,000 in flood damage prevention realized in the over 60 year's life of the projects.

With the increase development of lands downstream of the reservoirs forcing the tighter regulation of the water releases and the increase development of the watershed upstream of the reservoirs causing increased runoff into the projects, the value of the dams and reservoirs for flood damage reduction is ever increasing. Four of the top ten pools at both Addicks and Barker Dams and Reservoirs have occurred in the past 10 years.

The increase development of the lands around Addicks and Barker Reservoirs has also increased the value of lands in the reservoirs as natural and recreation areas. Recreation was not an authorized purpose of the projects, however, through the leasing of lands to the City of Houston, Harris County, and Fort Bend County, the Corps has been able to provide the citizens of the metropolitan Houston area with some world class recreation facilities. In addition, the lease agreements require that lands are set aside and manager for the protection and enhancement of the natural resources. The Corps has been able to make available over 20,000

acres of the projects 26,000 acres to these local government agencies for recreational development. Through a tight review process within the Galveston District Office as well as with other local, state, and federal agencies having an interest in the projects, the Corps has been able to permit construction of a variety of recreation facilities while protecting thousand of acres in there natural or near natural state for the benefit of the wildlife populations located on the projects and for the enjoyment of this and future generations to come.



Dedication of new hike and bike trail.

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Some of the recreational facilities available on the projects include but are not limited to miles of hike and bike trails, 3 18 hole golf courses, a shooting range, a model airport, soccer facilities, baseball facilities, and hundreds of picnic sites. Visitation to these facilities has consisted exceeded 2,000,000 for the past few years. Additions to the available facilities during 2006 include over 6 more miles of hike & bike trails with many more miles planned. In addition, Millie Bush Bark Park, a park for dogs was opened in George Bush Park located in Barker Reservoir. Another bark park is under construction in Addicks Reservoir. For the visitor looking for a more relaxing and close to nature experience, the thousand of acres of undeveloped lands permits those visitors to enjoy nature in an urban environment. Two stops on the Great Texas Coastal Birding Trail are located in Addicks and Barker Reservoirs. The variety of wildlife that exist in the reservoirs range from deer, raccoon, and bobcat, to over 200 species of birds, to a large variety of reptiles and amphibians.

-- Richard Long



Addicks -- Northeast

Flood Damage Reduction

Section 211(f) –

Harris County Flood Control District

Section 211(f) of WRDA 96 authorizes non-Federal interests to plan, design, and construct Federal flood damage reduction projects, and upon approval of the project by the Assistant Secretary of the Army of Civil Works, be reimbursed the Federal share of costs of work accomplished. Brays, Hunting and White Oak Bayous are projects that fall under this category. The Galveston District provides review and oversight of work accomplished by Harris County Flood Control District (HCFCDD), the project sponsor.

Federal costs of the completed Segments once the GRR is approved and the amended Project Cooperation Agreement (PCA) is signed. HCFCDD has completed construction on the Channel Freshwater Marsh at Mason Park and continues to move forward with construction on the Willow Waterhole Detention Basin and channel modifications.

Brays Bayou

Upstream Element

Construction of Discrete Segment 21 in the Old Westheimer to Hwy 6 Channel and Detention Basin is expected to be complete in March 2007. This would complete construction on that basin. Construction of Discrete Segment 12 in Arthur Storey Park Detention Basin was completed in September 2006, while Discrete Segment 22 will be completed in March 2007. These two segments will complete the construction of Arthur Storey Park. Construction of Discrete Segment 15 in Eldridge Road Basin was completed in September 2006. Construction in Eldridge Road Basin is scheduled for completion in November 2009.



Eldridge Road Basin

Completed construction of the Downstream Element is scheduled for 2014.



Willow Waterhole Detention Basin



Old Westheimer to Hwy 6 Channel & Basin

Downstream Element

The General Reevaluation Report (GRR) for the Downstream Element, which provides an alternative flood control plan to the previously proposed Diversion plan, is scheduled to be approved by the Assistant Secretary of Army for Civil Works in FY2007. HCFCDD will begin seeking reimbursements for the

Hunting Bayou

HCFCDD is preparing a GRR to identify the plan of improvements for the Hunting Bayou flood damage reduction project. The project consists of stream improvements and recreation facilities. Public coordination of the report is scheduled for January 2008.

White Oak Bayou

HCFCDD is preparing a GRR to identify the plan of improvements for the White Oak Bayou flood damage reduction project. A series of detention reservoirs and channel adjustments in the upper reaches that could facilitate drainage in the watershed may be part of the proposed plan. Public coordination of the report is scheduled for FY 2007.

-- Sharon Manzella Tirpak



Flood Damage Reduction

Sims Bayou, Houston, Texas

The Sims Bayou, Houston, Texas project is scheduled to receive \$22,400,000 in Federal funding for fiscal year 2007. These funds will be used to complete construction of Reach 6, Cullen to State Highway 288 and Reach 7a, State Highway 288 to Robin Boulevard and for ongoing Sediment Removal and Channel Repairs Downstream of Cullen to the Mouth. Funds will also be used to award a fully funded contract for the Swallow Street Steel Sheet Pile Wall Removal in May 2007. The contract includes removal of a steel sheet pile wall and concrete lining, repair of articulated concrete block, repair to the sub-drainage system and relief wells and placement of grout and turf. Design efforts for channel rectification along Reach 7b, Robin Boulevard to Bathurst Drive, and Reach 8, Bathurst Drive to Croquet are continuing. The Limited Reevaluation Report for the Sims Bayou Recreational Plan is scheduled for approval in May 2007. Execution of the Recreation PCA with the City of Houston is on hold pending recreation being included in the Corps budget or Congress appropriating funds for the project recreation features.

--Enrique Villagomez



Construction on Sims Bayou

Raymondville Drain, Texas

The Raymondville Drain, Texas project is expected to receive \$600,000 in Federal funding for fiscal year 2007. These funds will be used to perform preliminary geotechnical investigations and to finalize the Flood Damage Analysis (FDA) Model facilitating the formulation of flood damage reduction measures for Willacy County.

--Enrique Villagomez

South Main Channel, Texas

The South Main Channel project remains on hold as the project is not scheduled to receive Federal funding for fiscal year 2007.

-- Enrique Villagomez



Flood Damage Reduction

Clear Creek

The project is located in Harris and Galveston Counties, Texas. The purpose of the project is flood damage reduction for an extensively developed urban area. The authorized project consists of approximately 15.3 miles of channel enlargement and bend easing, more stringent regulations restricting development of the 100-year floodplain, and a second outlet channel with a gated structure between Clear Lake and Galveston Bay. Dredging and construction of the second outlet channel was completed in July 1997, and the outlet and gated structure were transferred in March 1998 to the local sponsor for operation and maintenance.



Clear Creek

Opposition to the authorized project over environmental concerns arose during construction in 1997 and, as a result, led to the preparation of a General Reevaluation Report (GRR) that is currently ongoing.

The local sponsors are the Harris County Flood Control District, Galveston County and Brazoria Drainage District No.4.

Proposed activities for FY 2007 include complete development of the National Economic Development Plan (NED); select a recommended plan; prepare the draft engineering appendix; complete the plan formulation appendices; conduct an independent technical review; and hold an Alternatives Formulation Briefing.

Funds are not included in the President's Budget for FY 2008. If funds are made available, they could be used to complete the engineering appendix and draft General Reevaluation Report/Environmental Impact Statement report; complete review and approval of the reports; and initiate engineering design work. The General Reevaluation Report is scheduled to be completed in FY 2008.

-- Mike Bragg

Greens Bayou

Greens Bayou, excluding its tributary of Halls Bayou, drains about 154 square miles in the north central area of the Buffalo Bayou watershed. A project was authorized by the Water Resources Development Act of 1990, however, a reevaluation of the project scope was determined to be required to formulate a project with reduced environmental impacts.

The new recommended plan consists of 3.7 miles of channel improvement in the upper reaches of the watershed, a detention basin at the downstream terminus of the channel improvements. There is no non-structural component in the new plan. The structural flood damage reduction features are estimated to provide a ten-year level of protection, at a cost of approximately \$40 million. The General Reevaluation Report/Environmental Assessment was approved on February 20, 2006. If funds are made available in FY 2007, work could be initiated on engineering design.

-- Mike Bragg

Maintenance

Greens Bayou Channel

The maintenance portion of the project is located in the vicinities of Houston, Pasadena, Deer Park, Jacinto City, and Galena Park in Harris County, Texas. The Greens Bayou Channel is a 1.6 mile long shallow and deep draft waterway which extends from the Houston Ship Channel at mile 42.9 northeast up Greens Bayou. During early Fiscal Year 2007, 88,000 cubic yards of material was dredged from the federal channel of Greens Bayou using Federal Supplemental Funds from Hurricane Rita.

-- Captain Michael Raymo



National Hurricane Study

The National Hurricane Study Program is a joint effort between Federal Emergency Management Agency (FEMA) and the US Army Corps of Engineers (Corps) to provide hurricane evacuation decision making products to coastal states. FEMA contributes funds through the Assistance to Others Program and the Corps contributes funds through the Flood Plain Management Program.

Supplementing these efforts, the state of Texas has promised to match Corps funds through the Planning Assistance to States Program.

The Texas Hurricane Evacuation Study (HES) program covers the 624 miles stretch of Texas coastline; extending from Sabine Pass to the Rio Grande. This project area includes 22 counties with a total population of over 5 million residents. The HES program has been divided into five study areas:

- Lake Sabine Study Area (SSA), Chambers, Hardin, Jasper, Jefferson, Liberty, Newton and Orange Counties.
- Galveston Study Area (GSA), Brazoria, Galveston, and Harris Counties.
- Matagorda Study Area (MSA), Calhoun, Jackson, Matagorda, and Victoria Counties.
- Coastal Bend Study Area (CSA), Aransas, Kenedy, Kleberg, Nueces, Refugio, and San Patricio Counties.
- Valley Study Area (VSA), Cameron and Willacy Counties.

The intent of the HES program is to combine contemporary field data with modern scientific tools and models, providing to the public tools to make informed decisions. HES information includes hurricane storm surge models, hazard and vulnerability analysis, behavior studies, transportation studies (including clearance time estimates), shelter data, and evacuation decision tools. One of the chief modeling tools HES uses is HURREVAC. HURREVAC is a hurricane tracking and evacuation decision making software package. One of the primary usable tools of the HES study is a map that the public and governmental officials (local and state) can use in determining estimated clearance times required when hurricanes are approaching.

The GSA was complete in FY 06 and we continue to provided outreach and education opportunities for this study area. Once a HES area is completed, outreach and

educational training is provided to emergency managers at both the state and local levels. Our anticipated Fiscal Year 07 work goal includes completing the transportation model for the CSA and providing the public outreach and education associated with this product, plus beginning the transportation studies and modeling efforts for the SSA. Simultaneously, the state along with FEMA and the Corps, continued development of the web based product delivery system in ArcIMS, that provide updates to evacuation maps statewide, and readily available public awareness materials.

Funding for the Texas HES through the Flood Plain Management Program continues to be unavailable for the past two fiscal years. At current funding levels the full cadre of study products for the Sabine, Matagorda, Coastal Bend and Valley Study Areas will not be available until 2010-2011 timeframe. Future products may be expanded to incorporate the states' shelter database, and the development of response and recovery planning. These studies will need to be updated and maintained to remain valid and depict contemporary conditions.

The Galveston District coordinates extensively with coastal communities, the state of Texas, FEMA Region VI, local National Weather Service Offices; other Corps district Hurricane Study Managers, National Oceanic and Atmospheric Administrations, the Institute for Water Resources, and FEMA headquarters. Efforts continue to develop consistent products nationally and to modernize the product delivery system to allow for more effective distribution of products and more cost effective program updates. SWG has initiated a pilot study to develop an ArcIMS, web based product delivery system that makes maps, data and reports available to emergency managers on line and allows them to create their own maps. The system will also permit other Corps Districts to load data for their hurricane studies, resulting in more consistent products and cost effective universal updates.

The active 2004 and 2005 hurricane seasons illustrate the need for states, counties, and cities to be prepared to make evacuation decisions, plan evacuation and shelter strategies, and understand the risks coastal and inland communities face when a hurricane makes landfall. Texas ranks second, behind Florida, for the most hurricanes to make landfall.

-- *Kenny Jaynes*



Regulatory Update

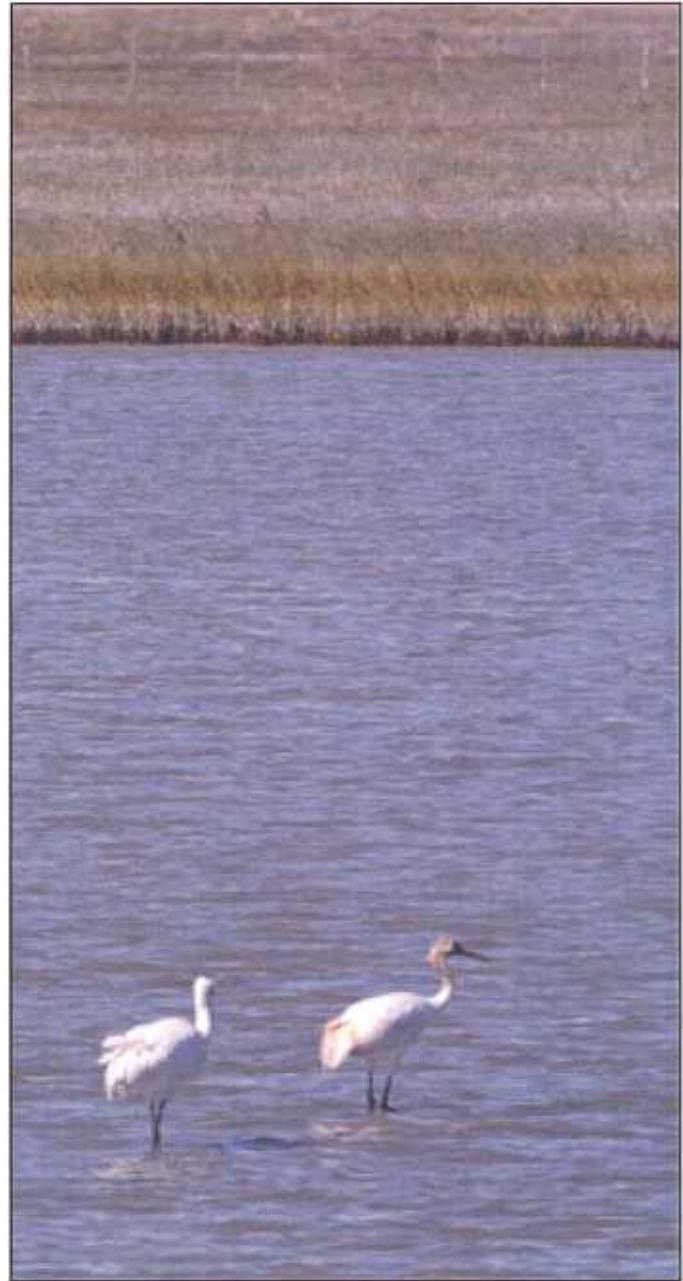
It was a busy year for the Galveston District in our role as Guardians of the Coast. Several large projects were completed that will develop the maritime infrastructure, and enhance the aquatic environment through important wildlife habitat mitigation and restoration within the District.

The large and controversial Bayport Container Terminal held their ground breaking for the new facilities in Houston. This project will bring millions of dollars to the Houston economy and provide mitigation benefits for Galveston Bay.

The Port of Corpus Christi received a permit to dredge the La Quinta Channel extension and will mitigate for the impacts to the aquatic environment by creating a 12-acre seagrass habitat which is part of a larger 200-acre beneficial use site (BUS). The seagrass mitigation has the potential to be the nursery stock for seagrasses that will be able to populate the entire BUS and provide valuable habitat far beyond the mitigation requirements of the project.

The Regulatory Branch issued a permit for a 900-acre canal subdivision and marina located off of the GIWW. The project included a formal Endangered Species consultation for the federally listed Whooping Crane with the FWS due to the project's close proximity to the Aransas National Wildlife Refuge. The mitigation for the project includes the preservation of almost 114 acres of estuarine wetlands, creation of 23 acres of estuarine wetlands and almost 41 acres of freshwater wetlands. This mitigation ensured that the project will have a minimal impact on the endangered Whooping Crane.

The District worked with the oil industry to develop a number of restoration projects on the Sabine National Wildlife Refuge, in Cameron Parish, Louisiana. In southeast Texas and Coastal Louisiana building access roads and drill sites often involves the discharge of fill in open water. During pre-application meetings, representatives from U.S. Fish and Wildlife Services and the oil industry agreed to compensate for the impacts to aquatic resources by creating new terraces, reducing the impact to essential fish habitat and wetlands while



Whooping Cranes at Aransas

improving the refuge. The terraces were designed by the FWS and have been very successful in the past.

The Corpus Christi Regulatory Field Office was involved in some big restoration projects. Some unauthorized fill occurred along the Channel to Aransas Pass that adversely impacted an important nesting, feeding, and foraging area for shorebirds. The

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Brown pelicans sit on a convenient pier.

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 shoreline had significant areas of *Spartina* marsh and patches of black mangroves. The Corps was able to work with the resource agencies to develop a restoration plan.

Another project adjacent to the Corpus Christi Ship Channel in Ingleside involved the unauthorized disposal of silt into the water in front of an existing dock. The violator agreed to restore the area and host a public outreach seminar to educate the public, contractors, consultants, and homebuilders on the USACE regulatory program and permit requirements.

The Galveston District revised the Regional General Permit (GP) for piers to remove the 1,000 square foot restriction which will allow longer piers in shallow waters, while protecting the valuable aquatic resources.

As a result, the new GP is closely aligned with the Texas General Land Office (GLO) requirements, and the District may transfer administration of the GP to the GLO in the future.

These projects illustrate the commitment and professionalism of the District Regulatory staff. Working in concert with agency personnel and the public we have been able to develop synergistic solutions to complex problems. The challenges of regulating the impacts to the aquatic environment continue to grow, but the District is committed to innovative solutions that allow our vitally important coastline develop in an environmentally sustainable manner.

-- John Machol

Emergency Management Update

The Disaster Preparedness Program is a congressionally authorized program (under Public Law 84-99, as amended) that supports disaster preparedness, flood-fighting, drought and emergency water assistance, hazard mitigation and Rehabilitation and Inspection of Flood Control Works.

Disaster preparedness activities in 2006 included an update of the District's All-Hazards Emergency Plan to include lesson learned from 2005 Hurricanes Katrina and Rita, the establishment of a 12-person county liaison team to work directly with county emergency management officials to improve the Corps' capability to support local disaster response, and continuing coordination and outreach through attendance at local, state and national emergency management meetings, workshops, exercises, and conferences. One of the key additions to the Emergency Plan was the development of "boiler-plate" contract for debris removal, and quality assurance support. In support of outreach efforts, a series of five fact sheets were developed on key FEMA missions briefly explaining the mission and recommending local government planning factors. Fact sheets were developed for commodities (ice and water), emergency power, debris removal, temporary roofing, and temporary housing. The fact sheets were forwarded to the county liaisons and the coastal counties and, in addition, posted on the District web page.

The District's flood-fighting and emergency operations activities in 2006 were focused on closing out Hurricane Rita operations and continuing support to USACE Hurricane Katrina operations. District Hurricane Rita support to FEMA and the National Response Plan was virtually complete by March 2006 except for the close-out of debris removal operations and demolition of



Destruction by Hurricane Rita

tstructures and vessels. Approximately 1,000,000 cubic yards of debris and 15,000 stumps were removed in 2006 bringing the disaster total removed by the Corps to 4.9 million cubic yards of debris and 19,670 stumps. The prime contractor for the Corps' debris removal efforts was D&J Enterprises, Inc (Auburn, AL). By 30 March, 2006, virtually all removal operations were complete and debris removal operations focused on restoring and closing remaining debris collection and reduction sites. In addition to our debris removal activities, a total of 70 condemned structures were demolished in Jefferson and Orange Counties in 2006. Two prime contractors, ICU Environmental Health, and Safety (Spring, Texas) and J C's Environmental Technologies (North Richland Hills, Texas) both Texas-based small business, performed the demolition work that included hazardous waste removal. The firms were selected using a competitive Blanket Purchase Authority (BPA) process. The final element of the debris mission in 2006 was the disposal of 12 storm-damaged vessels removed from Sabine Pass waters by the US Coast Guard in 2005. The Corps contractor, ECOWater Industries, INC, is a small business out of Port Arthur, Texas. A key element of the vessel disposal process was

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The final Corps mission following Hurricane Rita was to demolish condemned houses.

the condemnation of the vessels by the Texas General Land Office. In support of FEMA's temporary housing

National Emergency Preparedness Program

This program addresses those activities conducted by the District to prepare for catastrophic natural and technological disasters and acts of terrorism. Preparedness involves development of plans, training employees, conducting exercises and coordinating with DOD and other Federal agencies, state, and local governments. Activities in 2006 focused on coordination and outreach through attendance at local, state and national emergency management meetings, workshops, exercises, and conferences. Coordination included the Region 6 Regional Response Team, the Houston Area Committee, the Corpus Christi and Beaumont Port Readiness Committees, and the Houston and Beaumont Area Maritime Security Committees.

-- Gus Marinos

US Army Corps of Engineers -- Galveston District

activities, another 869 travel trailers were inspected and leased-in in the first three months of 2006 for a disaster total of 3,642 mobile homes. The Corps responsibility was to serve as a liaison with the family receiving the trailer; conduct the final inspection and walk through with the applicant and then oversee, the family signing the 18-month lease agreement with FEMA. In addition to our inspection activities, a Corps team was formed to identify vacant pads at existing trailer parks. Over a two week period in Feb 2006, the team identified 269 pads for FEMA use.

In 2006, a total of 64 Galveston district employees were deployed on emergency operations; 53 for Hurricane Rita, five for Hurricane Katrina, and six in support of the Global War on Terrorism.

The Rehabilitation and Inspection Program (RIP) received no 2006 funding and activities were limited to outreach efforts to expand knowledge and participation in the RIP.

-- Gus Marinos

