



TEXAS GENERAL LAND OFFICE
GEORGE P. BUSH, COMMISSIONER

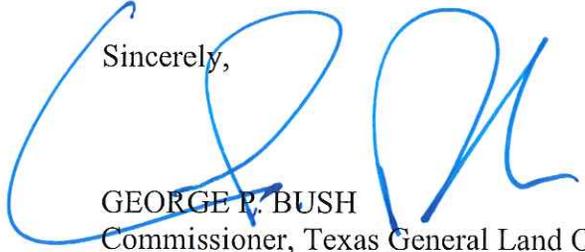
Dear Honorable Members of the 86th Legislature:

As the chair of the Coastal Coordination Advisory Committee, and as required by §33.204(f) of the Natural Resources Code, I am pleased to submit the Texas Coastal Management Program (CMP) Biennial Report for FY 2017 – 2018.

The purpose of the CMP is to improve the management of the state's coastal resources and to ensure the long-term ecological and economic productivity of the coast. The CMP is a "networked" program linking the regulations, programs, and expertise of local, state and federal entities managing various aspects of coastal resources. The CMP focuses on five primary issues of concern to coastal communities: coastal hazards, wetland protection, water quantity and quality, dune protection and shoreline access. Specifically, the CMP designates coastal natural resource areas, identifies uses or activities that may adversely affect the areas, and sets uniform policies to address the effects.

The biennial report includes overviews of key activities, including state and federal consistency, coastal long-term planning and grant administration. Since its inception in 1997, the CMP grant program has funded 609 §306/§306A projects totaling over \$45.7 million. The CMP grant program is essential to supporting other coastal programs at the General Land Office and is often used to leverage funds to complete large-scale projects under the Coastal Erosion Planning and Response Act, National Fish and Wildlife Foundation, RESTORE Act, and Natural Resource Damage and Assessment programs.

Sincerely,


GEORGE P. BUSH
Commissioner, Texas General Land Office

TEXAS COASTAL MANAGEMENT PROGRAM
B I E N N I A L R E P O R T

2017 - 2018



DECEMBER 2018

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ACRONYMS

BBP

Bi-Partisan Budget Act of 2018

BWEC

Boater Waste Education Campaign

CBBEP

Coastal Bend Bays
and Estuaries Program

CCA

Coastal Coordination Act

CCAC

Coastal Coordination
Advisory Committee

CCC

Coastal Coordination Council

CEPRA

Coastal Erosion Planning
and Response Act

CITs

Coastal Issue Teams

CMP

Texas Coastal Management Program

CNRAs

Coastal Natural Resource Areas

Committee

Technical Advisory Committee

CtG

Cease the Grease Campaign

CZMA

Coastal Zone Management Act

CZMP

Coastal Zone Management Program

DPA

Dune Protection Act

EG

Exploration Green

EPA

U.S. Environmental Protection
Agency

FOG

Fats, Oils and Greases

FY

Fiscal Year

GBAN

Galveston Bay Action Network

GBEP

Galveston Bay Estuary Program

GBF

Galveston Bay Foundation

GIS

Geographic Information System

GEBF

Gulf Environmental Benefit Fund

GIWW

Gulf Intracoastal Waterway

GLO

Texas General Land Office

GOMA

Gulf of Mexico Alliance

HAB

Harmful Algal Bloom

HBG

Houston Botanic Garden

HGNC

Houston-Galveston Navigation
Channel Expansion Project

HPARD

Houston Parks and Recreation
Department

HRI

Harte Research Institute

I-Plan

Implementation Plan

ICT

Interagency Coordination Team

IOCs

Issues of Concern

JPAF

Joint Permit Application Form

Land Commissioner

Texas Land Commissioner

LiDAR

Light Detection and Ranging

Master Plan

Texas Coastal Resiliency Master Plan

NERR

National Estuarine Research
Reserve

NFWF

National Fish and Wildlife Foundation

NOAA

National Oceanic and Atmospheric
Administration

NPS

Nonpoint Source

OBA

Texas Open Beaches Act

OCS

Outer Continental Shelf

PAG

Permitting Assistance Group

PSC

Permit Service Center

RMCs

Resource Management Codes

RESTORE

Resources and Ecosystem
Sustainability, Tourist Opportunities,
and Revived Economies of the Gulf
Coast States Act of 2012

SAC

Texas Sunset Advisory Committee

SSO

Sanitary Sewer Outflows

TAC

Texas Administrative Code

TAMU-CC

Texas A&M University-Corpus Christi

TAMU-G

Texas A&M University-Galveston

TAMU-K

Texas A&M University-Kingsville

TCEQ

Texas Commission
on Environmental Quality

TCOON

Texas Coastal Ocean Observation
Network

Texas Sea Grant

Texas Sea Grant College Program

TMDL

Total Maximum Daily Load

TPWD

Texas Parks and Wildlife Department

TSP

Tentatively Selected Plan

TSSWCB

Texas State Soil and Water
Conservation Board

TWDB

Texas Water Development Board

TWRI

Texas Water Resources Institute

TxDOT

Texas Department of Transportation

UT

University of Texas at Austin

UT-RVG

University of Texas-Rio Grande Valley

UT-BEG

University of Texas-Bureau of
Economic Geology

USACE

U.S. Army Corps of Engineers

USFWS

U.S. Fish and Wildlife Service

INTRODUCTION

The value of the Texas coast stretches far beyond the 18 coastal counties and 6.1 million residents. With 367 miles of coastline and 3,300 miles of bayfront, the Texas coast is a vital component of the state and national economies, supporting energy and agricultural industries, the port system, commercial fisheries, and tourism.

Coastal Zone Management Program

In 1972, the U.S. Congress passed the Coastal Zone Management Act (CZMA), which established the federal Coastal Zone Management Program (CZMP). The CZMP is a federal-state partnership that provides a basis for protecting, restoring, and responsibly developing the nation's diverse coastal communities and resources.

Coastal Coordination Act

In 1991, the Texas Legislature passed the Coastal Coordination Act (CCA) to solve concerns raised by Texas coastal citizens regarding the need for a unified and comprehensive approach to the management of coastal natural resources and other complex coastal issues. The CCA called for the development of a program based on previously existing statutes and regulations and directed the Texas General Land Office (GLO) to develop a long-range, comprehensive plan for managing coastal natural resource areas (CNRAs) in cooperation with federal and state agencies, local governments, and coastal citizens.



The CCA (1) set the boundaries of the state's coastal zone to include all or part of 18 coastal counties and more than 8 million acres of land and water; (2) established the framework for a federally approved coastal management program; and (3) created the Coastal Coordination Council (CCC) to establish rules for certification for consistency with the goals and policies of the Texas Coastal Management Program (CMP) and to approve CMP funded projects.

In 2010, the CCC underwent review by the Texas Sunset Advisory Commission (SAC). The SAC determined that while the state benefited from maintaining a federally approved CMP, the CCC was no longer needed to administer it. In response, the

1972

U.S. Congress passed the CZMA, establishing the CZMP.

1991

The Texas Legislature passed the CCA.

1997

The CMP was finalized and accepted into the CZMP.

2010

The Council was abolished and its duties transferred to the Land Commissioner. The CCAC was established with representatives from eight networked agencies and four public members.

82nd Texas legislature passed and the Governor signed into law a bill to abolish the CCC and transferred duties to the Texas Land Commissioner (Land Commissioner). The Land Commissioner is now authorized to make consistency determinations as required by Federal law. The bill also required the Land Commissioner to establish a Coastal Coordination Advisory Committee (CCAC) with representatives from the networked agencies and public members appointed by the Land Commissioner.

Texas Coastal Management Program

The CMP was finalized in 1997 and accepted into the CZMP by the National Oceanic and Atmospheric Administration (NOAA). The CMP is a networked program that links existing regulations, programs, and local, state, and federal entities that manage various aspects of coastal resource use. The CMP’s mission is to improve the management of the state’s CNRAs designated to be of particular concern and ensure the long-term ecological and economic productivity of the Texas coast.

Coastal Coordination Advisory Committee

The CCAC is comprised of eight members representing state agencies and four members representing local government and citizens. The state agencies represented include: the GLO, Railroad Commission of Texas, Texas Department of Transportation (TxDOT), Texas Commission on Environmental Quality (TCEQ), Texas Parks and Wildlife Department (TPWD), Texas State Soil and Water Conservation Board (TSSWCB), Texas



Coastal Coordination Advisory Committee



Commissioner-appointed committee members include a coastal resident representative, coastal business representative, agriculture representative and a local elected official.



Water Development Board (TWDB), and the Texas Sea Grant College Program (Texas Sea Grant). The Land Commissioner-appointed citizen members represent agriculture, coastal businesses, coastal governments, and coastal residents.

The CCAC manages elevated coastal issues that concern multiple Coastal Issue Teams (CITs) and consistency issues. In Fiscal Year (FY) 2017 and FY 2018, the CCAC met once on March 7, 2018. The GLO provides the CCAC with quarterly CMP updates.

Coastal Issues Team

Under the CCAC, CITs meet to coordinate on cross-agency issues, including water quality; CMP grants; CMP coastal long-term planning; and regulatory/permitting.

Water Quality CIT

The Water Quality CIT is actively working towards approval of the Texas Coastal Nonpoint Source (NPS) Pollution Control Program, with a current focus on measures related to onsite sewage facilities/onsite sewage disposal systems and storm water, roadway, and watershed planning.

CMP Grants CIT

Each year, the CMP awards approximately \$1.8 million in grant funding. The CMP Grants CIT reviews grant pre-proposals and provides comments to applicants and reviews and scores final applications.

CMP Coastal Long-Term Planning CIT

The Coastal Long-Term Planning CIT members participate in the development of the Section 309 Assessment and Strategies Report and serve as members of the Technical Advisory Committee (Committee) for the Texas Coastal Resiliency Master Plan (Master Plan).

Regulatory/Permitting CIT

The Regulatory/Permitting CIT focuses on federal consistency issues and information exchange on consistency reviews.

By the Numbers

6.5 Billion

Tax dollars generated by Texas ports

251 Billion

Value of goods exported from Texas ports in 2011

6 Billion

Value of agricultural commodities produced by Texas farmers and ranchers exported through Texas ports

\$240 Million

Value of seafood landed at Texas ports

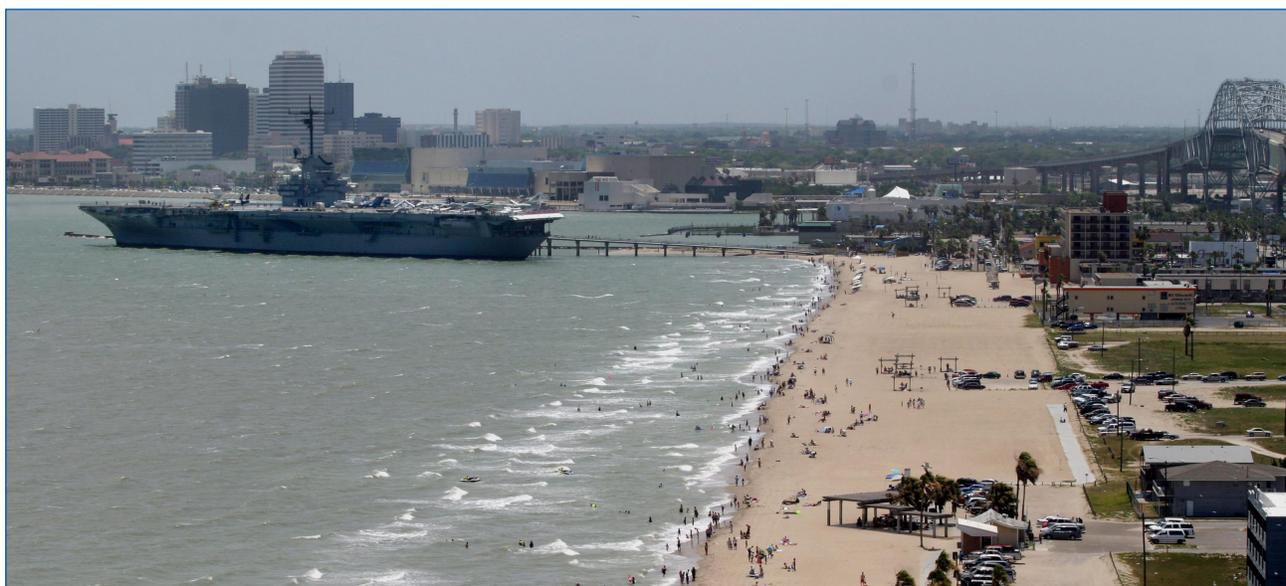
14 Billion

Amount spent by tourists visiting the Texas coast, generating about 143,000 jobs¹

¹“Shoring Up The Future for the Texas Gulf Coast.” Texas General Land Office. April 2013.

PROGRAM GOALS

- ◆ To protect, preserve, restore, and enhance the diversity, quality, quantity, functions, and values of CNRAs;
- ◆ To ensure sound management of all coastal resources by allowing for compatible economic development and multiple human uses of the coastal zone;
- ◆ To minimize loss of human life and property due to the impairment and loss of protective features of CNRAs;
- ◆ To ensure and enhance planned public access to and enjoyment of the coastal zone in a manner that is compatible with private property rights and other uses of the coastal zone;
- ◆ To balance the benefits from economic development and multiple human uses of the coastal zone, the benefits from protecting, preserving, restoring, and enhancing CNRAs, the benefits from minimizing loss of human life and property, and the benefits from public access to and enjoyment of the coastal zone;
- ◆ To coordinate agency and subdivision decision-making affecting CNRAs by establishing clear, objective policies for the management of CNRAs;
- ◆ To make agency and subdivision decision-making affecting CNRAs efficient by identifying and addressing duplication and conflicts among local, state, and federal regulatory and other programs for the management of CNRAs;
- ◆ To make agency and subdivision decision-making affecting CNRAs more effective by employing the most comprehensive, accurate, and reliable information and scientific data available and by developing, distributing for public comment, and maintaining a coordinated, publicly accessible geographic information system (GIS) of maps of the coastal zone and CNRAs at the earliest possible date;
- ◆ To make coastal management processes visible, coherent, accessible, and accountable to the people of Texas by providing for public participation in the ongoing development and implementation of the CMP; and
- ◆ To educate the public about the principal coastal problems of state concern and technology available for the protection and improved management of CNRAs.



PROGRAM MAP

Texas Coastal Management Program



Compiled by
Coastal GIS
Texas General Land Office

The Texas General Land Office makes no representations or warranties regarding the accuracy or completeness of the information depicted on this map or the data from which it was produced. This map IS NOT suitable for navigational purposes and does not purport to depict or establish boundaries between private and public land.

PROGRAM BUDGET

CZMA funds ensure effective administration of the CMP, especially activities to implement and enforce program policies, authorities, and other management techniques. Each year, the GLO receives approximately \$2.5 million under the CZMA to administer the CMP. The CZMA provides funding for three programs: the administrative and coastal resource improvement program (§306/§306A), the program enhancement program (§309), and the state's Coastal NPS Pollution Control Program (§310). The state is required to match the §306/§306A and §310 funds at a 1:1 ratio; however, a match is not required for §309.

Section 306/306A Funding

NOAA provided the state \$2,135,000 in FY 2017 and \$2,323,000 in FY 2018 in §306/§306A funding to administer the CMP. Approximately 78 percent (\$3,496,873) of the amount received in §306/§306A funding (\$4,458,000) was awarded to eligible entities for coastal projects through a competitive grant process. Grant subrecipients were required to contribute a 40 percent match. The state retained approximately 22 percent (\$978,000) for program administration, matching this amount with salaries, fringe benefits, and indirect costs.

Section 309 Funding

NOAA provided the state \$515,000 in FY 2017 and \$515,000 in FY 2018 in §309 funding to develop and carry out improvements that strengthen the CMP and implement program changes. Section 309 funding must support attainment of one or more of the eight coastal zone enhancement objectives: 1) wetlands, 2) coastal hazards, 3) public access, 4) marine debris, 5) cumulative and secondary impacts, 6) ocean resources, 7) energy and government facility siting, and 8) aquaculture.

Section 310 Funding

NOAA did not provide the state §310 funding for implementation of the Coastal NPS Pollution Control Program in FY 2017/ FY 2018.

FY 2017			
§306/§306A	STATE	SUB-RECIPIENTS	TOTAL
Federal Amount Awarded	\$392,356	\$1,742,644	\$2,135,000
State/Subrecipient Match	\$694,131	\$1,440,869	\$2,135,000
Subtotal	\$1,086,487	\$3,180,513	\$4,273,000
§309	STATE	SUB-RECIPIENTS	TOTAL
Federal Amount Awarded	\$515,000	\$0	\$515,000

FY 2018			
§306/§306A	STATE	SUB-RECIPIENTS	TOTAL
Federal Amount Awarded	\$568,771	\$1,754,229	\$2,323,000
State/Subrecipient Match	\$1,025,603	\$1,297,397	\$2,323,000
Subtotal	\$1,594,374	\$3,051,626	\$4,646,000
§309	STATE	SUB-RECIPIENTS	TOTAL
Federal Amount Awarded	\$515,000	\$0	\$515,000

HIGHLIGHTS & SIGNIFICANT EVENTS

Texas Coastal Nonpoint Source Pollution Control Program

GLO and TCEQ staff continue coordination efforts to develop and implement a Coastal NPS Pollution Control Program plan that meets §6217(g) conditions necessary for full approval, specifically focusing on addressing outstanding management measures related to:

- ◆ On-Site Sewage Disposal Systems Impact to Nitrogen Limited Waters;
- ◆ Operating On-Site Sewage Disposal Systems (on-site inspection);
- ◆ New Development;
- ◆ Site Development;
- ◆ Off-system Roads, Highways, and Bridges (non-TxDOT);
- ◆ Watershed Protection; and
- ◆ Existing Development.

In FY 2017 and FY 2018, the GLO and TCEQ submitted draft management measures for each of the above-mentioned focus areas to NOAA and U.S. Environmental Protection Agency (EPA) for informal review. The revised measures will ensure conformance to CZMP guidance and incorporate policies and mechanisms for successful implementation.

Building from positive feedback received from the federal review team, staff are developing technical and engagement resources that will be utilized during program implementation. A stormwater drainage guidance manual and program website are under development and will be completed by May 2019.

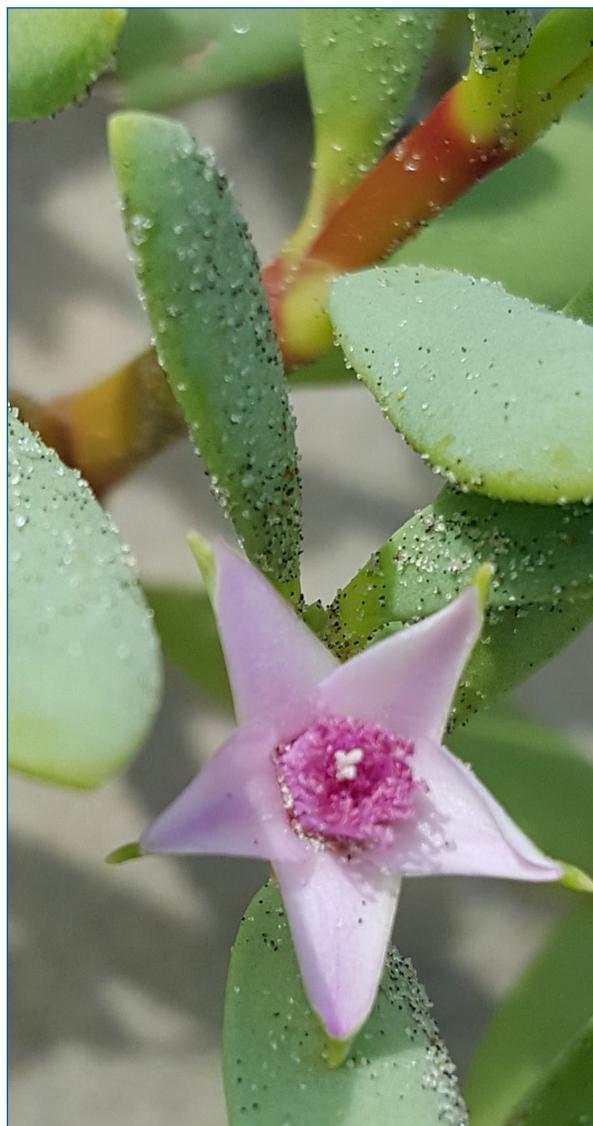
The management measures addressing On-Site Sewage Disposal Systems Impacts to Nitrogen Limited Waters and on-site inspections will be submitted for formal approval no later than March 2019. The remaining measures will be sent for formal federal approval by May 2019.

CMP Rule Revisions

The GLO adopted new CMP rules in Title 31 of the Texas Administrative Code (TAC), Chapters 501, 504, and 505. The new rules reflect the abolition of the CCC and transfer of CCC functions to the GLO and the Land Commissioner. The GLO continues to consult with NOAA on Chapter 506 (Federal Consistency) revisions as it works to update and streamline the rules.

Section 309 Assessment & Strategies Report Development

Section 309 of the CZMA establishes a voluntary grants program to encourage states with federally approved coastal management programs to identify, develop, and implement strategies to strengthen and enhance their programs. As a



condition of receiving \$309 funding, the GLO must submit a Section 309 Assessment & Strategies Report to NOAA every five years. The report assesses the CMP, identifies program priorities, and proposes strategies that lead to program enhancements for the subsequent five years.

Harte Research Institute (HRI) assisted GLO staff in the development of the FY 2016-2020 report. The report includes the following strategies to address identified program enhancements: Assessment & Data Collection to Enhance Permitting, Leasing, and Monitoring for Coastal Activities; Incorporation of Ecosystem Services into Grant Processes; Beach and Dune Protection; Living Shoreline Protection; Data Collection, Technical Assistance and Planning to Mitigate Coastal Hazards; and Implementation of Coastal NPS Management. NOAA reviewed and approved the FY 2016-2020 report. In May, the GLO received approval from NOAA to amend the FY 2016 – 2020 309 Assessment and Strategy Report to remove the “Incorporation of Ecosystem Services into the Grant Processes” strategy and replace it with the “Coastal Resources Grant Integration” strategy. The Grant Integration strategy will result in a streamlined, integrated Coastal Resources grant program that allows more efficient allocation of coastal funds to implement the goals and priorities of the Master Plan.



PROGRAM COORDINATION



The CMP serves as an umbrella for the management of coastal resources along the Texas Coast. Through networking with state and federal natural resource agencies and other entities, the effectiveness of protection, restoration, and enhancement of CNRAs can be accomplished.

Regulatory Partnerships ***Interagency Coordination Teams***

In the early 1990s, the U.S. Army Corps of Engineers (USACE) developed the Interagency Coordination Team (ICT) concept as part of the Houston-Galveston Navigation Channel (HGNC) Expansion Project, which involved deepening and widening the Houston Ship Channel and finding advantageous uses for the dredged material. The HGNC ICT, consisting of state and federal resources agencies and the Port of Houston Authority, was created to address key environmental issues and concerns associated with the project. Other non-governmental organizations, including the Galveston Bay Foundation (GBF), local residents, commercial fishermen, and recreational boaters, participated in ICT meetings, providing advice and feedback. In an effort to identify solutions to key issues associated with the project, the ICT formed several subcommittees, composed of ICT members with scientific expertise in various environmental disciplines. Subcommittees include the Beneficial Uses Group, the Oyster Committee, Cumulative Impacts Group, and the Benthic Recovery Group. The Beneficial Uses Group monitors the progress of marsh restoration sites created from material dredged from the navigation project.

The success of the HGNC ICT led USACE to form additional ICTs for other large and potentially controversial projects such as: the Gulf Intracoastal Waterway (GIWW) Laguna Madre maintenance dredging; GIWW Welder Flats-Aransas National Wildlife Refuge whooping crane habitat protection; the Corpus Christi Ship Channel Improvement Project; Sabine-Neches Waterway Improvement Project; and the Sabine Pass to San Luis Pass Shoreline Erosion Project.

Open Beach and Dune Protection Program

The Beach and Dune Protection Program enforces the Open Beaches Act (OBA), Dune Protection Act (DPA), and related administrative rules to ensure protection of CNRAs and accessibility for all beach users.

Funding Partnerships ***Coastal Erosion Planning and Response Act Program***

In 1999, the Texas Legislature established the Coastal Erosion Planning and Response Act (CEPRA) program to reduce and minimize erosion impacts to public beaches and dunes, wetlands, the GIWW, homes, businesses, and public infrastructure, thereby protecting the state's natural resources and economic future. As a cost-sharing program, CEPRA funding is used to leverage federal, state, local, and private resources. The CEPRA program matches up to 75 percent of funding for beach nourishment and dune restoration projects and up to 60 percent of funding for wetland and habitat restoration projects, shoreline protection projects, and erosion studies.

Gulf of Mexico Energy Security Act Program

In 2006, President Bush signed the Gulf of Mexico Energy Security Act into law to enhance the Outer Continental Shelf oil and gas leasing activities and revenue sharing in the Gulf of Mexico. Alabama, Louisiana, Mississippi and Texas share lease revenues for coastal restoration and conservation projects and hurricane protection. The GLO administers the funds for projects along the Texas coast.

National Fish and Wildlife Foundation

In early 2013, a U.S. District Court approved two plea agreements resolving certain criminal cases against British Petroleum and Transocean which arose from the 2010 Deepwater Horizon explosion and oil spill. The agreements directed a total of \$2.544 billion to the National Fish and Wildlife Foundation (NFWF) to fund projects benefiting the natural resources of the Gulf Coast that were impacted by the spill. Between 2013 and 2018, NFWF's newly-established Gulf Environmental Benefit Fund (GEBF) received a total of \$203 million for natural resource projects in Texas. To date, NFWF has awarded nearly \$135 million from the GEBF for 42 restoration projects in Texas. These projects were selected following extensive consultation with the TPWD, TCEQ, GLO, the U.S. Fish & Wildlife Service (USFWS) and NOAA. The projects in Texas address high-priority conservation needs. They represent important efforts to protect and enhance natural and living resources along the vast Texas coast.

Resources and Ecosystem Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act (RESTORE)

In July 2012, the Resources and Ecosystem Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act (RESTORE) directed 80 percent of funds from penalties assessed for the Deepwater Horizon oil spill to the Gulf States to fund environmental and economic development projects. Commissioner Baker at the TCEQ was designated by Governor Abbott as the Texas trustee for the funds. In October 2017 Texas released its first restoration plan, selecting 13 restoration projects to compensate for injuries to natural resources caused by the oil spill. This plan prioritizes restoration projects for oysters and wetlands, coastal, and nearshore habitats with a total estimated cost of \$45,761,000. Texas is expected to receive at least \$550 million in RESTORE funds through 2033.

Program Partnerships

Texas Beach Watch Program

The EPA funds the Texas Beach Watch Program for water quality monitoring at Texas recreational beaches. Results of water sampling and advisories are posted on the Texas Beach Watch website at <http://cgis.glo.texas.gov/Beachwatch/index.html#>.

Mission-Aransas National Estuarine Research Reserve System

In 2006, NOAA included the Mission-Aransas National Estuarine Research Reserve (NERR) within its network of coastal sites designated for research, monitoring, education, and stewardship. The University of Texas, Marine Science Institute manages the Mission-Aransas NERR, composed of approximately 190 acres of coastal habitat, including tidal flats, seagrass beds, mangroves, and oyster reefs. Through the CZMA, NOAA provides funding, guidance, and assistance to



the Mission-Aransas NERR to protect and study the estuarine system. Three GLO representatives serve on the Mission-Aransas NERR Advisory Board, collaborating with partners on issues related to coastal resources, energy, and coastal leasing.

Texas Sea Grant College Program

Texas Sea Grant College Program (Texas Sea Grant) is a partnership between NOAA and Texas A&M University that addresses issues within coastal communities to support healthy coastal environments and economies. Texas Sea Grant provides scientific research of coastal and marine resources and conducts outreach to educate the public and guide communities in decision making. A GLO representative serves on the Texas Sea Grant Advisory Committee, collaborating with partners to improve the understanding and stewardship of Texas coastal and marine resources.

Gulf of Mexico Alliance

The Gulf of Mexico Alliance (GOMA) is a partnership between federal and state agencies, academic organizations, non-profit organizations, and businesses in Alabama, Florida, Louisiana, Mississippi, and Texas. GOMA provides an opportunity for partners to identify and discuss the Gulf of Mexico's priorities and needs, promote collaboration between scientific and technical experts and resource managers, and minimize duplicative efforts. GOMA has identified priority issues for the Gulf, including water quality, nutrient impacts, habitat conservation and restoration, ecosystem integration and assessment, coastal resilience, and environmental education.

Galveston Bay Estuary Program

As a non-regulatory program administered through TCEQ, the Galveston Bay Estuary Program (GBEP) coordinates and facilitates partnerships to implement the Galveston Bay Plan and provides comprehensive ecosystem management to preserve the Bay's multiple uses. GBEP partners with local, state, and federal governments, regional authorities, non-government organizations, academic organizations, recreational fisheries, businesses, and industries to identify issues, solutions, and actions to support the Bay's needs. A GLO representative serves on GBEP's coordinating body, the Galveston Bay Council, assisting in plan implementation and ensuring program effectiveness.

Coastal Bend Bays and Estuaries Program

The Coastal Bend Bays and Estuaries Program (CBBEP) is a non-profit organization dedicated to improving the health of bays and estuaries in the Texas Coastal Bend. CBBEP oversees a voluntary partnership, consisting of resource managers, local, state, and federal governments, bay users, environmental organizations, and private industries and ensures implementation of the Coastal Bend Bays Plan. GLO staff serve on various plan implementation teams, providing oversight and guidance for ongoing projects, monitoring, and research initiatives, identifying program needs, and recommending projects for inclusion in CBBEP's annual work plans.



COASTAL LONG-TERM PLANNING & STUDIES

Texas Coastal Resiliency Master Plan

As the steward of state-owned lands, the GLO is responsible for the management of the Texas coastline from tidally influenced streams and riverbeds, and out to 10.3 miles into the Gulf of Mexico. Recognizing that Texas does not have a state-sponsored coastal plan, the Land Commissioner directed his Coastal Resources Division to develop the Texas Coastal Resiliency Master Plan (Master Plan), which is in alignment with the GLO's mission to restore, enhance and protect the state's coastal natural resources.

The first iteration of the Master Plan, released in March 2017, highlights the value of the coast, its resources, and the hazards that endanger coastal communities. The 2017 Master Plan also presents resiliency strategies and recommended nature-based projects to mitigate the impacts of coastal hazards that threaten the vitality and productivity of the coastal region.

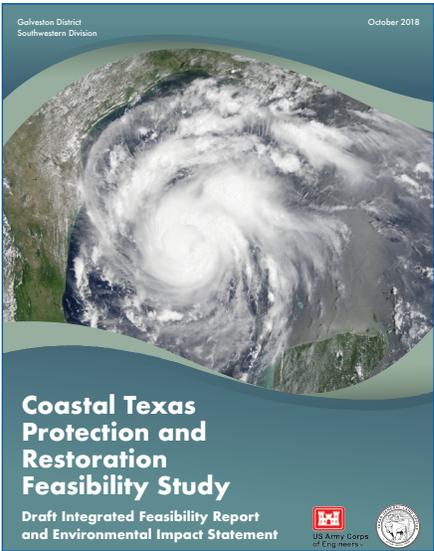
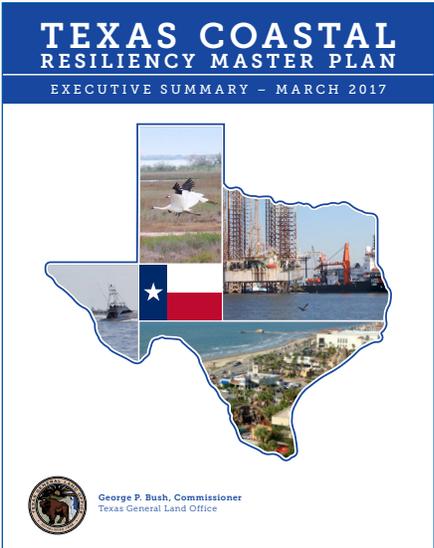
In the Fall of 2017, the GLO began work on the 2019 version of the Master Plan, which has a broader scope to address the natural and built environments as they pertain to resiliency for coastal communities. The planning process is dependent upon input from a Technical Advisory Committee. The Technical Advisory Committee is a group of coastal experts from state and federal agencies, universities, local and state governments, non-profits, engineering firms, port representatives, and regional trusts, foundations and partnerships. The Technical Advisory Committee members provide scientific and technical review and consultation throughout the entire planning process.

The GLO will use the Plan to guide funding for projects that provide coastal communities with ecologic and infrastructure protection. The recommended projects will restore and enhance the state's coastal resources, and will mitigate the impacts of storm surge, flooding, erosion, habitat loss and degradation of water quality and quantity. The GLO will present the Plan to the Texas Legislature in 2019.

Coastal Texas Study

In November 2015 the USACE, in partnership with the GLO, began assessing the feasibility of constructing coastal storm risk management and ecosystem restoration projects along the Texas coast. The Coastal Texas Study is estimated to cost \$20 million with a 50/50 federal to non-federal cost share split. The study will involve engineering and economic and environmental analyses on approximately 10-12 large-scale projects which the U.S. Congress may consider for authorization and funding.

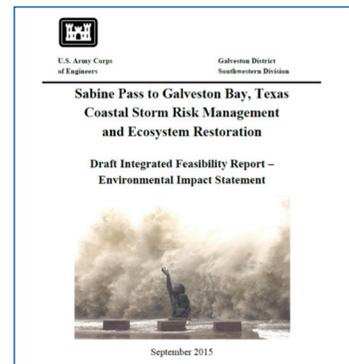
The GLO continues to partner with the USACE on the Coastal Texas Study, assessing the feasibility of constructing coastal storm risk management and ecosystem restoration projects along the Texas coast. The Tentatively Selected



Plan (TSP) was identified on May 30, 2018 and described in the Draft Integrated Feasibility Report and Environmental Impact Statement that was released on October 26, 2018. The TSP includes a storm surge barrier system for the Houston Galveston region, nine landscape scale ecosystem restoration projects along the Texas coast, and beach and dune enhancement for storm risk reduction in South Padre Island. There were seven public meetings in late November and early December 2018 with a comment period that ended January 9, 2019. The study is scheduled for completion by early 2021. The study was included in the Bi-Partisan Budget Act of 2018 (BPP), so the study may move to construction quicker than previously anticipated. Additional information on the TSP and the study can be found at coastalstudy.texas.gov.

Sabine Pass to Galveston Bay Study

The USACE and GLO completed the Sabine Pass to Galveston Bay Study to evaluate potential upgrades to existing Coastal Storm Risk Management systems in Brazoria and Jefferson counties and construction of a proposed Coastal Storm Risk Management system for Orange County. A feasibility analysis determined if there was a federal interest in funding projects in the identified regions. The final report was completed and signed by the USACE in December 2017. The study received BBP fund since 2018 to implement the study plans.



STATE & FEDERAL CONSISTENCY



The CZMA allows states to operate coastal management programs through a single permitting agency or by coordinating existing regulatory authorities through a networked program. Texas combines existing regulatory authorities and builds on the strength of those authorities utilizing the networked program approach.

CMP is intended to make coastal decision-making processes more effective and efficient. Each networked agency ensures its proposed actions that may adversely affect CNRAs are consistent with CMP goals and policies, through the exercise of statutory authorities. The

CCA requires networked agencies and subdivisions to comply with a uniform set of program goals and policies when conducting activities in the coastal zone.

Consistency Review

The consistency review process ensures the actions of state and federal agencies and limited local government actions are consistent with CMP goals and policies. Three consistency review components exist in the CMP: local consistency, state consistency, and federal consistency.

Local Consistency Review

The issuance of dune protection permits and beachfront construction certificates are the only local government actions that may adversely affect CNRAs. Local government beach/dune permitting authorities that have certified or conditionally certified dune protection and beach access plans are responsible for issuing dune protection permits and beachfront construction certificates for construction activities in the beach/dune system.

The GLO reviews all dune protection permits and beachfront construction certificate applications to ensure compliance with the OBA, DPA, and the GLO Beach Access and Dune Protection Rules. Permitted construction activities must be consistent with CMP goals and policies. For dune protection permits, local governments must certify that the proposed activity will not materially weaken any dune, materially damage any dune vegetation, or reduce the effectiveness of any dune as a means of protection against erosion and high wind and water. For beachfront construction certificates, local governments must certify that the proposed activity is consistent with the beach access portion of the approved dune protection and beach access plan and determine that the activity does not interfere with or otherwise restrict the public's right to access and use the public beach easement.

FY 2017 – 473 permits reviewed

FY 2018 – 297 permits reviewed

State Consistency Review

The CMP provides interagency coordination on significant policy issues and major coastal development projects, allowing networked agencies to manage their own programs on a day-to-day basis. Certification of an agency's rules is the primary tool for ensuring a networked agency's rules governing actions subject to the CMP are consistent with the program. Because

an agency must comply with its own rules, incorporating the goals and policies into agency rules ensures the agency will exercise its networked authorities consistent with the CMP. If an agency's rules are consistent, then its activities should be consistent.

Once an agency's rules are certified, the agency may adopt consistency review thresholds limiting the CMP's authority to review its actions. The agencies are responsible for enforcing the provisions of the CMP and are authorized to enforce the permits or authorizations issued.

Networked agencies are those with activities or rules that affect or protect CNRAs. The affected state agencies include the School Land Board, the Boards for Lease of State-owned Lands, the Public Utility Commission of Texas, the Texas Historical Commission, the TSSWCB, the Railroad Commission of Texas, GLO, TWDB, TCEQ, TxDOT, and TPWD.

During FY 2017 and FY 2018, the GLO received quarterly reports from the networked state agencies for permitting actions, rulemakings, and enforcement actions.

FY 2017

In FY 2017, the reporting state agencies received 2,165 permit applications, of which 1,300 were reported as approved without conditions, and 770 were reported as approved with conditions. The state agencies submitted and adopted 9 rulemakings. In addition, the state agencies reported undertaking 30 enforcement actions.

FY 2018

During FY 2018, the GLO received quarterly reports from the networked state agencies for permitting actions, rulemakings, and enforcement actions. The reporting state agencies received 2,537 permitting applications, of which 1,769 were approved without conditions, and 480 were approved with conditions. The state agencies submitted and adopted 7 rulemakings. In addition, the state agencies reported undertaking 359 enforcement actions.

Federal Consistency Review

Approval of the CMP gave Texas the authority to review proposed federal actions and activities that are in or may affect land and water resources in the Texas coastal zone. This process, called federal consistency review, ensures the state's interest is fairly represented and allows the state the opportunity to provide input into policies, procedures, or actions and activities that may affect the management of coastal areas, including:

- ◆ Projects requiring a federal license or permit;
- ◆ Direct activities proposed by federal agencies; and
- ◆ Federal financial assistance to state and local governments.

Federal actions and activities within or outside the Texas coastal zone that affect CNRAs must be consistent with enforceable policies of the CMP to the maximum extent practicable. If the state finds a given action or activity to be inconsistent, with a few exceptions the action cannot be undertaken.



Federal actions and activities are evaluated for potential impacts to CNRAs. During FY 2017 and FY 2018, all the proposed federal agency actions, activities, or financial assistance projects reviewed by staff and considered by the Land Commissioner were deemed consistent with CMP goals and policies.

In 2016, the Regulatory/Permitting CIT was notified of a USACE Section 10 Rivers and Harbors Act permit (SWG-2005-00552) for a 205-acre canal subdivision on Mustang Island. The USACE posted the permit application for public notice and comment from September 8, 2016 – October 10, 2016. The application, which is subject to the goals and policies of the CMP, generated significant public interest during the public comment period. The Regulatory/Permitting CIT is scheduling a conference call to identify and discuss consistency issues.

In May 2018, the USACE posted a permit application for public notice for an after the fact permit for Manley Builders (SWG-2016-00191) to retain impacts to waters of the United States associated with the development of a lot and a driveway. There was a permanent discharge of dredged or fill material into 0.03 acre of dune swale wetland. The public comment period was from May 15, 2018 - June 15, 2018. Since there was significant public interest in this project due to the lack of a relevant mitigation plan regarding the project impacts, the CIT met on July 2, 2018. On July 6, 2018, the applicant and USACE were informed that the CIT decided to elevate the federal consistency review because of the unresolved consistency issues. Since that time, the applicant signed a stay agreement in August 2018 to extend the review period to October 2018 and requested an extension to November 2018. The CMP consistency review process is still on going for this project.

Federal Agency Actions

A federal agency action is a federal license or permit issued by a federal agency that represents the proposed federal authorization, approval, or certification needed by the applicant to begin an action. For example, a USACE permit for the construction of a pier or boat dock is considered a federal action. During FY 2017, a total of 176 actions requiring a federal license or permit were reviewed. During FY 2018, a total of 187 actions requiring a federal license or permit were reviewed.

Federal Agency Activities and Development Projects

A federal agency activity is a function performed by or for a federal agency in exercise of its statutory responsibility. This includes the planning, construction, modification, or removal of a public work, facility, or any other structure, and the acquisition, use, or disposal of land or water resources. For example, maintenance dredging of a navigation channel or changes in federal permitting processes are considered federal activities. During Federal FY 2017, ten federal activities were reviewed for consistency, and during Federal FY 2018, 11 federal activities were reviewed for consistency.

Federal Funding Assistance

Financial assistance projects are state or local applications for federal funding in the form of grants, contractual agreements, and loans. For example, a request for funding for a flood control project is considered a request for financial assistance. Federal agencies may not grant federal assistance until the state CMP concurs. During FY 2017, 102 financial assistance projects were reviewed. During FY 2018, 76 financial assistance projects were reviewed.

Permitting Assistance

Prior to the CMP, overlapping jurisdiction between federal and state agencies created redundancies and a complicated application process for common projects, such as residential piers or placement of fill material to construct a building. To mediate the problem, the CMP streamlined the permitting process and improved agency coordination.

Permitting Assistance Group

The Permitting Assistance Group (PAG) was formed to identify and address permitting obstacles; encourage interagency cooperation; offer the public a single point-of-contact for project-specific advice during the permit application process; and serve as a liaison to the CCAC on permitting issues. The PAG is comprised of CCAC members and representatives of federal and state agencies that participate in the permitting process as applicants, permitting entities, or commenters.



The PAG addresses requests for preliminary consistency determinations. A regulatory work group was established to discuss various issues, such as jurisdictional issues and CMP determinations for larger (structure-only) projects. The PAG did not meet in FY 2017 or FY 2018.

Joint Permit Application Form

To reduce redundancies and streamline the permitting process, Joint Permit Application Forms (JPAFs) were created, providing one consolidated application for permits/authorizations from multiple agencies. JPAFs minimize the length of the permitting process and reduce confusion among applicants regarding which permits are required for a project.

Joint Evaluation Meetings

State and federal resource agency representatives routinely attend monthly Joint Evaluation Meetings. The meetings, sponsored by the USACE, provide guidance to applicants on CMP policies and agency permitting requirements.

Permit Service Center

The Permit Service Centers (PSCs) provide permitting assistance to small businesses, private individuals, and local government organizations for proposed projects within the coastal zone and JPAF boundaries. PSC staff assists applicants in submitting administratively complete JPAFs, providing technical guidance for permits within the coastal zone boundary and troubleshooting applications prior to submission to regulatory agencies. During the regulatory agency review, PSC staff monitors the permit applications, identifies interagency disagreements that hinder permit issuance, and facilitates conflict resolution between permitting agencies and applicants. This process reduces the length of permit processing and ensures review efficiency.

During the FY 2017 reporting period, the PSC assisted 166 applicants and processed 158 JPAFs. The lower coast office processed 29 JPAFs, and the upper coast office processed 129 JPAFs. During the FY 2018 reporting period, the PSC assisted 142 applicants and processed 134 JPAFs. The lower coast office processed 17 JPAFs, and the upper coast office processed 117 JPAFs.

FY 2017 AND 2018 JPAFS RECEIVED (BY QUARTER)

QUARTER	FY 2017	FY 2018
1	39	26
2	26	29
3	49	49
4	52	38
Total	166	142

The PSCs did meet the Legislative Budget Board target of 160 JPAFs in FY 2017 but did not meet the Legislative Budget Board target of 175 JPAFs in FY 2018. The number of JPAFs in FY 2018 can be attributed to Hurricane Harvey in August 2018, which resulted in fewer applications received for coastal projects in the months following the storm. This number is expected to increase as clean-up and rebuilding continues.

PERMIT SERVICE CENTER LOCATIONS AND CONTACT INFORMATION

Permit Service Center (Upper Coast)

Texas A&M University-Galveston
Sea Aggie Center Bldg., 3026, Room 912
P.O. Box 1675
Galveston, TX 77553-1675
Toll-free: 866.894.7664
Phone: 409.741.4057
Fax : 409.741.4010

Permit Service Center (Lower Coast)

602 N. Staples Street, Suite 240
Corpus Christi, Texas 78401
Phone: 361.886.1630
Fax: 361.888.9305

PERMITTING.ASSISTANCE@GLO.TEXAS.GOV

WWW.GLO.TEXAS.GOV/PSC



GRANT ADMINISTRATION

CMP Cycles 18, 19 and 20

In December 2016 and December 2017, CMP Cycle 18 and CMP Cycle 19, respectively, were closed out with the final drawing of funds and submittal of remaining deliverables to NOAA. GLO staff is currently working with sub-recipients to close out CMP Cycle 20.

CMP Cycle 21

CMP Cycle 21 grant applications were due on September 25, 2015. The CMP Review Team reviewed and scored 55 applications. The Land Commissioner approved 16 projects for funding, including 11 \$306 projects and five \$306A projects. Following NOAA's approval, the GLO executed the sub-recipient contracts for the selected projects, which commenced on October 1, 2016. Currently, GLO staff is conducting general oversight of the CMP and grant tasks to ensure all projects are completed in a timely manner and within budget.

CMP Cycle 22

CMP Cycle 22 grant applications were due on September 26, 2016. The CMP Review Team reviewed and scored 40 applications. The Land Commissioner approved 19 projects for funding, including 16 \$306 projects and three \$306A projects. Following NOAA's approval, the GLO executed the sub-recipient contracts for the selected projects, which commenced on October 1, 2017. Currently, GLO staff is conducting general oversight of the CMP and grant tasks to ensure all projects are completed in a timely manner and within budget.

CMP Cycle 23

The GLO mailed postcards to approximately 1,300 individuals and 450 elected officials within the CMP boundary, notifying potential applicants of the upcoming grant funding and informational workshops. Public notice of the availability of the CMP funds and of the grant workshops was also published in the Texas Register for a 30-day period.

Grant workshops were held in three coastal cities to help potential applicants understand the grant guidance and application packet. The workshops provided information on changes to the grant program and an opportunity to discuss specific project ideas. Although applicants were not required to attend a workshop, it was strongly encouraged for first-time and/or inexperienced applicants. In total, 64 interested applicants attended the workshops.

CMP Cycle 23 Workshop Dates and Locations

South Padre Island – May 2, 2017 at 9:30 a.m.

South Padre Island Birding and Nature Center
6801 Padre Blvd.

Corpus Christi – May 3, 2017 at 9:30 a.m.

Texas A&M University - Natural Resources Center
6300 Ocean Drive, Room 1003





Galveston – May 10, 2017 at 9:30 a.m.
Galveston County Park Board Main Office
601 Tremont Street, Board Room

Applicants were provided the opportunity to voluntarily submit a pre-proposal to receive project specific comments and recommendations. The CMP Review Team reviewed a total of 40 pre-proposals and provided comments to applicants to help strengthen their final application.

The deadline to submit final applications was October 4, 2017. A total of 54 applications were submitted, one of which was deemed administratively incomplete and was

not considered for funding. The final applications were compiled and submitted to the CMP Review Team. On December 7, 2017, the CMP Review Team met to discuss the final scores and recommend a list of projects to the Land Commissioner for funding. On January 29, 2018, the GLO's Procurements and Grants Review Committee voted to recommend the list of selected projects to the Land Commissioner for approval. The Land Commissioner approved 21 projects for funding, including 16 §306 projects and five §306A projects.

Following NOAA's approval, the GLO executed the sub-recipient contracts for the selected projects, which commenced on October 1, 2018. Currently, GLO staff is conducting general oversight of the CMP and grant tasks to ensure all projects are completed in a timely manner and within budget.

CMP Cycle 24

The GLO mailed postcards to approximately 1,700 individuals and 450 elected officials within the CMP boundary, notifying potential applicants of the funding opportunity and the upcoming grant workshops. A public notice was also published in the Texas Register for a 30-day period.

Grant workshops were held in three coastal cities to help potential applicants understand the grant guidance and application packet. The workshops provided information on the CMP program and an opportunity to discuss specific project ideas with staff. Although applicants were not required to attend a workshop, it was strongly encouraged for first-time and/or inexperienced applicants. In total, 85 interested applicants attended the workshops.

CMP Cycle 24 Workshop Dates and Locations

Corpus Christi – May 1, 2018 at 9:30 a.m.
Corpus Christi Regional Transportation Authority
602 N. Staples, 2nd Floor Boardroom

South Padre Island – May 2, 2018 at 9:30 a.m.
South Padre Island Birding and Nature Center
6801 Padre Blvd.

Galveston – May 9, 2018 at 9:30 a.m.

Rosenberg Library

2310 Sealy Street, Fox Room

For Cycle 24, applicants were required to submit pre-proposals for review by the CMP Grant Review Team. The submittal deadline for pre-proposals was June 14, 2018. A total of 82 pre-proposals were received. The CMP Grant Review Team reviewed and provided a score between 0-2 for each pre-proposal. The scores were consolidated and pre-proposals that received a score of 2 were invited to submit a final application. Scores were based on how closely the project aligned with CMP goals and policies and implemented a networked agency need. Written comments were provided for each pre-proposal, regardless of invitation status. Applicants received their final application notification letter on August 10, 2018. A total of 38 applicants were invited to submit final applications. The deadline to submit final applications for Grant Cycle 24 was October 3, 2018.

PROJECT SUCCESS STORIES

San Benito Wetlands Project – Phase II

Texas A&M AgriLife Extension and Texas Water Resources Institute (TWRI), in partnership with the City of San Benito (the City), used CMP Cycle 20 funds to convert abandoned wastewater treatment polishing cells into a 10-acre wetland system. Old levees and rock berms within the cells were refurbished and the City piped clean water from the new San Benito Wastewater Treatment Plant to the unused cells to create a contiguous wetland pond. Once filled, project partners hosted invasive plant species removal events and replanted the area with native wetland vegetation. The new habitat has proven extremely successful and is attracting a multitude of migratory birds and local fauna. 146 species of birds have been identified at the site with as many as 250 species expected to arrive in future months. Ebird.com recently designated the site as a “Jewel of the Valley” birding location and the area is quickly becoming a destination for avid birders and wildlife viewers.



Texas Coastal Planning Program: Providing Technical Assistance to Texas Coastal Communities

The Texas Coast is changing both physically and socially. As coastal populations grow, the use of coastal natural resources that attract and sustain populations also increases. To better prepare coastal communities for hazards and climate change, Texas A&M University Sea Grant, in coordination with the Texas A&M's Department of Landscape Architecture and Urban Planning, used CMP Cycle 20 funds to develop a draft Multi-Jurisdictional Floodplain Management plan for Aransas County.



Sea Grant hosted public meetings to engage local stakeholders and municipalities in the planning process, so they could better understand the risks and vulnerabilities facing their communities. The original scope of work only included a Floodplain Management Plan for the City of Rockport. However, local community leadership was so interested in the project, the scope was expanded



to create a Multi-Jurisdictional Floodplain Management Plan for Aransas County, the City of Rockport, the Town of Fulton, and the City of Aransas Pass. The results included a Community Survey Synthesis, an Alternative Scenarios Report and the draft Multi-Jurisdictional Floodplain Management Plan signed by the four local communities.

Cease the Grease

GBF used CMP Cycle 20 funds to continue work on the Cease the Grease Campaign (CtG). The campaign strives to reduce the amount of fats, oils and grease (FOG) poured down drains in the Houston-Galveston area. Improper disposal of FOG is a leading cause of damage to sewage lines and sanitary sewer overflows (SSOs) and contributes to fecal bacteria contamination in Galveston Bay. Through education and public outreach, CtG hopes to reduce the number of SSOs, decrease fecal bacteria contamination in the bay and provide the public with convenient oil recycling drop off locations. GBF hosted

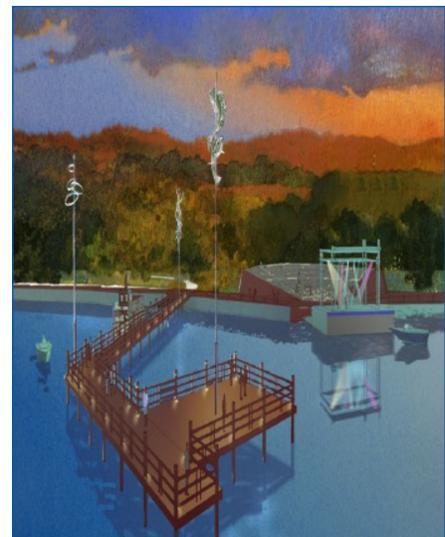
eight stakeholder workgroups in which participants developed new marketing materials and revised the campaign's outreach plan. GBF's 29 campaign partners distributed outreach materials to over 3 million local citizens. Additionally, CtG launched pilot community grease recycling programs in partnership with the City of Nassau Bay and City of Seabrook. Both communities received oil recycling containers and set them up in convenient locations so local citizens could easily dispose of their cooking oil instead of pouring it down the drain.

PROTECT GALVESTON BAY
DON'T FEED THE GREASE MONSTER!

1. Remove cooking oil and grease from dishes and pans.
2. Pour in a container and seal.
3. Store in the freezer.
4. Once full, throw grease in the trash and recycle the oil.

Port Neches Riverfront Enhancement Planning & Design Project

The City of Port Neches improved and revitalized a one-mile stretch of Neches River waterfront to enhance ecotourism and benefit the local economy. The City used CMP Cycle 20 funds to develop the Riverfront Planning and Design Report to define the site restoration and revitalization plans. The report produced plans to improve shoreline access, enhance recreational utilization, and allow increased public access and enjoyment. The report provided details on future river bank stabilization to protect against manmade and natural wakes and surges and showcased a riverside walkway that will allow pedestrians to traverse between proposed commercial outlets along the waterfront. Additionally, the report developed plans for a boardwalk that will extend over the water, connecting the new public area to the existing park, boat ramp, and parking lot immediately downstream.



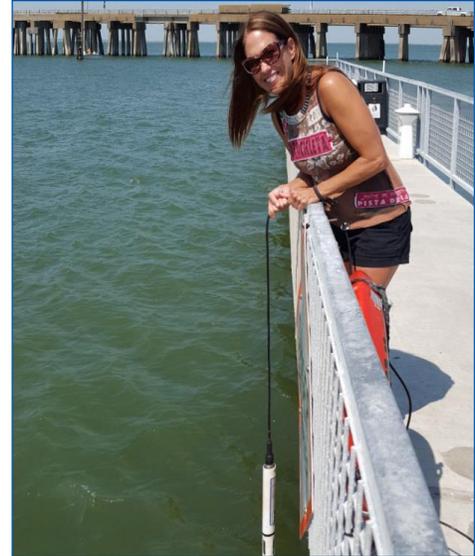
Coastal Bend Bays and Estuary Program

The CBBEP used CMP Cycle 20 funds to implement a volunteer marsh planting project in the Nueces Bay Marsh along the Nueces Bay Causeway. The project educated community volunteers on the importance of wetlands and promoted stewardship of bay resources through active participation in marsh vegetation planting. The CBBEP hosted five volunteer planting events in which 240 volunteers planted 8,000 plugs of smooth cordgrass (*Spartina alterniflora*) on 27 marsh terraces. In total, the project created 4.27 acres of marsh habitat. These improvements increase aquatic wildlife abundance and diversity and provide better foraging opportunities for coastal waterbirds.



Automated Detection of Harmful Algae Blooms (HABs) in Galveston Bay

The Galveston Bay system is one of the largest sources of seafood in Texas and the second highest oyster producing estuary in the United States. Unfortunately, the ecosystem faces numerous ecological pressures including low oxygen, fish kills, and harmful algal blooms (HABs) events that contaminate seafood and shut down commercial oyster harvesting. Texas A&M University-Galveston (TAMU-G) used CMP Cycle 19 funds to study the phytoplankton responsible for HAB events and develop an early warning system to alert regulatory authorities to HAB occurrences. TAMUG deployed an Imaging FlowCytobot to continuously monitor phytoplankton communities in Galveston Bay. The data from the FlowCytobot allowed TAMUG to identify the timing, magnitude, and duration of HABs. TAMUG followed HABs through the bay ecosystem, observed changes in species composition, analyzed the distribution of species in real time, and developed predictive abilities to forecast subsequent HABs. The FlowCytobot successfully detected 14 HAB events, which were reported to Texas Parks and Wildlife Department and Texas Department of Health and Human Services.



Japhet Creek Land Acquisition II

Buffalo Bayou Partnership used CMP Cycle 21 funds to acquire a .54-acre (23,400 square feet) property along Japhet Creek. The property was then transferred to the Houston Parks & Recreation Department (HPRD) for future long-term monitoring and restoration. The site, a former construction dump, is located between two properties owned by HPRD and is covered in construction debris and invasive plant species. Although the site is small, restoration of the riparian corridor associated with the property will help prevent flooding, increase absorptive ground cover and enhance the ecological, conservation and recreational values of Japhet Creek.

With the purchase of this property, more than 5.7 acres of land along Japhet Creek are now assembled in fulfillment of the Buffalo Bayou and Beyond Master Plan and HPRD's Bayou Greenways Initiative. Both projects seek to transform Buffalo Bayou into an ecologically functioning, pedestrian-friendly waterway with "greenfingers" that link the bayou to adjacent neighborhoods. In the future, BBP and HPRD will introduce native riparian vegetation, increase bird and aquatic habitat and add amenities such as interpretive and way finding signage, benches and a pavilion.



Causeway Rookery Island – Protection and Restoration

Causeway Rookery Island is a 7-acre site that serves as roosting and nesting habitat for colonial waterbirds. The island supports approximately 3,070 pairs of breeding birds each year and harbors numerous threatened and priority Texas avian species. Protection of the island is critical to maintaining a healthy colonial waterbird population in the Texas Coastal Bend and Nueces Bay. In 2003, the CBBEP installed geotextile tubes on the Island's north side to prevent erosion. In early 2014, the

geotextile tube began to fail, exposing the shoreline to wave energy and resulting in approximately 45 feet of shoreline eroding in less than a year.

This project used CMP Cycle 21 funds to protect the rookery island from wind and wave erosion. The project collected data, obtained aerial imagery and produced an alternatives analysis for island restoration in preparation for future phases of shoreline protection.



Bucket Brigade – What is in our water?

Artist Boat used CMP Cycle 20 funding to engage beachgoers on Galveston Island in place-based learning to promote improved perceptions and attitudes toward water and sediment quantity and quality on Texas Gulf waters and beaches. Specifically, the project was designed to enhance the public’s understanding of Sargassum, suspended sediments in the water column, turbidity and plankton, and human impacts. As part of this program, Artist Boat trained 33 volunteers to provide 11,465 “Bucket Brigade” interpretive tours at beach access points. Funds were also used to create a Marine Debris Task Force to develop an action plan to reduce the introduction of marine debris into ocean waters. Finally, Artist Boat hosted an annual World Oceans Day Festival and Art Contest with 505 visitors and held the Beautify the Bucket competition in which participants decorated 142 trash cans with coastal themes. Artist Boat also printed and distributed field guides for Galveston Island beaches, which included information on coastal organisms, the beach code of conduct, currents, and water quality.



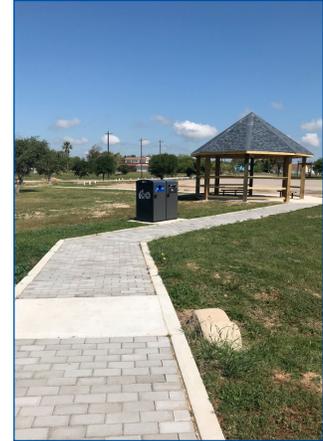
Exploration Green

The GBF, in partnership with the Clear Lake City Water Authority, purchased Exploration Green (EG), historically utilized as the Clear Lake City Municipal Golf Course, to retrofit the area with storm water detention ponds to help reduce flooding risks. Through the Exploration Green Conservancy, this project provided public access to a perpetually conserved open space, nature-based recreational opportunities for residents and visitors and water quality improvements from natural wetland filtration. CMP Cycle 21 funds were used to initiate trail construction under Phase 1 of the EG Master Plan. Project partners installed approximately one (1) mile of all weather, ADA compliant trail surface for walkers, runners and cyclists, planted over 700 native trees and shrubs for habitat restoration and 16,000 wetland plants in addition to installing an irrigation system to support the newly planted vegetation. This project has been incredibly successful and prevented approximately 150 homes from flooding during Hurricane Harvey by retaining water in the newly completed detention cells.



Palacios Coastal Education Pavilion

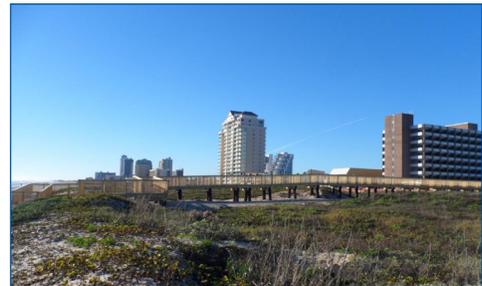
The City of Palacios (the City) used CMP Cycle 20 funds to ecological and aesthetically enhance the City bay front. This project improved grading and drainage, enhanced wetlands, constructed two small interpretive plazas and a walkway, installed three covered picnic tables with slabs, benches and trash receptacles and placed educational/interpretive signage around the site. These upgrades help direct the flow of runoff into the area wetlands to allow sediment to filter before being discharged into the bay. The two new interpretive plazas, walkways and picnic tables enhanced the bay front by providing scenic views and allowing visitors to appreciate natural resources while learning about their function and value. The project improved the overall Palacios bay front visitor experience and works to increase public appreciation and awareness of coastal natural resources.



The project improved the overall Palacios bay front visitor experience and works to increase public appreciation and awareness of coastal natural resources.

Moonlight and Ocean Circle Beach Access Improvements

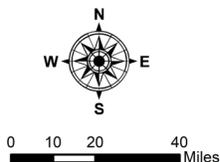
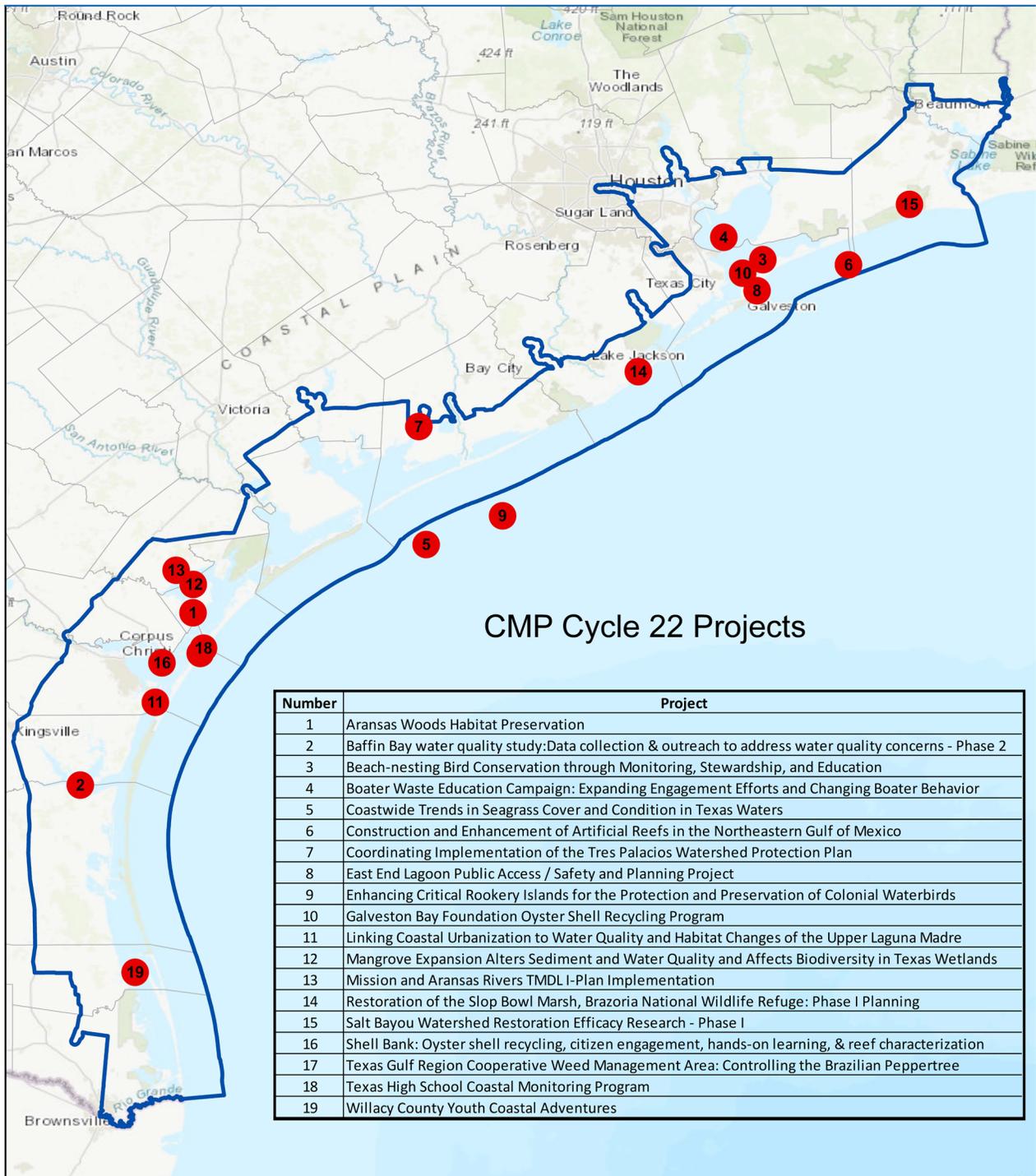
The City of South Padre Island's (the City) public beach access points enhance the local economy and enrich the lives of residents and tourist alike. Of the over five million people visiting the City each year, a large majority are day visitors or persons residing off the beach. To accommodate public access in areas where beaches are restricted to vehicular traffic, the City sought to improve public beach access. The City used CMP Cycle 20 funds to complete two public beach access projects at Moonlight and Ocean Circle. At Moonlight Circle, the City replaced an aging Mobi-mat with an ADA-compliant dune walkover and installed drinking water and rinse stations. At Ocean Circle, the City constructed an ADA-compliant dune walkover, a 28-space parking lot, a sidewalk and installed drinking water and rinse stations. These new walkovers are instrumental in keeping the dune systems strong by reducing human traffic on the dunes and dune vegetation.



FUNDING BREAKDOWN

COUNTY	CYCLE 22/FY17	CYCLE 23/FY18	TOTAL
Aransas	\$228,715.00	\$43,074.00	\$271,789.00
Brazoria	\$92,442.00	\$131,702.00	\$224,144.00
Calhoun	\$0.00	\$0.00	\$0.00
Cameron	\$0.00	\$59,901.00	\$59,901.00
Chambers	\$0.00	\$0.00	\$0.00
Galveston	\$267,906.00	\$255,852.00	\$523,758.00
Harris	\$0.00	\$455,373.00	\$455,373.00
Jackson	\$0.00	\$0.00	\$0.00
Jefferson	\$84,394.00	\$0.00	\$84,394.00
Kenedy	\$0.00	\$0.00	\$0.00
Kleberg	\$88,012.00	\$0.00	\$88,012.00
Matagorda	\$95,816.00	\$0.00	\$95,816.00
Nueces	\$223,546.00	\$249,542.00	\$473,088.00
Orange	\$0.00	\$0.00	\$0.00
Refugio	\$83,979.00	\$0.00	\$83,979.00
San Patricio	\$0.00	\$0.00	\$0.00
Victoria	\$0.00	\$0.00	\$0.00
Willacy	\$45,400.00	\$0.00	\$45,400.00
Coastwide	\$232,434.00	\$459,907.00	\$692,341.00
Lower Coast	\$0.00	\$98,878.00	\$98,877.00
Upper Coast	\$300,000.00	\$0.00	\$300,000.00
Total	\$1,742,644.00	\$1,754,229.00	\$3,496,873.00

CYCLE 22 PROJECTS



Compiled by ETS-GIS
Texas General Land Office

November 2018

The Texas General Land Office makes no representations or warranties regarding the accuracy or completeness of the information depicted on this map or the data from which it was produced. This map IS NOT suitable for navigational purposes and does not purport to depict or establish boundaries between private and public land.



George P Bush
Commissioner

ARANSAS COUNTY
ARANSAS WOODS HABITAT PRESERVATION

The City of Rockport will purchase approximately 5.43 acres of woodlands to expand the protected habitat of the Great Texas Birding Trail. The site is part of Aransas Woods, a 114.5-acre complex with more than 60 acres of fresh water upland and two large wetland lakes. The project will protect and preserve coastal habitat and provide tremendous economic, ecological, aesthetic, recreational, and water quality values to Aransas County residents and visitors.

CMP FUNDED: \$132,898
MATCH: \$44,300
TOTAL PROJECT: \$177,198
CONTACT: MR. GREG HARLEN
Rockport, Texas
361.463.1428

MANGROVE EXPANSION ALTERS SEDIMENT AND WATER QUALITY AND AFFECTS BIODIVERSITY IN TEXAS WETLANDS

Black mangroves are expanding into Texas coastal wetlands and displacing marsh plants. The effects on coastal biodiversity and wetland biogeochemistry are largely unknown. Texas A&M University-Corpus Christi (TAMU-CC) will conduct a study within the Mission-Aransas National Estuarine Research Reserve, an area that experienced one of the largest increases in black mangroves. TAMU-CC will conduct real-time monitoring to measure concentrations of methane, sulfide, and ammonium and understand the temporal variation over daily and seasonal cycles. The benthic infaunal community will be surveyed at various locations to determine the impacts of sediment and water quality on biodiversity. Project findings will be integrated into education and outreach modules.

CMP FUNDED: \$95,817
MATCH: \$95,946
TOTAL PROJECT: \$191,763
CONTACT: DR. BRANDI REESE
6300 Ocean Drive, Unit 5858
Corpus Christi, Texas 78412
361.825.3022

BRAZORIA COUNTY
RESTORATION OF THE SLOP BOWL MARSH, BRAZORIA NATIONAL WILDLIFE REFUGE: PHASE I PLANNING

The Slop Bowl Marsh, located adjacent to the Brazoria National Wildlife Refuge in Brazoria County, Texas, was historically known for its extraordinary bird habitat and high fish productivity. More recently, hydrocarbon extraction and injection activities have caused land subsidence, resulting in hypersaline conditions and the loss of critical habitat. Texas A&M AgriLife Research will assess the hydrological barriers contributing to hypersalinity and marsh loss, identify habitat changes, integrate stakeholder goals with scientific findings, and design an action plan for hydrologic restoration.

CMP FUNDED: \$92,442
MATCH: \$92,442
TOTAL PROJECT: \$184,884
CONTACT: DR. RUSTY FEAGIN
2138 TAMU
College Station, Texas 77843
979.862.2612

**COASTWIDE
COASTWIDE TRENDS IN SEAGRASS COVER AND CONDITION IN TEXAS WATERS**

The University of Texas at Austin (UT) will expand the Texas Seagrass Monitoring Program to include monitoring in all known seagrass beds along the entire Texas coast. UT currently samples at 285 stations coastwide and will work to establish up to 75 additional stations in San Antonio and Galveston Bay. UT will conduct elemental analysis of seagrass tissue to determine ratios of carbon, nitrogen, and phosphorous. Project findings will be presented through the Scientist in Residence program and public seminars.

CMP FUNDED: \$94,487
MATCH: \$64,078
TOTAL PROJECT: \$158,565
CONTACT: **DR. KENNETH DUNTON**
750 Channel View Drive
Port Aransas, Texas 78373
361.749.6917



ENHANCING CRITICAL ROOKERY ISLANDS FOR THE PROTECTION AND PRESERVATION OF COLONIAL WATERBIRDS

Audubon Texas seeks to improve the suitability of rookery islands through habitat enhancement and protection activities. Audubon Texas will increase community awareness of coastal conservation issues through outreach events, educational programs, and trainings. Audubon Texas will monitor colonial waterbird populations and provide the collected data to the public via ArcGIS Online.

CMP FUNDED: \$54,097
MATCH: \$18,810
TOTAL PROJECT: \$72,907
CONTACT: **DR. VICTORIA VAZQUEZ**
1500 Marina Bay Drive, Suite 1800
Clear Lake Shores, Texas 77565
706.338.0110

TEXAS HIGH SCHOOL COASTAL MONITORING PROGRAM

The University of Texas at Austin, Bureau of Economic Geology (BEG) will engage students and teachers who live along the coast in the study of the natural beach environment. Middle and high school students, teachers, and scientists will work together to gain a better understanding of dune and beach dynamics. Students and teachers will learn how to measure the topography, recognize and map the vegetation and shoreline, and observe weather and wave conditions. By participating in an actual research project, the students will obtain an enhanced science education. Furthermore, public awareness of coastal processes will be heightened, and the students' efforts will provide coastal communities with valuable data on shoreline change.

CMP FUNDED: \$83,850
MATCH: \$28,094
TOTAL PROJECT: \$111,944
CONTACT: **MS. TIFFANY CAUDLE**
University Station, Box X
Austin, Texas 78713
512.475.9572

GALVESTON COUNTY

BEACH-NESTING BIRD CONSERVATION THROUGH MONITORING, STEWARDSHIP, AND EDUCATION

Beach-nesting birds are declining along the Gulf of Mexico as a result of human disturbance and habitat loss. The American Bird Conservancy will work with land/resource managers to identify and monitor sensitive breeding locations and engage and educate the public, coastal visitors, and land/resource managers in becoming stewards for the birds.

CMP FUNDED: \$90,535
MATCH: \$90,536
TOTAL PROJECT: \$181,071
CONTACT: **MS. KACY RAY**
267 E Constance Road
Debary, FL 32713
614.218.8838

BOATER WASTE EDUCATION CAMPAIGN: EXPANDING ENGAGEMENT EFFORTS AND CHANGING BOATER BEHAVIOR

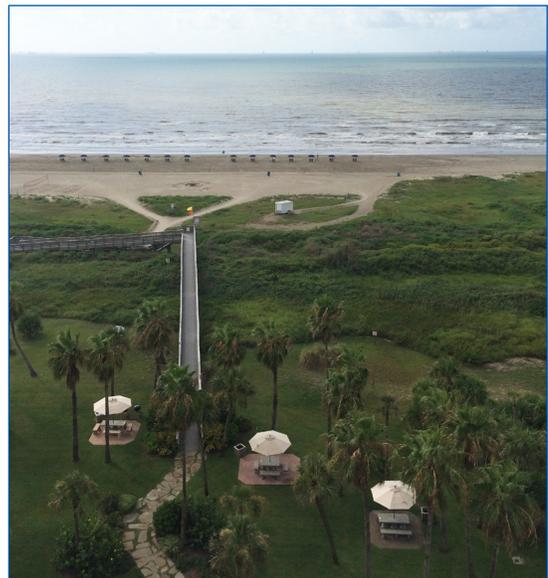
The Galveston Bay Foundation (GBF) will continue the Boater Waste Education Campaign (BWEC). In CMP Cycle #22, GBF will refine the BWEC based on lessons learned, improve the Interactive Pump-Out map, expand messaging to boaters throughout Texas, continue efforts to designate Galveston Bay as a federal No Discharge Zone (NDZ), and track program improvements. GBF will maintain the licensing, authority partnerships, improvements, and citizen outreach to ensure the Galveston Bay Action Network (GBAN) remains a successful tool for reporting illegal dumping. GBF anticipates the project will result in an increased awareness of pump-out stations around the Bay, a stronger understanding of the harms of bacteria loading in marinas, improved pump-out station best management practices, and the designation of Galveston Bay as a federal NDZ.

CMP FUNDED: \$71,908
MATCH: \$23,970
TOTAL PROJECT: \$95,878
CONTACT: **MS. SARAH GOSSETT**
1100 Hercules Avenue, Suite 200
Houston, Texas 77058
281.332.3381 x217

EAST END LAGOON PUBLIC ACCESS / SAFETY AND PLANNING PROJECT

The Galveston Park Board of Trustees will enhance and protect the East End Lagoon Nature Preserve in Galveston, Texas through the removal of marine debris and construction of site improvements. Bollards will be installed to delineate a non-motorized watercraft launch area and limit public access to the surrounding natural habitat. An ADA parking area and accessible pathways will enhance access and use of the area. Interpretative signage will be installed at the site.

CMP FUNDED: \$41,250
MATCH: \$13,750
TOTAL PROJECT: \$55,000
CONTACT: **MS. SHERYL ROZIER**
601 Tremont, Suite 200
Galveston, Texas 77550
409.797.5138



GALVESTON BAY FOUNDATION OYSTER SHELL RECYCLING PROGRAM

The Galveston Bay Foundation (GBF) will continue the Galveston Bay Oyster Shell Recycling Program, a program that reclaims spent oyster shell from local seafood restaurants and properly cures the shell in preparation for reuse in local oyster reef restoration projects. GBF will enhance the program through a new citizen science component and expansion of recycling efforts and hands-on gardening activities.



CMP FUNDED: \$64,213
MATCH: \$64,223
TOTAL PROJECT: \$128,436
CONTACT: **MR. MICHAEL NIEBUHR**
1100 Hercules Ave. Suite 200
Houston, Texas 77058
281.332.3381

JEFFERSON COUNTY SALT BAYOU WATERSHED RESTORATION EFFICACY RESEARCH - PHASE I

Lamar University (LU) will implement a two-phase monitoring and research effort to better understand altered hydrological conditions and marsh health within the Salt Bayou Watershed. LU will monitor the estuarine physicochemical and biological conditions of Johnson-Keith Lake to define benthic-pelagic primary and secondary producer communities. The biogeochemistry of marsh sediment will be monitored to define the sulfate reducing bacterial community structure and function. LU students will participate in education and outreach activities.

CMP FUNDED: \$84,394
MATCH: \$84,587
TOTAL PROJECT: \$168,981
CONTACT: **DR. MATTHEW HOCH**
P.O. Box 10037
Beaumont, Texas 77710
409.719.4204

KLEBERG COUNTY BAFFIN BAY WATER QUALITY STUDY: DATA COLLECTION & OUTREACH TO ADDRESS WATER QUALITY CONCERNS - PHASE 2

Texas A&M University – Corpus Christi will conduct monthly water quality monitoring efforts in Baffin Bay to document the influence of hydrological and climatic variability on water quality in the system. Project results will be disseminated to managers and stakeholder groups through data reports and presentations. The project supports a larger effort to reduce the frequency/intensity of harmful brown tide blooms and hypoxia in Baffin Bay.

CMP FUNDED: \$88,012
MATCH: \$88,169
TOTAL PROJECT: \$176,181
CONTACT: **DR. MICHAEL WETZ**
6300 Ocean Drive, Unit 5860
Corpus Christi, Texas 78412
361.825.2309

NUECES COUNTY

LINKING COASTAL URBANIZATION TO WATER QUALITY AND HABITAT CHANGES OF THE UPPER LAGUNA MADRE

Texas A&M University-Corpus Christi (TAMU-CC) will analyze the impact of coastal development in the Corpus Christi-Kingsville metropolitan area on water and habitat quality in the Upper Laguna Madre between 1982-2016. TAMU-CC will develop forecasting models to predict stress on estuarine health resulting from urbanization processes. A GIS-based decision support system will be developed to facilitate the participation of decision makers and stakeholders. Data and results will be used to develop specific curriculum modules for elementary school education.

CMP FUNDED: \$93,604

MATCH: \$94,200

TOTAL PROJECT: \$187,804

CONTACT: DR. HUA ZHANG

6300 Ocean Drive, Unit 5797
Corpus Christi, Texas 78412
361.825.2467

SHELL BANK: OYSTER SHELL RECYCLING, CITIZEN ENGAGEMENT, HANDS-ON LEARNING, & REEF CHARACTERIZATION

Texas A&M University-Corpus Christi (TAMU-CC) will continue the oyster shell recycling program. TAMU-CC developed the program to reclaim and recycle shucked oyster shells from Coastal Bend restaurants, seafood wholesalers, and seafood festivals for use in reef restoration. At two community-based oyster restoration events, volunteers will fill mesh bags with reclaimed oyster shells to create reef building blocks. In the future, the shell bags will be used to build oyster reef at the Goose Island State Park to protect and stabilize the eroding marsh for living shoreline restoration activities.



TAMU-CC will conduct sampling and facilitate two field monitoring events to teach students about habitat restoration and its role in conserving coastal environments.

CMP FUNDED: \$99,942

MATCH: \$99,967

TOTAL PROJECT: \$199,909

CONTACT: DR. JENNIFER POLLACK

6300 Ocean Drive, Unit 5860
Corpus Christi, Texas 78412
361.825.2041

TEXAS GULF REGION COOPERATIVE WEED MANAGEMENT AREA: CONTROLLING THE BRAZILIAN PEPPERTREE

Brazilian peppertree is an invasive, noxious, and prohibited species that negatively impacts property access, coastal prairie habitats, and shorelines. As a member of the Texas Gulf Coast Cooperative Weed Management Area, the Coastal Bend Bays and Estuaries Program will work with project partners to advocate for cooperative control amongst willing landowners and managers to prevent the spread and movement of the Brazilian peppertree. CMP funds will be used to hire a Certified Weed Management Area Coordinator, conduct meetings and community events, and remove Brazilian peppertrees from public land.

CMP FUNDED: \$30,000
MATCH: \$10,000
TOTAL PROJECT: \$40,000
CONTACT: MS. ROSARIO MARTINEZ
 615 N. Upper Broadway, Suite 1200
 Corpus Christi, Texas 78401
 361.336.0308

**REFUGIO COUNTY
 MISSION AND ARANSAS RIVERS TMDL I-PLAN IMPLEMENTATION**

In 2004, the Texas Commission on Environmental Quality classified the tidal segments of the Mission and Aransas Rivers as impaired due to elevated bacteria levels. In 2016, a Total Maximum Daily Load (TMDL) and TMDL Implementation Plan (I-Plan) were developed to address sources of bacteria within the two watersheds. The Texas Water Resources Institute will facilitate implementation of management measures outlined in the I-Plan, engage local stakeholders, expand educational programs, and monitor water quality progress with a goal of improving water quality to meet established water quality standards.



CMP FUNDED: \$83,979
MATCH: \$83,980
TOTAL PROJECT: \$167,959
CONTACT: DR. ALLEN BERTHOLD
 1500 Research Parkway, Suite 240, 2260 TAMU
 College Station, Texas 77843
 979.845.2028

**UPPER COAST
 CONSTRUCTION AND ENHANCEMENT OF ARTIFICIAL REEFS IN THE NORTHEASTERN GULF OF MEXICO**

The Texas Parks and Wildlife Department (TPWD) Artificial Reef Program develops and enhances reef sites in the Gulf of Mexico, building important natural fisheries habitat for threatened and endangered species. TPWD will use concrete, limestone, and shell to create habitat for juvenile and adult fish at the Big Man Nearshore Reef Site.



CMP FUNDED: \$300,000
MATCH: \$300,000
TOTAL PROJECT: \$600,000
CONTACT: DR. BROOKE SHIPLEY
 4200 Smith School Road
 Austin, Texas 78744
 281.534.0112

WILLACY COUNTY
WILLACY COUNTY YOUTH COASTAL ADVENTURES

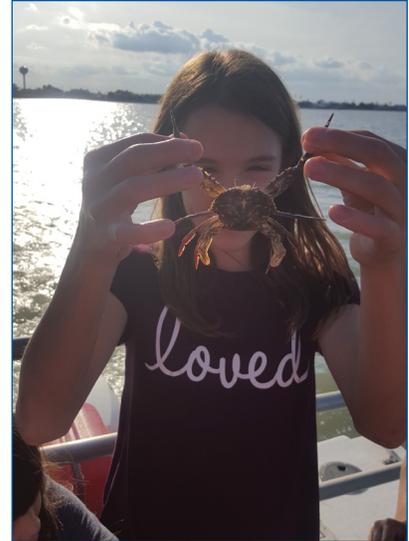
Texas Floating Classroom will conduct approximately 80 marine education field trips for elementary, middle, and high school students in Willacy County. Students will board a 37-foot research vessel to learn about water quality, bird and marine wildlife, microbiology, and scientific methods, instruments, and techniques. Following the cruise, students will participate in a 90-minute classroom session.

CMP FUNDED: \$45,400

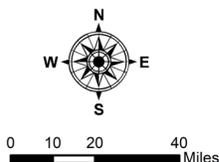
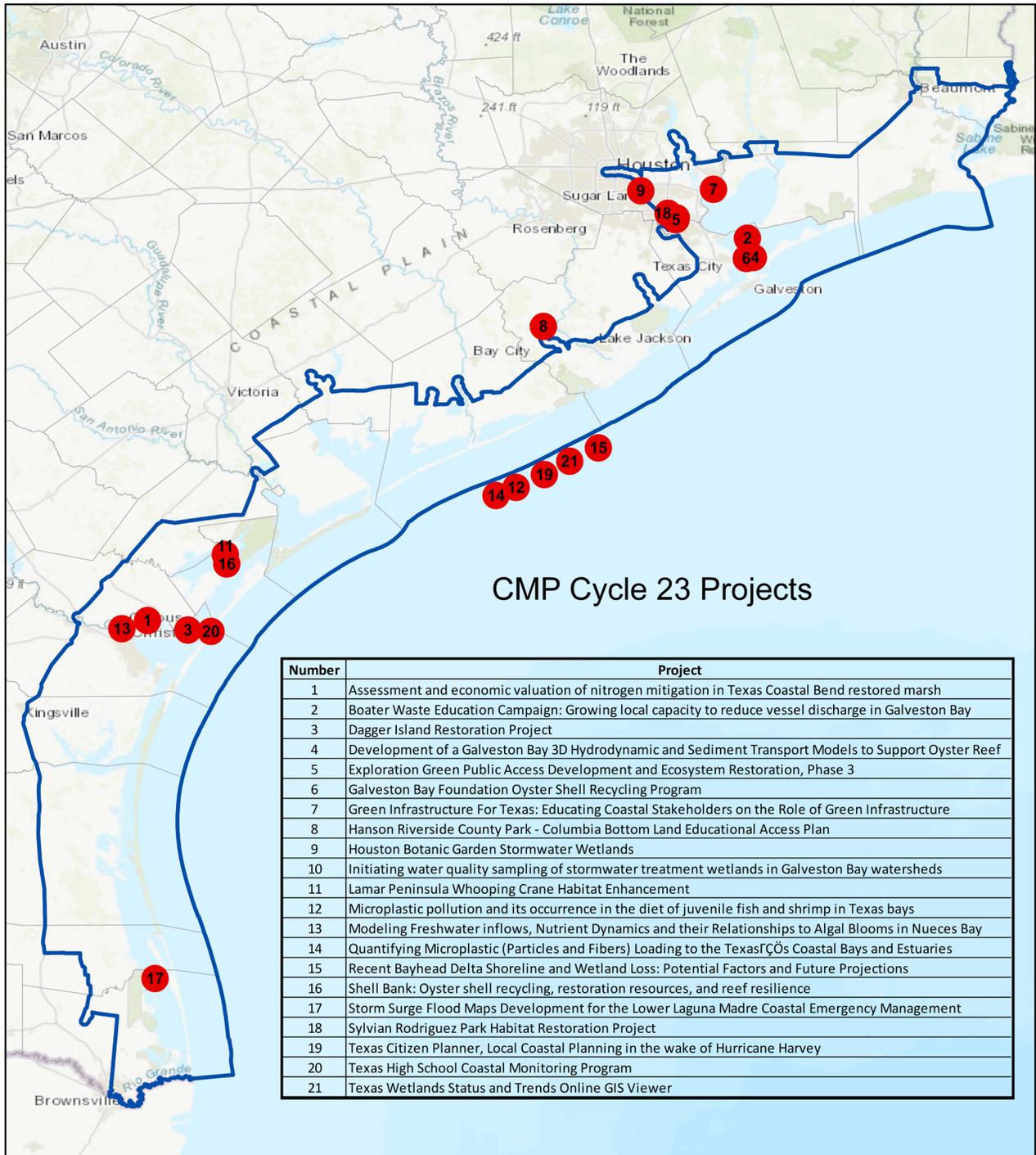
MATCH: \$49,000

TOTAL PROJECT: \$94,400

CONTACT: **CAPT. WHITNEY CURRY**
219 N. 8th St.
Aransas Pass, Texas 78336
361.717.4176



CYCLE 23 PROJECTS



Compiled by ETS-GIS
Texas General Land Office

November 2018

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George P. Bush
Commissioner

ARANSAS COUNTY
LAMAR PENINSULA WHOOPING CRANE HABITAT ENHANCEMENT

The Coastal Bend Bays & Estuaries Program will enhance protection of Whooping Crane habitat on the Lamar Peninsula in Aransas County. New bollards will be installed to protect 107 acres of Whooping Crane habitat. Individual Plant Treatments will be conducted on approximately 20 acres of shrub habitat to control the encroachment of mesquite. Debris will be removed to enhance the coastal marsh and tidal flat habitat. Signs will be installed to educate the public about Whooping Cranes.



CMP FUNDED: \$43,074
MATCH: \$28,717
TOTAL PROJECT: \$71,791
CONTACT: MR. JAKE HERRING
615 N. Upper Broadway, Suite 1200
Corpus Christi, Texas 78401
361.336.0309

BRAZORIA COUNTY
HANSON RIVERSIDE COUNTY PARK - COLUMBIA BOTTOM LAND EDUCATIONAL ACCESS PLAN

Brazoria County will expand the infrastructure at Hanson Riverside County Park to improve recreational access and enhance public education and awareness of coastal natural resource areas. The County will design and construct a pavilion to educate visitors about the principle coastal problems of state concern and technology available for the protection and improved management of coastal natural resource areas. A covered observation deck will be constructed to overlook the proposed wetland garden, allowing visitors to study and survey native wildlife and migratory birds. A freshwater wetland garden and rain harvesting system will provide an outdoor living laboratory demonstrating the usefulness of water harvesting. Interpretative signage will be installed describing the importance of coastal habitats.

CMP FUNDED: \$131,702
MATCH: \$88,734
TOTAL PROJECT: \$220,436
CONTACT: MS. LYDIA GARCIA
313 W. Mulberry
Angleton, Texas 77515
979.864.1149

CAMERON COUNTY
STORM SURGE FLOOD MAPS DEVELOPMENT FOR THE LOWER LAGUNA MADRE COASTAL EMERGENCY MANAGEMENT

The University of Texas Rio Grande Valley (UTRGV) will develop a hurricane storm surge model for the South Texas coastal region. Meetings will be held with end users to discuss ideal model scenarios, including hypothetical storm events, storm drain channels, and local traffic capacity. UTRGV will produce a coastal watershed flood routing model and coastal storm surge flood maps to predict watershed inundation from excessive channel flows. UTRGV will analyze local emergency routes and provide recommendations for roadway operation strategies, public outreach, and capital roadway improvements.

CMP FUNDED: \$59,901
MATCH: \$42,566
TOTAL PROJECT: \$102,467
CONTACT: DR. JUNGSEOK HO
 1201 W. University Dr.
 Edinburg, Texas 78539
 956.665.3104

**COASTWIDE
 TEXAS WETLANDS STATUS AND TRENDS ONLINE GIS VIEWER**

The University of Texas - Bureau of Economic Geology (UT-BEG) has completed extensive studies on the distribution, abundance, and status of wetlands and aquatic habitats along the Texas coast, providing critical information on the preservation and protection of wetland functions and uses. Based on study findings, UT-BEG produced a series of GIS datasets and reports for coastal scientists, managers, planners, and decision makers to use as guidance for mitigation/restoration projects. In this project, UT-BEG will develop a user-friendly, interactive, web-based display of GIS-based maps of historical and current Texas wetland types, boundaries, and distribution.

CMP FUNDED: \$23,439
MATCH: \$15,644
TOTAL PROJECT: \$39,083
CONTACT: MRS. TIFFANY CAUDLE
 University Station, Box X
 Austin, Texas 78713
 512.475.9572

TEXAS HIGH SCHOOL COASTAL MONITORING PROGRAM

The University of Texas at Austin, Bureau of Economic Geology will engage students and teachers who live along the coast in the study of the natural beach environment. Middle and high school students, teachers, and scientists will work together to gain a better understanding of dune and beach dynamics. Students and teachers will learn how to measure the topography, recognize and map the vegetation and shoreline, and observe weather and wave conditions. By participating in an actual research project, the students will obtain an enhanced science education. Furthermore, public awareness of coastal processes will be heightened, and the students' efforts will provide coastal communities with valuable data on shoreline change.

CMP FUNDED: \$80,754
MATCH: \$54,304
TOTAL PROJECT: \$135,058
CONTACT: MRS. TIFFANY CAUDLE
 University Station, Box X
 Austin, Texas 78713
 512.475.9572



TEXAS CITIZEN PLANNER, LOCAL COASTAL PLANNING IN THE WAKE OF HURRICANE HARVEY

The Texas AgriLife Extension Service will develop a coastal planning program for stakeholders along the Texas coast. The program will include hands-on planning clinics and training classes with presentations from experts. Through these trainings, local officials and stakeholders will become more aware of how to guide the creation of community ordinances and planning tools to avoid flood and surge zones, more efficiently build to code, and further protect human safety and coastal natural resource areas.

CMP FUNDED: \$99,969
MATCH: \$67,676
TOTAL PROJECT: \$167,645
CONTACT: MR. STEVEN MIKULENCAK
1335 Regents Park Drive, Suite 260
Houston, Texas 77058
607.592.3115

RECENT BAYHEAD DELTA SHORELINE AND WETLAND LOSS: POTENTIAL FACTORS AND FUTURE PROJECTIONS

Bayhead deltas along the Texas coast have experienced significant degradation and erosional loss over the last few decades. In the 1980's and 1990's, the University of Texas, Bureau of Economic Geology undertook a major initiative to examine historical changes in bayhead deltas. Texas A&M University-Corpus Christi will build on these previous efforts, focusing on recent changes in four bayhead delta systems. Changes will be documented using aerial imagery and high-resolution elevational data products and analyzed to understand the varying roles of sediment supply, basin characteristics, and relative sea level changes. Project results will be presented to coastal resource planners/managers, decision makers, and the public via an iterative outreach/feedback/revision/training process and an easy-to-use public website for visualization.

CMP FUNDED: \$99,178
MATCH: \$66,447
TOTAL PROJECT: \$165,625
CONTACT: DR. MARK BESONEN
6300 Ocean Drive, Unit 5869
Corpus Christi, Texas 78412
361.825.2043

QUANTIFYING MICROPLASTIC (PARTICLES AND FIBERS) LOADING TO THE TEXAS'S COASTAL BAYS AND ESTUARIES

Plastic debris in rivers, streams, and coastal bays adversely impacts tourism, the economy, and the health of aquatic organisms. Texas A&M University-Corpus Christi will quantify the inputs of microplastics from nine river catchments discharging to Texas coastal bays and estuaries and develop education and outreach materials to inform the public about the impacts of plastic debris on ecosystem health.

CMP FUNDED: \$92,749
MATCH: \$61,985
TOTAL PROJECT: \$154,734
CONTACT: DR. JEREMY CONKLE
6300 Ocean Drive, Unit 5892
Corpus Christi, Texas 78412
361.825.2862

MICROPLASTIC POLLUTION AND ITS OCCURRENCE IN THE DIET OF JUVENILE FISH AND SHRIMP IN TEXAS BAYS

The loading of microplastics to Texas coastal bays and estuaries and the resulting impact on fish nursery function has not

been comprehensively investigated. Texas A&M University will assess the ingestion of microplastic in juvenile finfish and shellfish in Baffin Bay, Aransas Bay, San Antonio Bay, and Matagorda Bay. Texas A&M University will quantify microplastic pollution near nursery habitats and identify the type and amount of plastic ingested by juvenile fish and shrimp species of commercial interest or high importance. Texas A&M University will work with the Texas State Aquarium and the Coastal Bend Bays and Estuaries Program to inform and educate the public and stakeholders about emerging concerns with microplastics.

CMP FUNDED: \$63,818
MATCH: \$42,546
TOTAL PROJECT: \$106,364
CONTACT: DR. SIMON GEIST
 6300 Ocean Drive
 Corpus Christi, Texas 78412
 361.825.4164

**GALVESTON COUNTY
 BOATER WASTE EDUCATION CAMPAIGN: GROWING LOCAL CAPACITY TO
 REDUCE VESSEL DISCHARGE IN GALVESTON BAY**

The Galveston Bay Foundation (GBF) will continue the Boater Waste Education Campaign (BWEC). GBF will expand the number and distribution of available pump-out facilities for recreational vessels in Galveston Bay, incorporate community-based social marketing strategies into outreach efforts to reduce barriers and increase benefits of clean boating behavior among recreational boaters, increase boater waste reports and enforcement via the Galveston Bay Action Network, analyze and publicize current volunteer water quality data to support and encourage best boating practices, and collaborate with commercial boaters and government agencies to encourage support for a Galveston Bay No Discharge Zone designation.

CMP FUNDED: \$72,271
MATCH: \$49,000
TOTAL PROJECT: \$121,271
CONTACT: MS. SARAH GOSSETT
 1100 Hercules Avenue, Suite 200
 Houston, Texas 77058
 281.332.3381



DEVELOPMENT OF A GALVESTON BAY 3D HYDRODYNAMIC AND SEDIMENT TRANSPORT MODELS TO SUPPORT OYSTER REEF

Texas A&M University at Galveston (TAMUG) will develop a 3D, intertidal sediment transport model that represents the physical characteristics of Galveston Bay (e.g., particle size distribution; sediment erosion, re-suspension and deposition; oyster larvae and spat size distribution at various growth stages). TAMUG will research published and non-published data on sediment distributions within the study area and collect and analyze field data. Project efforts will focus on the development of the model to simulate the transport of Hurricane Harvey flood pulse sediment and determine potential impacts to oyster beds for future restoration efforts.

CMP FUNDED: \$103,712
MATCH: \$69,143
TOTAL PROJECT: \$172,855
CONTACT: DR. TIMOTHY DELLAPENNA
 1001 Texas Clipper Road
 Galveston, Texas 77554
 409.740.4952

GALVESTON BAY FOUNDATION OYSTER SHELL RECYCLING PROGRAM

The Galveston Bay Foundation (GBF) will continue the Galveston Bay Oyster Shell Recycling Program, a program that reclaims spent oyster shell from local seafood restaurants and properly cures the shell in preparation for reuse in local oyster reef restoration projects. GBF will enhance the program through a new citizen science component and expansion of recycling efforts and hands-on gardening activities.

CMP FUNDED: \$79,869
MATCH: \$53,588
TOTAL PROJECT: \$133,457
CONTACT: MR. MICHAEL NIEBUHR
 1100 Hercules Avenue, Suite 200
 Houston, Texas 77058
 281.332.3381



**HARRIS COUNTY
 SYLVIAN RODRIGUEZ PARK HABITAT RESTORATION PROJECT**

The Houston Parks and Recreation Department (HPARD) will restore 72 acres of coastal prairie habitat in Sylvan Rodriguez Park. In the absence of natural processes, such as fire and intermittent grazing by bison, Chinese Tallow and other woody vegetation have inundated the park. In Phase 1, HPARD will target 14 acres for restoration. Contractors will remove Chinese Tallow and woody vegetation and seed the area with locally collected native grasses and forbs. Community planting events will educate volunteers on the importance of the prairie ecosystem. Interpretive signage will be placed along the newly installed boardwalk.

CMP FUNDED: \$99,869
MATCH: \$104,360
TOTAL PROJECT: \$204,229
CONTACT: MS. KELLI ONDRACEK
 Houston Parks and Recreation Department
 2999 S. Wayside Drive
 Houston, Texas 77023
 832.395.7090

EXPLORATION GREEN PUBLIC ACCESS DEVELOPMENT AND ECOSYSTEM RESTORATION, PHASE 3

The Galveston Bay Foundation (GBF) will continue developing Exploration Green, a 200-acre stormwater detention, natural conservation and recreation area in the Bay Area of Houston. In Phase 3, GBF will restore approximately 20 acres of prairie,

install a 1.5-mile, 10-foot wide, multi-purpose trail, and provide public access to a variety of environmentally-oriented education and recreation opportunities.

CMP FUNDED: \$100,000
MATCH: \$100,000
TOTAL PROJECT: \$200,000
CONTACT: **MS. ANNA DEICHMANN**
1100 Hercules Avenue, Suite 200
Houston, Texas 77058
281.332.3381 x224

GREEN INFRASTRUCTURE FOR TEXAS: EDUCATING COASTAL STAKEHOLDERS ON THE ROLE OF GREEN INFRASTRUCTURE

Texas A&M AgriLife Extension Service (AgriLife) will increase the Green Infrastructure For Texas (GIFT) outreach effort through stakeholder education. AgriLife will produce a web-hosted video to showcase green infrastructure projects and explain how green infrastructure improves water quality, reduces flood risks, and provides habitat. The GIFT website will be fully developed as a clearinghouse of information and resources. Factsheets will be created for distribution. Workshops and field days will be held to educate stakeholders and decision makers on the importance and benefits of green infrastructure.

CMP FUNDED: \$76,978
MATCH: \$51,324
TOTAL PROJECT: \$128,302
CONTACT: **MS. CHARRISS YORK**
1335 Regents Park Drive #260
Houston, Texas 77058
832.561.4988

HOUSTON BOTANIC GARDEN STORMWATER WETLANDS

The Houston Botanic Garden (HBG) will partner with Texas A&M AgriLife Extension Service to create three to five stormwater treatment wetlands and educate visitors on the importance of coastal wetlands. HBG will complete engineering design, identify and remove invasive species, and create and plant the basins, constructing a total of five to seven acres of stormwater treatment wetlands. Interpretive signage will be installed, explaining the functions and values of natural and constructed wetlands.

CMP FUNDED: \$100,000
MATCH: \$94,560
TOTAL PROJECT: \$194,560
CONTACT: **JOY COLUMBUS**
3701 Kirby Drive, Suite 992
Houston, Texas 77098
713.715.9675

INITIATING WATER QUALITY SAMPLING OF STORMWATER TREATMENT WETLANDS IN GALVESTON BAY WATERSHEDS

Texas A&M AgriLife Extension Service will develop a Quality Assurance Project Plan water quality monitoring protocol and sample three stormwater wetland sites during qualifying rain events, including two sites at the Exploration Green Conservation and Recreation Area in Clear Lake and one site at MD Anderson Cancer Center's South Campus. Measured parameters for each site include nitrate/nitrite, total phosphorous, total suspended solids, E. coli, dissolved oxygen, pH, conductivity, and total suspended solids. Heavy metals and hydrocarbons will be sampled at the MD Anderson site where runoff is predominantly from an adjacent parking lot. Samples will be analyzed in a National Environmental Laboratory Accreditation

Program-certified lab. AgriLife will prepare the results for dissemination, conduct presentations, and distribute information via the Texas A&M University website.

CMP FUNDED: \$78,526
MATCH: \$52,352
TOTAL PROJECT: \$130,878
CONTACT: MS. CHARRISS YORK
1335 Regents Park Drive #260
Houston, Texas 77058
832.561.4988

LOWER COAST

ASSESSMENT AND ECONOMIC VALUATION OF NITROGEN MITIGATION IN TEXAS COASTAL BEND RESTORED MARSH

Texas A&M University-Corpus Christi (TAMU-CC) will monetize the ecosystem value of wetlands for restoration and recovery investment in the Texas Coastal Bend. TAMU-CC will identify the sources of reactive nitrogen species in different water sources and investigate denitrification, nitrification, and remineralization processes in surface sediments of marsh sites. Seasonal denitrification rates will be quantified in collected sediment cores. The economic value of nitrogen mitigation will be calculated using the replacement cost method and the value of the nitrogen removal ecosystem service established in scientific literature.

CMP FUNDED: \$98,877
MATCH: \$65,924
TOTAL PROJECT: \$164,801
CONTACT: DR. LIN ZHANG
6300 Ocean Drive, HRI 104
Corpus Christi, Texas 78412
361.825.2095

NUECES COUNTY

SHELL BANK: OYSTER SHELL RECYCLING, RESTORATION RESOURCES, AND REEF RESILIENCE

Texas A&M University-Corpus Christi (TAMU-CC) will continue the oyster shell recycling program. TAMU-CC developed the program to reclaim and recycle shucked oyster shells from Coastal Bend restaurants, seafood wholesalers, and seafood festivals for use in reef restoration. At two community-based oyster restoration events, volunteers will fill mesh bags with reclaimed oyster shells to create reef building blocks. In the future, the shell bags will be used to build oyster reef at Goose Island State Park to protect and stabilize the eroding marsh for living shoreline restoration activities. TAMU-CC will conduct sampling and facilitate two field monitoring events to teach students about habitat restoration and its role in conserving coastal environments.



CMP FUNDED: \$99,607
MATCH: \$70,277
TOTAL PROJECT: \$169,884
CONTACT: DR. JENNIFER POLLACK
6300 Ocean Drive, Unit 5860
Corpus Christi, Texas 78412
361.825.2041

DAGGER ISLAND RESTORATION PROJECT

The Texas Parks and Wildlife Department will plant at least 28 acres of marsh at Dagger Island in Nueces County to protect the eroding shoreline. Dredge material will be used to support the future development of a sand and shell shoreline, low and high marsh, upland, freshwater marsh, smooth cordgrass, and tidal flat habitats.

CMP FUNDED: \$60,000
MATCH: \$40,000
TOTAL PROJECT: \$100,000
CONTACT: MR. PAUL SILVA
6300 Ocean Drive, Unit 5846
Corpus Christi, Texas 78412
361.825.3204

MODELING FRESHWATER INFLOWS, NUTRIENT DYNAMICS AND THEIR RELATIONSHIPS TO ALGAL BLOOMS IN NUECES BAY

Texas A&M University–Kingsville will develop reliable and site-specific decision support tools to balance needs for freshwater inflows and reduce impacts of excess nutrient inputs in Nueces Bay. The project will provide an enhanced quantitative understanding of the controlling factors for hypoxia and harmful algal bloom occurrences and aid coastal resource managers in effective decision making, developing nutrient criteria and future monitoring program design, determining nutrient Total Maximum Daily Load, and developing recommendations for maintaining minimum freshwater inflows and levels.

CMP FUNDED: \$89,935
MATCH: \$78,250
TOTAL PROJECT: \$168,185
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917 W. Avenue B, MSC 213
Kingsville, Texas 78414
361.593.2798

EDUCATION & OUTREACH

Various publications are created and distributed to educate the public about coastal issues and the technology available to aid in the protection and improved management of CNRAs. Publications are evaluated and updated as needed to fill information gaps and reflect current areas of focus on the coast.

Reports

Interagency Coordination Teams

A biennial report published for the Texas Legislature that includes CMP program initiatives, updates on the total number of consistency reviews conducted, PSC activities, and reports on the grant program.

Coastal Erosion Prevention and Response Act Report to the 85th Texas Legislature

A report submitted to the Texas Legislature summarizing critical erosion areas, erosion response projects, and economic and natural resource benefits.

Coastwide Erosion Response Plan

A report that identifies critical coastal erosion areas and prioritizes coastal erosion response studies.

Storm Surge Suppression Study Report

A report that examines the feasibility of reducing the vulnerability of the upper Texas coast to storm surge and flood damages to protect the life, health, and safety of the community and provide environmental and economic resilience.

Texas Coastal Resiliency Master Plan

A comprehensive long-term planning framework that supports the resilient ecologic and economic management of the Texas coast.

Sabine Pass to Galveston Bay, Texas Coastal Storm Risk Management and Ecosystem Restoration

A Draft Integrated Feasibility Report and Environmental Impact Statement examining coastal storm risk management and ecosystem restoration problems and opportunities within six counties along the Upper Texas coast.

Guidebooks, Manuals, Brochures, Newsletters, etc.

Dune Protection and Improvement Manual for the Texas Gulf Coast, Fifth Edition

A manual providing guidelines for coastal municipalities, counties, and home owners for construction subject to the Open Beaches Act (OBA) and Dune Protection Act (DPA), August 2005. (Available online only)

Texas Beach Accessibility Guide

A guide for local governments adopting and implementing beach accessibility measures for persons with disabilities, January 2011. (Available online only)

Texas Homeowner's Handbook to Prepare for Coastal Natural Hazards

A handbook, developed with the Texas Sea Grant College Program, advising homeowners on methods to protect people and property from natural disasters. The handbook explains the importance of flood insurance and provides useful web links and disaster preparation checklists, October 2018. (Available online and in Spanish)

Shoring Up the Future for the Texas Gulf Coast

An overview report that highlights the ecologic and economic features along the Texas coast and identifies the primary

issues of concern threatening sustainability, August 2016.

2019 Treasures of the Texas Coast Calendar

A twelve-month calendar printed and distributed by the Adopt-A-Beach program to promote the annual children's art contest, raise public awareness of the importance of the Texas coast, and educate citizens about the harmful impacts of marine debris.

Adopt-A-Beach Clean Up Brochures

A brochure providing information on Adopt-A-Beach's semiannual beach clean ups as well as a brief history of the Adopt-A-Beach program and how to purchase an Adopt-A-Beach license plate.

Adopt-A-Beach Clean Up Poster

Poster advertising the semiannual Adopt-A-Beach clean ups.

Adopt-A-Beach Newsletter

A semi-annual newsletter that features news and information about past and future clean-ups, program initiatives, and the children's art contest.

Websites

Texas Coastal Ocean Observation Network (TCOON)

<https://cbiweb.tamucc.edu/TCOON/>

This is a publicly accessible website that houses data collected through the Texas Coastal Ocean Observation Network (TCOON), a unique network of scientific data collection platforms used to amass critical data pertaining to wind and water.

Resource Management Codes Viewer

<http://glo.maps.arcgis.com/home/webmap/viewer.html?webmap=c65754a74de84eee8dec3197213eee6c>

Resource Management Codes (RMCs) assist potential bidders by providing the best available information on natural resource concerns that may be associated with leasing state land tracts and assist them with project planning efforts and development guidelines for activities within the tracts.

Resource Management Codes

<http://www.glo.texas.gov/energy-business/oil-gas/mineral-leasing/leasing/keyword-search/index.cfm>

This website allows users to search for RMCs, providing the best available information on natural resource concerns that may be associated with leasing state-owned land tracts and assisting with project planning efforts.

GLO GIS Maps & Data

<http://www.glo.texas.gov/land/land-management/gis/>

This links to dynamic interactive mapping websites, providing access to a vast collection of coastal data.

Grant Project Listing Viewer

<http://www.glo.texas.gov/coastal-grants/#search>

This is a user-friendly, searchable website that provides information for coastal grant projects funded along the Texas coast.

Texas Coasts

www.txcoasts.com

This website provides a location-enabled mapping function with turn-by-turn directions to more than 600 destinations

along the Texas coast. The application integrates with Facebook and Twitter, allowing users to share vacation plans with friends and family.

Beach Watch

<http://cgis.glo.texas.gov/Beachwatch/index.html#>

This website provides the public with information about water quality at selected recreational beaches along the Texas coast in Aransas, Brazoria, Cameron, Galveston, Jefferson, Kleberg, Matagorda, Nueces, and San Patricio counties.

Shoreline Change Atlas

<https://coastal.beg.utexas.edu/shorelinechange2012/>

This website provides long-term historical shoreline change rates of the Texas coast.

Digital Coast, NOAA

<http://coast.noaa.gov/digitalcoast/>

This website provides coastal data, tools, and training for the coastal management community. Content is derived from several sources and is vetted by NOAA.

Texas Coastal Sediments Geodatabase

<http://gisweb.glo.texas.gov/txsed/index.html>

This website provides sediment related geospatial and geotechnical data, which may be used for proposed beach nourishment and habitat restoration projects to assist in identifying compatible sediment resources or as an aid in the permitting/regulatory process.

State of Texas Oil Spill Response Mapping Tool

<http://gisweb.glo.texas.gov/ostoolkit/index.html>

This website is an oil spill mapping viewer that provides weather information and tools.

Land & Lease Mapping Viewer

<http://gisweb.glo.texas.gov/glomap/index.html>

This is an interactive land lease mapping program that provides access to vast collections of land and energy related data, including upland and submerged Original Texas Land Survey boundaries, Permanent School Fund land, upland and coastal leases, oil and gas well locations, and current imagery.

Texas Natural Resources Information System (TNRIS)

<https://tnris.org/>

This website provides a collection of maps, photos, documents, and other spatial datasets acquired from multiple sources, including state, federal, and local agencies.

Coastal Habitat Restoration GIS

<http://www.cbi.tamucc.edu/CHRGIS/>

This website offers an interactive, online archive, qualitative analysis, and mapping tool that provides visualization of beach profile survey data and aerial imagery from the CEPRA Program, in support of the Beach Monitoring and Maintenance Plan.

SSPEED Center

<http://www.sspeed.rice.edu>

This website provides information to facilitate the creation and dissemination of knowledge to better address severe storm

impacts and evacuation strategies in the Gulf Coast area.

Sea Level Rise

<http://slr.stormsmart.org>

This website provides a series of technical tools and future scenarios to support the practical understanding of impacts to the environment and to human coastal communities that may result from Sea Level Rise and related climate hazards, including storm surge, in the Gulf of Mexico region.

Coastal GIS Data Sets

Texas Coastal Sediments Geodatabase (TxSed) is a systematic inventory and clearinghouse of sediment samples and related geotechnical information for the Texas coast. The TxSed project coordinates existing efforts and facilitates the integration of historical sampling data from the GLO, USACE-Galveston District, relevant port authorities, universities, engineering firms, and other local, state, and federal entities. The primary users of TxSed are resource managers within governmental agencies or non-profit organizations, as well as engineering firms interested in identifying compatible sediment sources for proposed beach nourishment or habitat restoration projects. In addition, the project aids in the permitting/regulatory process and reduces the cost of initial data search and collection for such projects. Approximately 2,000 more sampling points were added to TxSed through August 2018.

Coastal Grants and Projects Geodatabase (CGAP) is a spatial database that stores all GLO-administered coastal projects, and could eventually include projects by other federal, state, local, and non-governmental entities. CGAP serves as an efficient geospatial infrastructure for assisting future coastal planning efforts, through data query, mapping, and spatial analysis of various types of coastal projects (construction vs. study, mitigation, restoration, etc.). Currently, all funded and proposed CIAP, CEPRA, CMP, GOMESA, and OSPRA projects are in CGAP.

Texas Coastal Access Points Geodatabase (TxCoasts) is a spatial database and Web application of all beach and bay access points along Texas coast. The initial effort to compile and distribute the very popular Texas Beach & Bay Access Guide was conducted between 1989 and 1999. The publication was revised in 2003 and distributed in static format (hard-copy and, later, on CD). Since then, technology, the coast, and Texas have changed dramatically. The current, online version is a self-contained, dynamic, interactive, and platform-agnostic Web application that provides up-to-date information on beach access sites and their amenities for visitors to the Texas coast. Find Your Perfect Beach at TxCoasts.com.

Offshore Structures Inventory is a cooperative effort between Coastal Resources, Oil Spill Prevention & Response, Construction Services, Energy Resources, and the GIS teams, to identify, verify, and catalog all hazardous derelict structures in state waters (all bays and the Gulf of Mexico out to the extent of state jurisdiction). The structures are contained in an online mapping viewer and mobile data collection application, which field staff uses to enter information and photos of structures during field reconnaissance. The dataset is used to locate responsible parties or otherwise fund the removal of the derelict structures.

Coastal County Parcel Data provides the GLO's Beach and Dune team and the Coastal Field offices with property owner information for the coastal counties. Initially, in 2016, the GIS team acquired and processed county parcel data for all coastal counties, except Kennedy and San Patricio, plus the City of Corpus Christi. The data were processed and standardized, and then provided to GLO staff in Google Earth format, allowing overlay with historical aerial imagery, for permitting purposes. In 2017, the GLO GIS team partnered with the Texas Natural Resources Information System (TNRIS.org) to conduct a parcel

data pilot project of the Texas coastal counties, to help initiate and develop a statewide parcel dataset. The updated coastal counties were again acquired, processed, standardized, and provided to Coastal Resources staff. A parcel and address points data coordinator has been hired at TNRIS to further the statewide parcel data initiative. The 2018 update is currently underway.

Resource Management Codes (RMCs) are assigned to state-owned tracts in Texas bays and estuaries, and Gulf of Mexico waters, representing development guidelines for activities within the tracts. RMCs protect sensitive natural resources, providing recommendations for minimizing adverse impacts from mineral exploration and development activities. RMCs are based on the recommendations from the federal and state resource agencies: U.S. Fish and Wildlife Service, National Marine Fisheries Service, U.S. Army Corps of Engineers, Texas Parks and Wildlife Department, and the Texas Historical Commission, all of whom rely on the best available information and datasets of natural resources in the area. The GLO serves as custodian of the RMC database and uses the codes to assist potential bidders with project planning efforts. A new code designating the desalination zones for diversion of marine seawater, and discharge of desalination waste, was added in August 2018.

Coastal Aerial Imagery and LiDAR Elevation Data is acquired annually for the Texas gulf coast and bay shorelines, as needed. For example, in 2017, the GLO hired Sanborn to fly gulf shoreline and selected bay beaches to monitor coastal projects and to provide up-to-date beach use numbers to justify funding allocations for beach renourishment. The GLO also contracted with the UT Bureau of Economic Geology to acquire high-resolution post-Hurricane Harvey aerial imagery and Light Detection and Ranging (LiDAR) 3D elevation data of the entire gulf shoreline, as well as various bay beaches. These datasets will allow us to conduct post-storm debris, structure, and project assessments, and will allow for the development of updated shoreline change data.

TEXAS COASTAL MANAGEMENT PROGRAM

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800.998.4GLO | 512.936.6447 | 512.475.0680 (Fax)
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FOR MORE INFORMATION ON PERMITTING ASSISTANCE

1.866.894.3578 (Lower Coast Office)

1.866.894.7664 (Upper Coast Office)

permitting.assistance@glo.texas.gov

<http://www.glo.texas.gov/coast/coastal-management/permitting/index.html>

A publication of the Texas General Land Office. Funded by a grant from the U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA) pursuant to award No. NA18NOS4190153.

Photos courtesy of Texas Parks and Wildlife Department, Texas Department of Transportation, South Padre Island Convention and Visitors Bureau and Vadim Troshkin, Galveston.com.

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