RESTORE Council Activity Description

General Information

Sponsor:
Texas Commission on Environmental Quality

Title:
Texas Coastal Water Quality Program

Project Abstract:
The RESTORE Council has approved $3,262,500 for planning activities as FPL Category 1 Council-Selected Restoration Component funding for the Texas Coastal Water Quality Program, sponsored by Texas, through the Texas Commission on Environmental Quality (TCEQ). In addition, the Council has also identified a separate $19,237,500 implementation component as a FPL Category 2 priority for potential future funding. The program supports the primary RESTORE Comprehensive Plan goal to restore water quality and quantity through activities that aim to restore water quality and freshwater inflows on the Texas coast using a variety of proven methods. Methods include the implementation of best management practices in Texas coastal watersheds to reduce nonpoint source pollution, the repair and enhancement of drainage channels and outfalls to improve stormwater flow and increase freshwater inflow to adjacent marshes, and the construction of living shoreline features to reduce erosion and improve water quality. The program will utilize specified criteria for selecting projects that were identified earlier through public meetings and as part of a stakeholder process.

Water quality on the Texas Coast is adversely impacted by diverted freshwater inflows and increased nutrient input from agriculture. This program will address environmental issues focused on stormwater runoff, freshwater inflows, floodplain management, sediment control and water quality for activities related to coastal communities, wetlands, and agriculture. Program duration is 4 years.

FPL Category: Cat1: Planning/ Cat2: Implementation

Activity Type: Program

Program: Texas Coastal Water Quality Program

Co-sponsoring Agency(ies): N/A

Is this a construction project?: Yes

RESTORE Act Priority Criteria:
(I) Projects that are projected to make the greatest contribution to restoring and protecting the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region, without regard to geographic location within the Gulf Coast region.
(II) Large-scale projects and programs that are projected to substantially contribute to restoring and protecting the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast ecosystem.
(III) Projects contained in existing Gulf Coast State comprehensive plans for the restoration and protection of natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.

Priority Criteria Justification:
This program meets three of the RESTORE Act Priority Criteria:

1. Projected to make the greatest contribution to restoring and protecting natural resources. Non-point source pollution and decreased freshwater inflows negatively impact water quality and quantity in bays and estuaries. Runoff carrying nutrient pollution into estuaries can degrade water quality and the health of seagrass beds, wetlands and other coastal habitats and the species they support. Adequate inflows are essential to maintain salinity levels and water quality in estuaries to support healthy coastal habitats. This program aims to enhance and restore water quality to protect Texas coastal habitats by maintaining or restoring freshwater inflows, creating and protecting habitats, and reducing non-point source pollution through the use of BMPs.

2. Large-scale projects and programs. This program will protect and restore water quality coastwide throughout Texas through a variety of methods tailored to the unique coastal environments and water quality needs of each region. Each individual initiative within the program is large-scale in its scope and potential positive impacts to water quality and the habitats that are at risk.

3. Contained in existing Gulf Coast State Comprehensive Plans. Water quality monitoring and management and marsh restoration projects are included in the TCRMP (TGLO, 2019).

Project Duration (in years): 4

Goals

Primary Comprehensive Plan Goal:
Restore Water Quality and Quantity

Primary Comprehensive Plan Objective:
Restore, Improve, and Protect Water Resources

Secondary Comprehensive Plan Objectives:
Restore, Enhance, and Protect Habitats

Secondary Comprehensive Plan Goals:
Restore and Conserve Habitat

PF Restoration Technique(s):
Reduce excess nutrients and other pollutants to watersheds: Agriculture and forest management
Reduce excess nutrients and other pollutants to watersheds: Erosion and sediment control
Reduce excess nutrients and other pollutants to watersheds: Stormwater management
Restore hydrology and natural processes: Restore hydrologic connectivity
Restore hydrology and natural processes: Restore natural salinity regimes

Location

Location:
Texas Coastwide

HUC8 Watershed(s):
Texas-Gulf Region(Neches) - Neches(Lower Neches)
Texas-Gulf Region(Central Texas Coastal) - Guadalupe(Lower Guadalupe)
Texas-Gulf Region(Central Texas Coastal) - Central Texas Coastal(West San Antonio Bay)
Texas-Gulf Region(Nueces-Southwestern Texas Coastal) - Southwestern Texas Coastal(San Fernando)
Texas-Gulf Region(Nueces-Southwestern Texas Coastal) - Southwestern Texas Coastal(Baffin Bay)

State(s):
Texas

County/Parish(es):
TX - Calhoun
TX - Kleberg
TX - Nueces
TX - Orange
TX - Refugio
TX - Victoria

Congressional District(s):
TX - 27
TX - 36
TX - 34

Narratives

Introduction and Overview:

The degradation of water quality on the Texas coast has put the environmental health of coastal ecosystems at risk. Water quality in Texas is adversely impacted by diverted freshwater inflows and an increase in nutrient input from agriculture (Bricker et al., 2007; Wetz et al., 2016; TCEQ, 2019). Water quality and the estuarine environments of coastlines are intrinsically linked. Healthy habitats associated with estuaries can act as filters, helping to remove sediments and pollutants to improve water quality. But when water quality is depleted due to increased nutrient loading, sensitive habitats become vulnerable to instances of eutrophication, hypoxia, and harmful algal blooms (Bricker et al., 2007; Wetz et al., 2017). Urban and agricultural land uses have been found to contribute significant amounts of nutrients to nearby watersheds, leading to water quality degradation (Hopkinson and Vallino, 1995, Handler et al., 2006). The lack of freshwater inflow additionally puts marshes at risk, particularly freshwater marshes, which are vulnerable to changes in salinity. Extended periods of reduced inflows lead to increased salinity and nutrient reductions in bay waters, altering the composition and distribution of plant and animal populations (Elexander and Dunton, 2002). This program aims to restore water quality and freshwater inflows on the Texas coast using a variety of methods that will enhance the natural environment.

Coastwide, the implementation of best management practices (BMPs) to reduce non-point source pollution will improve the water quality of Texas bay systems. The goal of this program is to reduce nutrient loading into Texas bays, thereby reducing the instances of eutrophication, hypoxia or harmful algae blooms that impact economically valuable fisheries and sensitive habitat that occur within the bay systems (Park et al., 1994). This program will build on existing watershed studies and initiatives being undertaken by several water quality workgroups, including the DWH NRDA trustees. This program will incentivize farmers to utilize cropland management strategies and BMPs to reduce nutrient loading into waterways and ditches that drain into watersheds. These methods could include but are not limited to: conservation, constructed wetlands, cover crops, reduced till, nutrient management, filter strips, and vegetated/grassed waterways. Additionally, planning efforts, including engineering & design, will be used to identify and assess water quality activities that will provide restoration of hydrology and natural processes to reduce excess nutrients.

This program will consider improving freshwater inflows by improving sections of existing drainage channels and tributaries and extending outfalls into nearby fresh or estuarine marshes. This will result in the introduction of more sediment and freshwater, which will help restore marshes suffering from the effects of saltwater intrusion and inundation and improve overall water quality. Multiple recent events, including Hurricane Ike (2008) and Hurricane Harvey (2017), have caused damage to drainage outfalls on the Texas coast, resulting in increased flooding in nearby communities and degraded water quality flowing into the bays. These natural disasters, along with land surface subsidence, and increasing residential development along important drainages have contributed to impairment.

This program will also consider improving water quality through the implementation of projects that utilize living shorelines, which consist of marsh plantings and, in higher energy environments, the construction of breakwaters to reduce erosion issues. This approach will also create new and protect existing critical environments that improve water quality and allow natural re-habitation by a variety of aquatic organisms.

This program will develop a process for selecting locations for water quality enhancements that builds on Texas' stakeholder-driven process for developing the RESTORE Planning Framework and for selecting preliminary projects for FPL 3b consideration. During this earlier work, county governments, NGOs, and a workgroup made up of Texas NFWF/NRDA and Texas Coastal Resiliency Master Plan (TCRMP) (TGLO, 2019a) representatives submitted 38 projects for FPL 3b consideration. Coastal experts, HRI staff, and TCEQ staff reviewed the projects and selected 23 for public comment. Among these 23 projects, several projects included water quality enhancements that this program will consider for implementation, but additional projects that are part of the TCRMP will also be considered.

Texas has a history of success in implementing BMPs. The Texas Water Development Board (TWBD) and TCEQ work closely with stakeholders to implement and maintain resources for agricultural, industrial, and municipal BMPS (TWBD, 2013). Local NGOs, like the Coastal Bend Bays and Estuaries Program, have also developed large stakeholder groups and funded studies that will help further enhance the efficacy of BMPs in critical watersheds (CBBEP, 2020).

Drainage improvement projects in coastal Texas have proven to be critical and are especially a priority for communities after Hurricane Harvey made landfall in 2017 (TGLO, 2019b). Houston was greatly impacted post-Harvey due to the failure of the bayous and reservoirs to drain the extreme amount of precipitation dumped by the storm (Zhang et al., 2018). Expanding development and climate change likely increasing the frequency and intensity of storms will only further compound this problem (Toffol and Rauch, 2009). Studies have shown that suitably large scale and holistically considered infrastructure improvements that consider the system as a whole are better at draining large areas than traditional methods, like curb-and-gutter and underground piping (Brabec, 2009; Dietz and Clausen, 2008; Ellis and Marsalek, 1996; Yang and Li, 2013). Improving local infrastructure and drainage will be critical to protecting both the natural environment and local communities.

Past successful living shoreline projects implemented in Texas projects include Clear Lake Forest Park on Galveston Bay and the Shipe Woods living shoreline on Trinity Bay. Both living shorelines were constructed with funding from NOAA and the Galveston Bay Foundation. The two projects are on higher energy, eroding shorelines and include breakwater elements combined with marsh plantings. Living shorelines have a long history of being successful alternatives to traditional shoreline armoring methods (Hardaway et al., 2010).

The Council has approved $3,262,500 for planning activities and has also identified a separate $19,237,500 implementation component as a future implementation priority. The overall program has an estimated program duration of 4 years and includes activities that may be scaled or phased, if necessary. Several independent project sites will be identified with distinct line item budgets for each component. Some projects can be phased by selecting individual methods for each distinct location contingent on the allocated funding available.

This program addresses the 2016 update to the Comprehensive Plan by using the best available science for restoring water quality and quantity, developing a monitoring and data management framework, and defining metrics of success of the various program components. Additionally, this program conforms to the RESTORE Planning Framework by adhering to the priority to restore, improve, and protect water resources.

Methods:

Voluntary BMPs are used to reduce nutrient loads from cropland, pastureland, privately held off-field areas and road rights- of-way (TCEQ, 2019). Targeted methods are tailored to the dry-land agricultural practices and livestock pastureland employed along watersheds where excess nutrient loads are a stressor to the system. Some recommended strategies include but are not limited to conservation, constructed wetlands, cover crops, reduced till, nutrient management, filter strips, and vegetated/grassed waterways.

Steps to effectively implement BMPs include:

1. Identify target watersheds where BMPs would be effective at improving water quality
2. Conduct outreach to local stakeholders and potential project partners
3. Implement BMPs or conservation strategies identified in various scientific literature and reports, including the Texas Coastal Waters: Nutrient Reduction Strategies Report (TCEQ, 2019)
4. Conduct monitoring and adaptive management

The implementation of BMPs should be evaluated on a case-by-case basis depending on landowner willingness, soil type, topography, crop type, agribusiness market conditions, planting and harvesting methods, livestock type, size of operation, annual precipitation, and other field specific factors (TCEQ, 2019). Cost-effectiveness of strategies should also be considered. Engagement of stakeholders and landowners to develop individual projects that employ effective and feasible strategies will be necessary to determine what will eventually be the overall approach to nutrient reduction in each watershed (TCEQ, 2019).

For drainage outfall repairs and other drainage mitigation activities of the program, enhancements will consist of improved channels and extension of outfalls into areas where water quality may improve before moving through the estuary and where the flow will enhance the outfall area, such as an adjacent marsh. The first phase of implementation after determining project locations will be full and complete hydraulic and hydrologic ("H&H") assessments of the drainage outfalls, along with environmental impact assessments. Based on these assessments, the projects will be designed to improve water quality runoff entering estuaries and to enhance and restore adjacent marsh complexes by increasing freshwater inflow into the system. The projects within the program will be designed in such a manner that the outfalls are maintainable on a short and long-term basis. Alternatively, following a complete environmental assessment, the program may include the incorporation of pumps and pump basins, which will lessen the length of any channel extension.

This program also aims to construct small scale (500-1000ft) living shorelines consisting of a breakwater or groin with marsh plantings on bay shorelines to improve water quality. In general, the living shoreline design and implementation process will follow these steps:

1. Identify priority areas and analyze site-specific information
2. Engineering and design
3. USACE Permitting
4. Oversee bidding and contractor selection
5. Construction
6. Monitoring and adaptive management.

The type of living shoreline must be location specific. Living shorelines are not a one size fits all mechanism - they are versatile and can be designed and tailored to fit the specific conditions at that site (Morris et al., 2018). Site conditions that will affect living shoreline design include water depth, wave energy and the current rate of erosion.

Environmental Benefits:

This program seeks to improve the quality of water flowing across our coastal watersheds and through our estuaries. Water quality (and quantity) is not only fundamental to the ecosystem, but it is impacted by many activities occurring in the coastal zone including agriculture, navigation, recreation, and development. This program will use proven techniques to improve estuarine water quality thus improving ecosystem health.

Implementing BMPs will protect and restore water quality within identified impaired Texas watersheds and their headwater tributaries, which will enhance ecosystem services and improve the overall productivity of the systems. Water quality is a major determinant of the health of estuaries (Whitfield and Elliott, 2002, Eby et al., 2005). There is a growing urban footprint on coastal land use coverage, and agriculture remains a significant land use in many Texas watersheds (NOAA Coastal Change Analysis Program). Highly urbanized and agricultural watersheds tend to have high inorganic nutrient, dissolved organic matter and chlorophyll concentrations where the system has excessive wastewater effluent, leading to water quality degradation through pollutant inputs (Hopkinson and Vallino,1995; Handler et al., 2006; Wetz et al., 2016). Reduction of excessive nutrient loading into Texas coastal waters will help maintain stable food webs, healthy and diverse seagrass and wetland plant communities, and increase populations of recreationally and commercially important fish and macroinvertebrate species (Wetz et al., 2016). Additionally, BMPs will aid in reducing the instances of eutrophication, hypoxia or harmful algae blooms (Wetz et al., 2017).

Improving drainage channels and outfalls will result in the increase of freshwater inflows to the estuarine system, restoring natural salinity gradients (Palmer et al., 2002). Coastal marshes in Texas depend upon periodic freshwater inundation to support current community structure and promote further establishment and expansion of emergent vegetation, but decades of watershed modifications have dramatically decreased freshwater discharge into Texas estuaries (Elexander and Dunton, 2002). The introduction and restoration of more freshwater into estuarine marshes will enhance and help restore estuarine marsh from adverse effects caused by the lack of inflows and/or the inundation of saltwater into these important ecosystems. More inflow will also bring sediments to marshes increasing vertical accretion rates and partially countering inundation by rising sea level (White et al., 2002). Additionally, improved drainage will enhance community resilience by reducing the risk of flooding and property damage.

Implementation of a living shoreline project also has the potential to improve water quality by reducing erosion and creating environments that filter pollutants. Living shorelines also increase coastal resiliency by buffering storm surges (Arkema et al., 2013; Barbier et al., 2013; Manis et al., 2015). Oyster reefs and breakwater structures can become valuable substrate for marine organisms, as well as provide shelter and habitat for many fish, crab, oysters and other mobile species (Davis et al., 2006; Scyphers, et al., 2011). Reefs and offshore structures also dampen wave energies and increase sediment retention. Because shellfish are filter feeders, oyster reefs can improve water quality (Scyphers, et al., 2011). Living shorelines also contribute to healthy habitat for juvenile fish, which can improve recreational and commercial fisheries in the area, thus protecting important natural resources that support activities which are critically important to the region’s economy such as fishing, hunting, and nature-based tourism (Sutton-Grier, et al., 2015).

Metrics:

Metric Title: HM001: Nutrient reduction - Lbs. N avoided or removed
Target: TBD
Narrative: After project selection and design is complete, a quantitative target of nitrogen reduction will be set. The nitrogen target for each watershed implementing a BMP plan will be different but guided by recommendations from the EPA (EPA, 2017).

Metric Title: HM003: Nutrient reduction - Lbs. P avoided or removed
Target: TBD
Narrative: After project selection and design is complete, a quantitative target of phosphorus reduction will be set. The phosphorus target for each watershed implementing a BMP plan will be different but guided by recommendations from the EPA (EPA, 2017).

Metric Title: HM005: Agricultural BMPs - acres under contracts/agreements
Target: TBD
Narrative: A key component of this program will be implementing BMP agreements with land owners at a scale large enough to impact the nutrient loads in targeted watersheds. After project selection and design is complete, a quantitative target of acres under BMP agreements will be set so that the intended goals are met.

Metric Title: HR013: Wetland restoration - Acres restored
Target: TBD
Narrative: Freshwater wetlands will be targeted for restoration through the increase of freshwater inflows via improved drainage. After project selection and design is complete, a quantitative target of wetland acres restored will be set.

Metric Title: RES002: Watershed management - # upgrades to stormwater and/or wastewater systems
Target: TBD
Narrative: A key to the success of the program is to upgrade stormwater drainage systems at a scale large enough to have an impact on wetlands and communities. After project selection and design is complete, a quantitative target of upgrades will be set.

Metric Title: HR003: Stream restoration - Miles of stream channel protection installed
Target: TBD
Narrative: A key to the success of the program is to upgrade stream channels at a scale large enough to have an impact on wetlands. After project selection and design is complete, a quantitative target of the length of protected channels will be set.

Metric Title: HR009: Restoring hydrology - Acres with restored hydrology
Target: TBD
Narrative: Restoring hydrology is a key outcome in this program to positively impact wetlands that have been affected by altered hydrology. After project selection and design is complete, a quantitative target of the acres of restored hydrology will be set.

Risk and Uncertainties:

The major uncertainty in implementing BMPs is the willingness of agriculture producers and land managers to participate in a BMP program. Stakeholders may need to be incentivized to participate in the program. Education levels, capital, income, farm size, access to information, positive environmental attitudes, environmental awareness, and utilization of social networks are variables that are positively associated with adoption rates (Feather and Amacher, 1994; Prokopy et al., 2008). Understanding the stakeholder's perspective and working with them will be key to the program's success. Compared to regulation or financial incentives, raising producer information levels may be a more cost-effective method of increasing adoption, and so an information/outreach program may be part of BMP implementation (Feather and Amacher, 1994).

Risks and uncertainties surrounding construction activities involve the long-term sustainability of the enhancements and repairs, weather events, relative sea level rise, the degree of drainage improvement, and the response of degraded habitats to the increase in freshwater input (Winter et al., 1998; NAS, 2017). Monitoring and adaptative management can decrease these risks.

Additional uncertainties include the potential impacts from changes in human activity and land use that may result from improvements in drainage and inland flows. Increasing population trends in coastal areas will impact drainage capacity through the increase in impermeable surfaces and may cause increases in point source pollution from storm drains, industrial facilities, and sewage treatment plants (Arnold and Gibbons, 1996; Winter et al., 1998). Additionally, the reduction in flood risk may encourage even further expansion of development and impermeable surfaces in the area, which will put more pressure on the drainage capacity. Improvements to existing drainage systems and enhancement of wetlands with these population increase pressures in mind will be critical to the success of the program.

The effects of climate change pose additional uncertainties. Climate change is likely to directly impact precipitation patterns and urban drainage (Arnbjerg-Nielsen et al., 2013). Extreme rainfall events will likely become more frequent in the future, impacting urban drainage systems and potentially overwhelming their capacity (Toffol and Rauch, 2009). If wetlands, especially those that are impounded, are flooded when urban infrastructure fails, those wetlands can become permanently flooded and convert to open water (Day et al., 1990). Although the magnitude of these changes is still uncertain, designing drainage improvements considering climate change impacts will be important to the long-term success of these projects (Grum et al., 2006).

The predominant risk to living shorelines is relative sea level rise and compaction of soils which lowers breakwater elevation, reducing their effectiveness. and potentially drowning intertidal marsh plantings (Hardaway et al., 2010). In order to alleviate this risk, relative sea level rise will be incorporated into the design to ensure that elevations remain sufficient to protect the shorelines from erosive forces and promote sediment trapping to decrease water depths to levels that support marsh vegetation. Additionally, incomplete geotechnical information regarding substrate stability and data on wave and tidal energy, sea level changes, water quality, and sediment supply can cause a project to be risky (GBF, 2014; Hardaway et al., 2010). This program will assess each project site for data gaps and for suitability for using a living shoreline technique.

Monitoring and Adaptive Management:

Project monitoring for this program will involve observations for ensuring (1) proper construction, (2) performance, and (3) to support adaptive management (NAS, 2017). Type of monitoring data will include biophysical observations (vegetation, hydrologic, nutrient load, salinity) of the project and of adjacent areas to serve as reference sites and to detect off site impacts (DWH-NRDA, 2017). Monitoring will occur on semiannual or annual bases for a minimum of two years following project completion.

Watersheds implementing BMPs will be monitored for changes in nutrient load via water samples taken regularly. Since the primary goal of the program is to reduce non-point source pollution from agriculture, the primary metric of success will be measuring the amount of nitrogen and phosphorus removed or avoided in each system. Other water quality parameters can be assessed while the samples are collected, such as water temperature, dissolved oxygen, and salinity, that are also important indicators of the functioning of the watershed (EPA, 2017).

Construction activities to improve drainage will be monitored for the effectiveness of the repairs/enhancements. Primary indicators of success will be the number of enhancements made, the health of adjacent marsh complexes, and the total acres of restored hydrology. Methods of monitoring may include regular vegetation sampling, salinity sampling, measuring flow characteristics, and land cover surveys (NAS, 2017).

A successful living shoreline requires maintenance and monitoring (NAS, 2017; Thayer et al., 2005; TGLO, 2020). Monitoring the area over time will help determine how well the living shoreline is performing and if it is providing the expected benefits. Semiannual or annual project monitoring will enable effective adaptive management actions such as additional vegetation plantings, removal of debris at the project site, and repositioning of structural components (Kreeger and Moody, 2014; TGLO, 2020).

Data Management:

Data management for this program will make data publicly available thereby enhancing outcomes and future restoration efforts.

<u>Planning data</u>: During program planning, a variety of existing data and newly acquired data will be gathered. Data in this category includes mostly existing geospatial data on land cover, land use, water quality, elevation, and ecological data describing past and current environmental conditions. Geotechnical and engineering data with construction specifications are also included.

<u>Project implementation data</u>: These data are needed for determining as-built conditions. Detailed engineering survey data and photography are included.

<u>Post-project implementation data</u>: These data are needed for monitoring performance, informing adaptive management actions, and for improving future projects. They include time series of biophysical and engineering data plus hydrological and water quality data for understanding trends.

Program activities will identify data used. TCEQ and GRIIDC (Gibeaut, 2016) will work with data users to ensure data are shared when key activities end. GRIIDC is a well-known data repository designed to receive data from a variety of sources and from various scientific and engineering disciplines. GRIIDC will track, curate, and archive data in the GRIIDC repository and make it publicly discoverable and available. Metadata will follow the ISO 19115-2 standard and datasets will be reviewed for completeness and organization to enable reuse.

Collaboration:

Two Texas workgroups were established to provide input on coastal priorities: State & Federal Representatives and Non-Governmental Organizations. On-line and in-person meetings were held to discuss plans to develop Texas coastal priorities and to ensure the public's involvement. A survey was developed that asked for individual's coastal priorities. These surveys were available to the public and were also completed by members of the two work groups. Public meetings were conducted in three coastal cities for the public to present their issues and concerns. Information received from workgroup meetings, discussions with elected officials, public meetings and the surveys were used to develop a list of priorities to be included in the RESTORE Council's Planning Framework document. These efforts of collaboration will continue throughout the process to develop programs and projects. Work will continue with Texas representatives for NRDA/NFWF to consider leveraging opportunities.

Public Engagement, Outreach, and Education:

The decision to submit this program was based on many months of discussions with work groups and participation by the public. It began with discussions with the Texas representatives for NRDA & NFWF to identify programs/projects for FPL 3b. This identified list was shared with the two workgroups (State & Federal and NGOs) established for Bucket 2 planning purposes, for their review and comment. County judges in the coastal area also were given the opportunity to identify potential programs/projects for their areas. Using the information compiled as part of this process, a list of 23 projects was posted for public comment on the Texas RESTORE website. In addition, two public hearings were held in coastal cities. In reviewing the comments received, the timing to move forward with proposals, and in discussions with the Texas Governor's staff, it was determined that program rather than project specific proposals would be submitted. The development of the program proposals was done to ensure that projects posted for public comment could be considered in at least one of the program submissions. Much of the work has already been done to identify projects that could be funded within this program n. The process to select FPL 3b grant subrecipients will include the requirement that projects will have to already been vetted by this process or through other public processes such as the TGLO's Coastal Resiliency Master Plan, NRDA or NFWF related activities. The criteria to select the specific projects will include, but are not limited to, the following: addresses issues presented in the program activity description; amount of funds available for the program; readiness; leveraging opportunities; scalability; risk/benefit ratio; and distribution of funds across the Texas coastline. Notification of the projects selected to receive grant funds will be posted on the Texas RESTORE website. This overall process, including parts already completed and others to be completed during program planning and implementation, will ensure that the ultimate selection of projects for this program are not only consistent with the RESTORE Planning Framework document, but also reflect the ideas that were discussed by the work groups, the elected officials, the public and the Office of the Governor.

Leveraging:

Funds: TBD
Type: TBD
Status: TBD
Source Type: TBD
Description: As part of the process to initially identify programs for FPL 3b, Texas held discussions with county judges, NGOs, NRDA and NFWF. Projects that are selected for funding in Texas could likely include partnerships leveraging various funds, including RESTORE, NRDA and

NFWF monies. All parties have emphasized the need to leverage DWH Oil spill associated funds, as well as other funds, and it is Texas' intent to consider leveraging as a criteria in selecting projects, including the recognition of previous projects and the potential for a new project to add to the cumulative benefits.

Environmental Compliance:

Drainage channel and outfall enhancements and repairs will be coordinated with the United States Army Corps of Engineers (USACE) for approval and permitting purposes.

Similarly, if living shorelines projects are selected for implementation under this water quality program, they too will require Section 10 and 404 permits from the USACE and a submerged lands lease from the Texas General Land Office. The USACE permit process ensures compliance with all applicable federal laws, primarily environmental laws such as the Clean Water Act. Coordination is planned with the USACE and other reviewing agencies such as the Texas General Land Office, United States Fish and Wildlife Service, NOAA, Texas Historical Commission, and TCEQ to address applicable environmental laws.

The approved FPL Category 1 portion of this program involves only planning actions that are covered by the Restore Council's NEPA Categorical Exclusion for planning, research, or design activities (Section 4(d)(3) of the Council's NEPA Procedures). The implementation component has been identified as a FPL Category 2 priority for future funding consideration.

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Budget

Project Budget Narrative:

The total budget for this program is $22.5 million. Of that amount, $21,262,500 will be provided to sub-recipients to implement projects selected for this program. TCEQ estimates that it will require approximately $1,237,500 to support the following: administrative expenses (salary, indirect, travel, fringe, supplies, etc.); hosting & maintenance costs for the Texas RESTORE web site; and for a contract to provide technical assistance to TCEQ staff.

Category 1: $3,262,500
Planning (9%) = $2,025,000
Project Management (5.5%) = $1,237,500

Category 2: $19,237,500
Implementation (84.5%) = $19,012,500 Contingency
(1%) = 225,000

Data management and monitoring & adaptive management costs are included in the implementation costs.

Since some costs are uncertain depending on the type of individual project ultimately selected, contingency costs are included at this point and could be considered in a project specific budget as appropriate.

Total FPL 3 Project/Program Budget:
$ 22,500,000

Estimated Percent Monitoring and Adaptive Management: 0 %
Estimated Percent Planning: 9 %
Estimated Percent Implementation: 84.5 %
Estimated Percent Project Management: 5.5 %
Estimated Percent Data Management: 0 %
Estimated Percent Contingency: 1 %

Environmental Compliance

Environmental Requirement	Has the Requirement Been Addressed?	Compliance Notes (e.g., title and date of document, permit number, weblink etc.)
National Environmental Policy Act	Yes	The FPL Category 1 portion of this program involves only planning actions that are covered by the Restore Council's NEPA Categorical Exclusion for planning, research, or design activities (Section 4(d)(3) of the Council's NEPA Procedures). The implementation component is in Category 2.
Endangered Species Act	N/A	
National Historic Preservation Act	N/A	
Magnuson-Stevens Act	N/A	
Fish and Wildlife Conservation Act	N/A	
Coastal Zone Management Act	N/A	
Coastal Barrier Resources Act	N/A	
Farmland Protection Policy Act	N/A	
Clean Water Act (Section 404)	N/A	
River and Harbors Act (Section 10)	N/A	
Marine Protection, Research and Sanctuaries Act	N/A	
Marine Mammal Protection Act	N/A	
National Marine Sanctuaries Act	N/A	
Migratory Bird Treaty Act	N/A	
Bald and Golden Eagle Protection Act	N/A	
Clean Air Act	N/A	
Other Applicable Environmental Compliance Laws or Regulations	N/A	

Maps, Charts, Figures

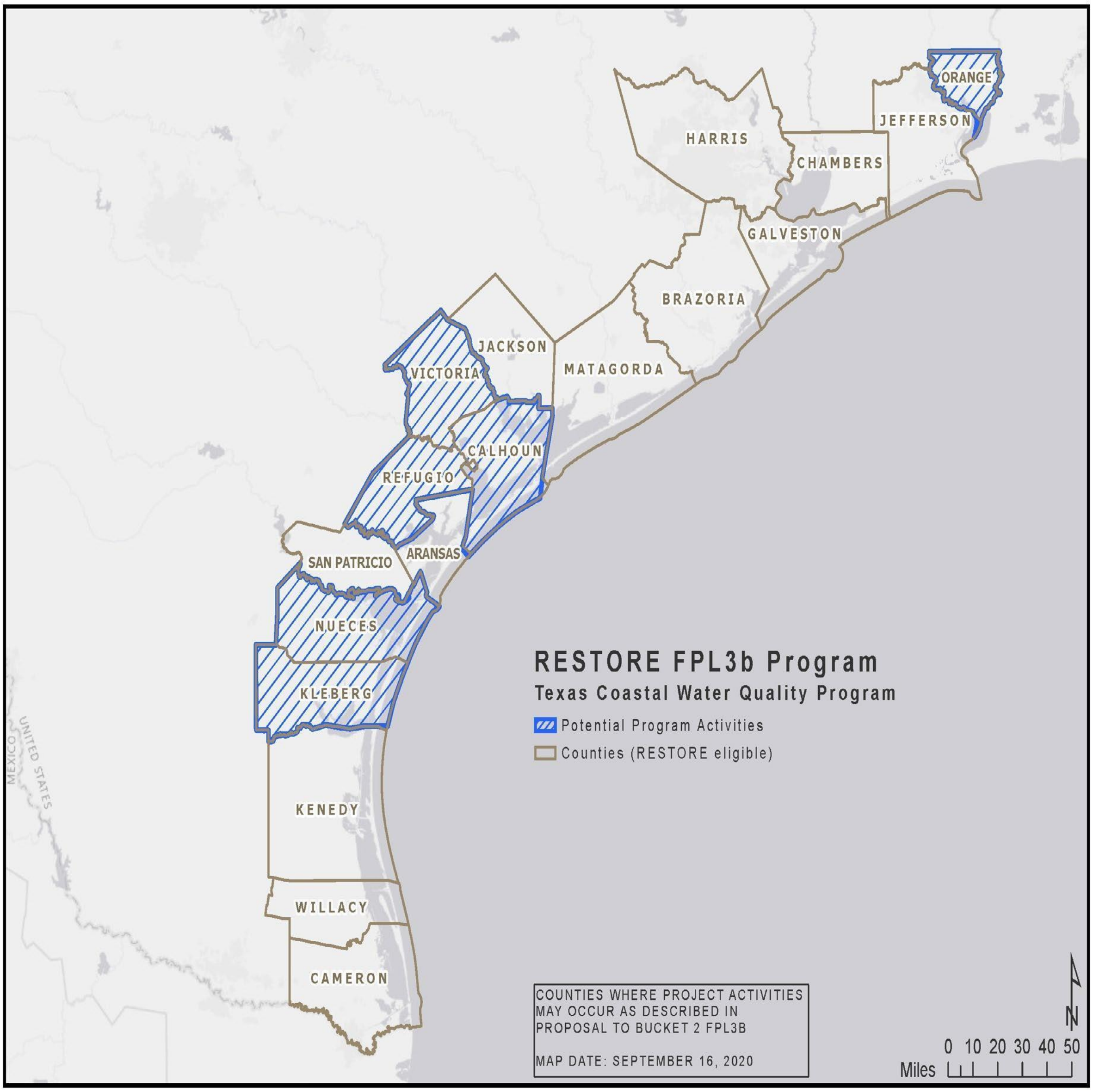

Figure 1: Map of potential program activities.