Identification of Potential Conservation, Restoration, and Enhancement Sites

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Final Report

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PROJECT SUMMARY

The Bays Plan calls for efforts to identify habitat types that are most at risk and to assist in efforts to conserve those habitats. Within the Coastal Bend, many separate efforts aimed at protecting upland and wetland habitat for conservation value and/or public use are being conducted or planned by federal, state, and local governments and non-governmental organizations such as the Nature Conservancy, Audubon Society, and Coastal Bend Land Trust. It is critical to the Coastal Bend Bays and Estuaries Program's (CBBEP) long-term environmental planning effort to be well informed regarding other habitat conservation areas and projects within the CBBEP region and to have access to all relevant data.

In addition, funds frequently become available to the CBBEP for possible habitat conservation projects, especially wetland conservation projects. Wetlands have been specifically identified by the CBBEP and others as an important coastal natural resource that is at risk. However, preparation of documents describing project parameters sufficient to justify receipt of funding is often difficult to accomplish in the short time frame frequently provided. Therefore, it is important that potential wetland conservation projects be identified and well described prior to the availability of the funds.

Habitat conservation areas and projects identified within the CBBEP region included sites and projects such as Texas General Land Office (TGLO) Coastal Management Program projects, TGLO Coastal Impact Assistance Program sites, The Nature Conservancy, Audubon Society, and Coastal Bend Land Trust conservation sites, and publicly owned sites such as national, state, and local parks. All data layers were incorporated into Geographic Information System (GIS) project files.

Potential sites were generated from several Project Advisory Committee (PAC) meeting throughout the term of the project. Twenty potential wetland conservation project sites were identified utilizing the conservation sites and projects data and project advisory committee input. Ranking criteria were developed that were specific to the focus of the CBBEP for FY2004 project development. The PAC selected seven potential wetland conservation project sites, and project descriptions were generated for each site. Descriptions included background information, introduction, justification, need, goals, objectives, budget(s), and long-term plans. Data generated from this project will be stored on the CBBEP GIS (geographic information system) for use in making informed decisions regarding individual CBBEP projects and the development of overall conservation and public access goals in the CBBEP area. The approach can be expanded to develop a comprehensive database that identifies a range of potential conservation and restoration projects in the Texas Coastal Bend.

Task (a) Collect and integrate conservation sites and project data

Existing data files were incorporated into the GIS project file using ArcMap (ESRI, Inc.) to provide information about the CBBEP geographic area and source information was included in the Metadata files within the GIS project (Appendix A). The TXDOT road data sets were

essential to georeferencing site locations in a meaningful context to lay persons. The NWI data provided wetland type information, although dated (1992), for the coastal areas.

Existing data layers were incorporated into the GIS information from these agencies and nongovernmental organizations and source information was included in the metadata files (Appendix B). These data were used to overview the geographic coverage of current project sites, as well as assist in the evaluation to of potential sites locations.

Several data files were located and incorporated into the GIS that may be useful in future evaluations (Appendix C). For example, storm drainage outfalls along Oso Creek in Corpus Christi could be evaluated as potential sites for best management practices designed to improve water quality into the receiving waters.

Task (b) Develop selection criteria for potential wetland project sites

The GIS database was utilized to query for sites satisfying selection criteria. Data layers were constructed identifying estuarine and palustrine wetlands that were located within 100 m of a TXDOT road, or a railroad. This query enabled the PIs and the PAC to determine if a specific wetland site had been potentially impacted by the placement of these transportation corridors. Knowledge of the area was essential to achieve these determinations, and the diversity of the PAC was instrumental in identifying sites warranting more evaluation.

Selection criteria were refined to include parameters incorporated in the GIS database attribute table as well suggestions from PAC members. Project sites that could satisfy all of the following criteria were selected for the preliminary project site list: immediate need for conservation or restoration; ownership (current landowner willing to implement conservation action), diversity of habitat types, regional coverage of geographic area, and interest by potential funding sources.

Task (c) Select potential wetland project sites

Potential site data layers were developed as a result of various queries based on site selection criteria. Data structure and metadata files are reported in Appendix D. Separate data layers were constructed according to habitat type (e.g., Estuarine, Palustrine) for the road and railroad queries. Twenty sites were selected as potential project sites for further evaluation by using selection criteria, scientific/technical expertise and regional/historical knowledge (see Task b). A new data layer was developed in the GIS and an associated Microsoft Word file was constructed that identified the site by Number, Project Name/Location, Issue/Concern, Habitat Focus, Ownership, Immediate Action (with type of action), and Long-term Action (with type of action). A site map and spreadsheet was submitted to the PAC for further review (Appendix E).

Based on CBBEP staff and PAC discussion, the list was reduced to seven sites for further project description development (Appendix F). Attribute tables within each habitat type layer for each site were developed as fields for the following information. Project goals were defined as acquisition (A), conservation easement (CE), management plan (M), and restoration (R). Property ownership was categorized as private, local government, county government, state

government, federal government, school district, nongovernmental organization (NGO), and other. Habitat types were generally grouped as Estuarine, Palustrine, and Estuarine/Palustrine. The following fields were defined as essential information when a potential site was selected for further evaluation and implementation: funding source(s), budget, site boundaries, endangered/threatened species, permanent photo points, etc. The information was included in the project descriptions submitted in Microsoft Word format, which were also linked to each site in the GIS attribute table.

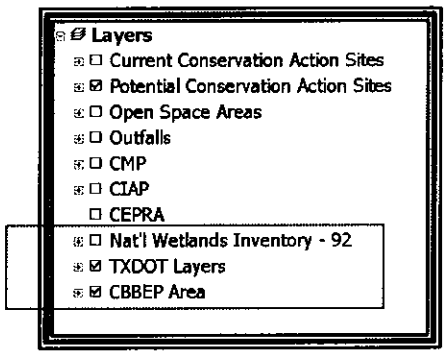
The CBBEP staff and PAC highlighted two areas as warranting further evaluation for conservation action as acquisition or conservation easements at the landscape scale. We present these two areas as potential CBBEP projects for FY2004 to develop regional conservation and management plans. A watershed map was constructed delineating all natural habitat areas in conjunction with city-owned lands along Oso Creek and used as a visual display and discussion at a Smart Growth Forum IV workshop held in April (Appendix G). This GIS file was not included in the Conservation Site Project file, but was submitted for inclusion in the CBBEP GIS (developed in FY2004 under separate contract).

The second area of interest targeted Live Oak Peninsula, where palustrine wetlands are being filled or excavated in conjunction with high rates of development. The National Wetland Inventory - 1992 data were used with TXDOT road data to delineate management units throughout the Peninsula (Appendix H). This database can be used in the future to assist in defining large tracts of land for conservation action that include palustrine wetland complexes within coastal woodland and prairie habitat. We further recommend comparing recent (2001 aerial imagery) to the 1995 DOQQ data to identify sites that have not been developed in the past eight years.

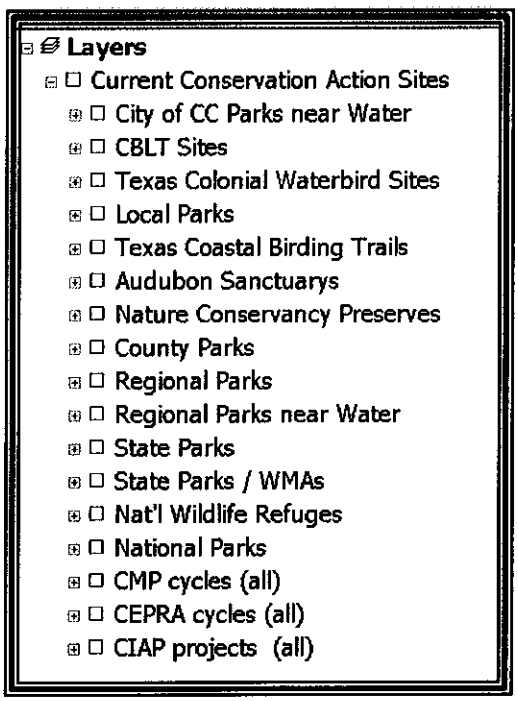
Task (d) describe potential wetland projects

The following information is provided for each potential wetland project site: background information, introduction, justification, need, goals, objectives, budget(s), and long-term plans. Project descriptions were completed for: Black Point south of Bayside, Egery Flats on Copano Bay, the Aransas River delta shoreline, Indian Point, Corpus Christi Botanical Gardens, Redhead Pond in Flour Bluff, and Francine Cohn Preserve and surrounding area on Mustang Island (Appendix I). These sites are currently of immediate interest and are being evaluated for conservation action by agencies and nongovernmental organizations. These descriptions include an area map showing their geographic location, site location map in relation to water bodies and roads, National Wetland Inventory data for the site, and potential restoration actions on a DOQQ image. The descriptions are in Microsoft Word format, and linked to each site in the Conservation Site GIS database. Additional project descriptions could easily be incorporated into the GIS at any time, and map exhibits developed from a template provided within the Conservation GIS project.

Appendix A. Data structure in Conservation Site GIS that provides information within CBBEP geographic area. Layers enclosed in blue box are used to develop base maps of the Texas Coastal Bend. Metadata identifying the sources of information for each layer is included in the GIS project files.

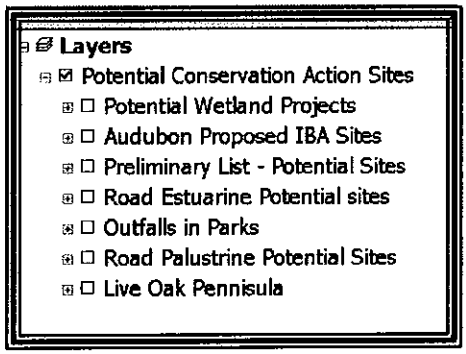


Appendix B. Current Conservation Action Sites GIS Project Data Structure used in identifying potential sites and submitted as final project deliverable. Most layers identify areas that already have been purchased and conserved for their natural resource values. The Coastal Management Program (CMP), Coastal Erosion Protection and Restoration Act (CEPRA), and Coastal Impact Assistance Program (CIAP) sites are included as areas where restoration funding has been appropriated. Metadata identifying the sources of information for each layer is included in the GIS project files.

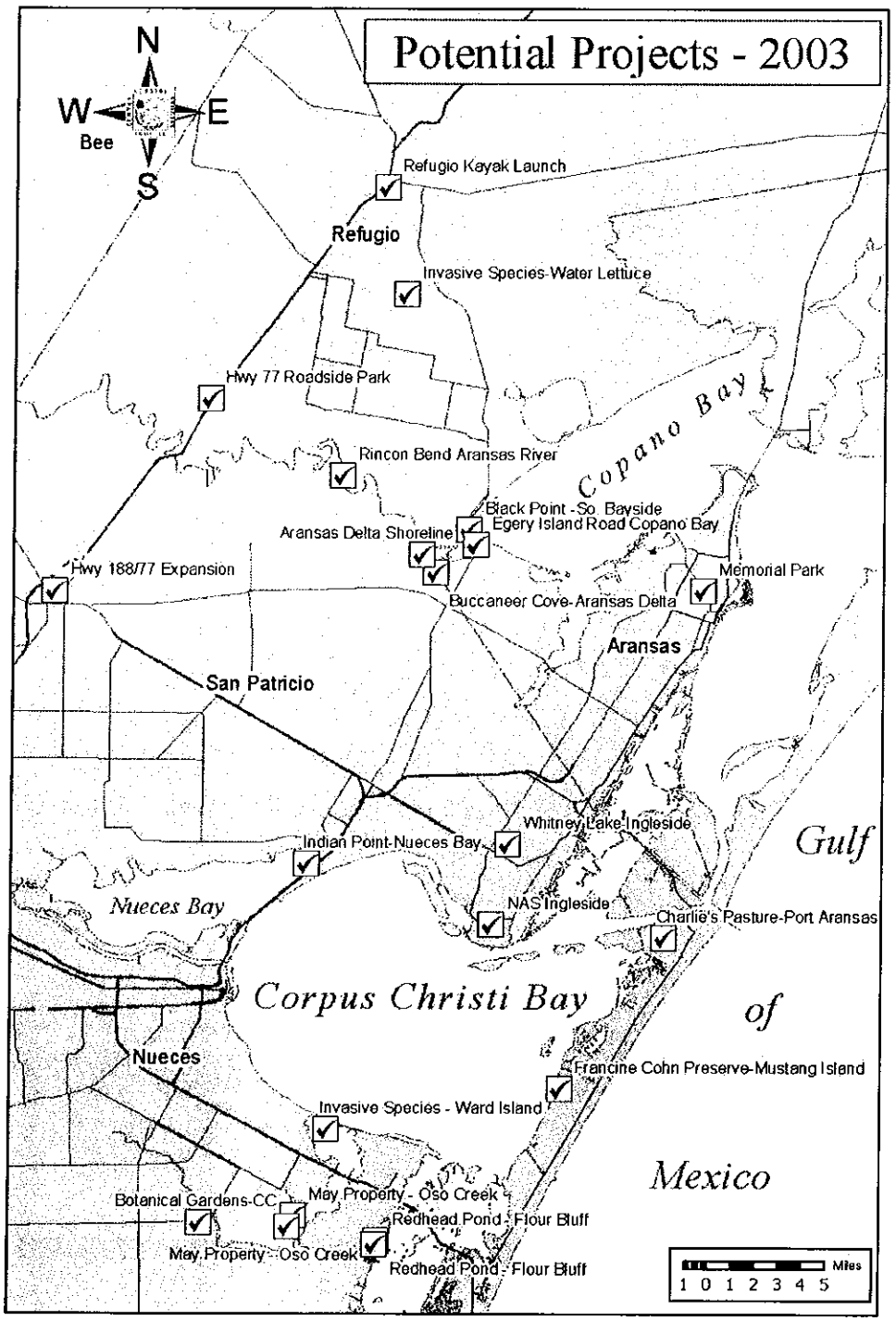


Appendix C. Additional data layers incorporated into the GIS project files that would be useful for future identification and evaluation of potential conservation and restoration sites. Metadata identifying the sources of information for each layer is included in the GIS project files.

Appendix D. Potential Conservation Action Sites data layers based on various queries and associated potential site information from nongovernmental organizations. Metadata identifying the sources of information for each layer is included in the GIS project files.



Appendix E. Preliminary List of Potential Sites map and associated attribute table submitted to PAC to evaluate and define subset for project site descriptions.

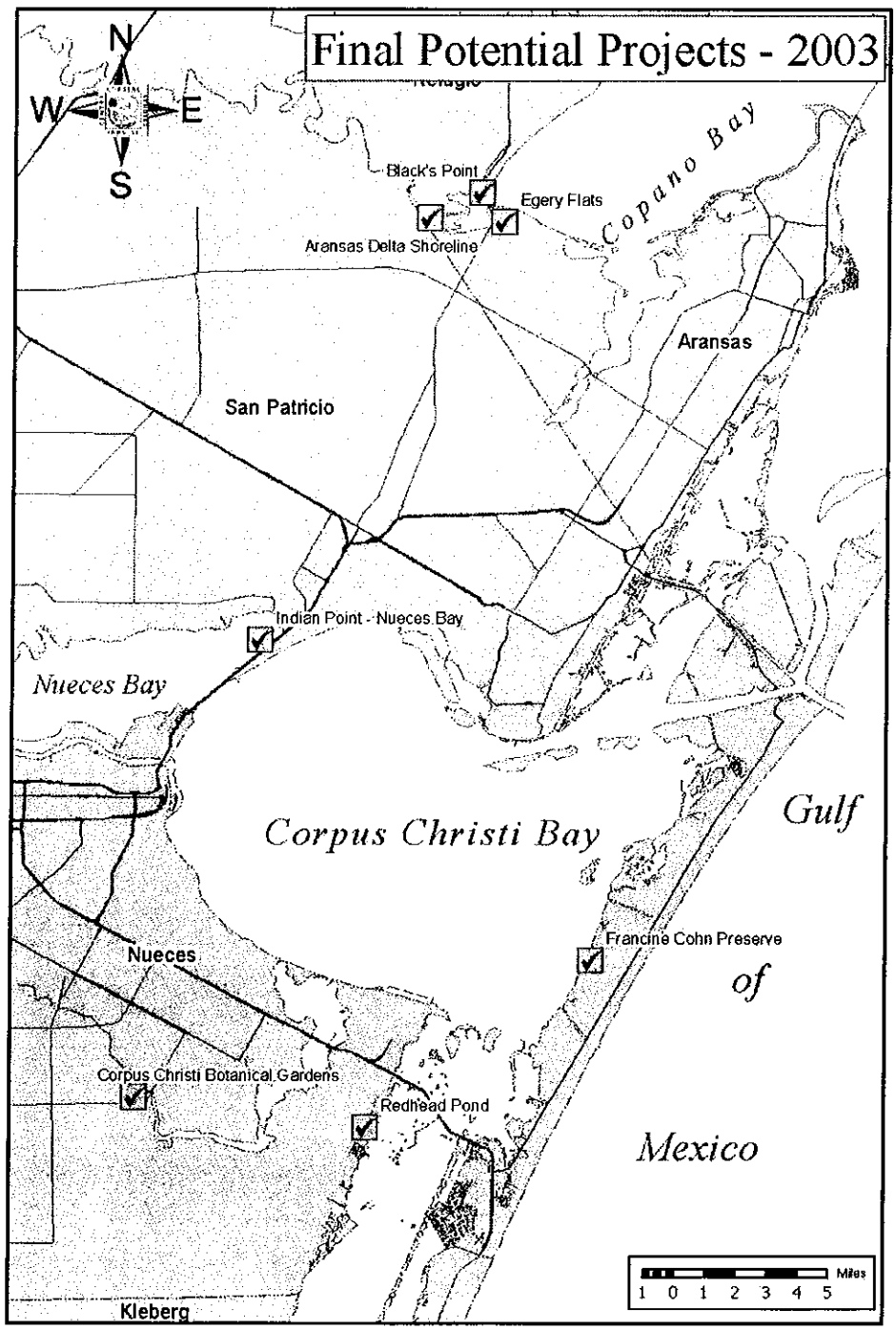


Preliminary project sites identified for further evaluation for restoration actions by CBBEP (sites highlighted in bold were selected).

Map ID	Project Name/Location	Issue/Concern	Habitat Focus	Ownership	Immediate Action	Long-term Action
1	Refugio Kayak Launch	managed access	riparian corridor	City of Refugio (soon?)	planning/design	preservation/reestablishment of native species
2	Invasive Species-Water Lettuce	uncontrolled spread	Palustrine habitat	Private	design/implement management practices demonstration project	
3	**Black Point -So. Bayside**	**Shoreline Erosion**	**Wetland Protection - 150 ac Intertidal Flat**	**Private**	**Planning/Design**	**Construct offshore structure**
4	**Egery Island Road Copano Bay**	**Hydrologic Alteration**	**Coastal Pond**	**Private**	**design/culvert placement**	
5	Memorial Park	Limited Wetland Fringe	Palustrine habitat	City of Rockport	design/recontour slopes/plant	
6	Whitney Lake-Ingleside	Wetland Diversity	Palustrine habitat	City of Ingleside (soon?)	Planning/Design	establish vegetation along recontoured wetlands
7	Buccaneer Cove-Aransas Delta	Hydrologic Alteration	Intertidal Wetland	Coastal Bend Land Trust (soon?)	planning/removal or burying pipeline	
8	**Aransas Delta Shoreline**	**vegetation diversity**	**transitional prairie**	**Private**	**fencing/planting native species**	
9	Rincon Bend Aransas River	Hydrologic Alteration	Palustrine habitat	Private	planning/design to remove drainage ditch	recontouring to increase vegetation diversity
10	Hwy 77 Roadside Park	create wetland habitat	Palustrine habitat	TXDOT?	planning/design	recontour upland to create wetland for observation
11	Hwy 188/77 Expansion	highway expansion over pond	Palustrine habitat	private?	planning/design	relocate/expand existing pond into public viewing area
12	**Indian Point-Nueces Bay**	**Estuarine wetland loss**	**vegetated marsh**	**TGLO?**	**planning/design**	**reestablishment of bay peninsula/islands with emergent marsh and flats**
13	Charlie's Pasture-Port Aransas	stormwater drainage	palustrine/estuarine	leased?	planning/design	beneficial use of stormwater management into wetlands
14	**South of Francine Cohn Preserve-Mustang Island**	**Hydrologic Alteration**	**Estuarine Habitat**		**Design/culvert placement**	

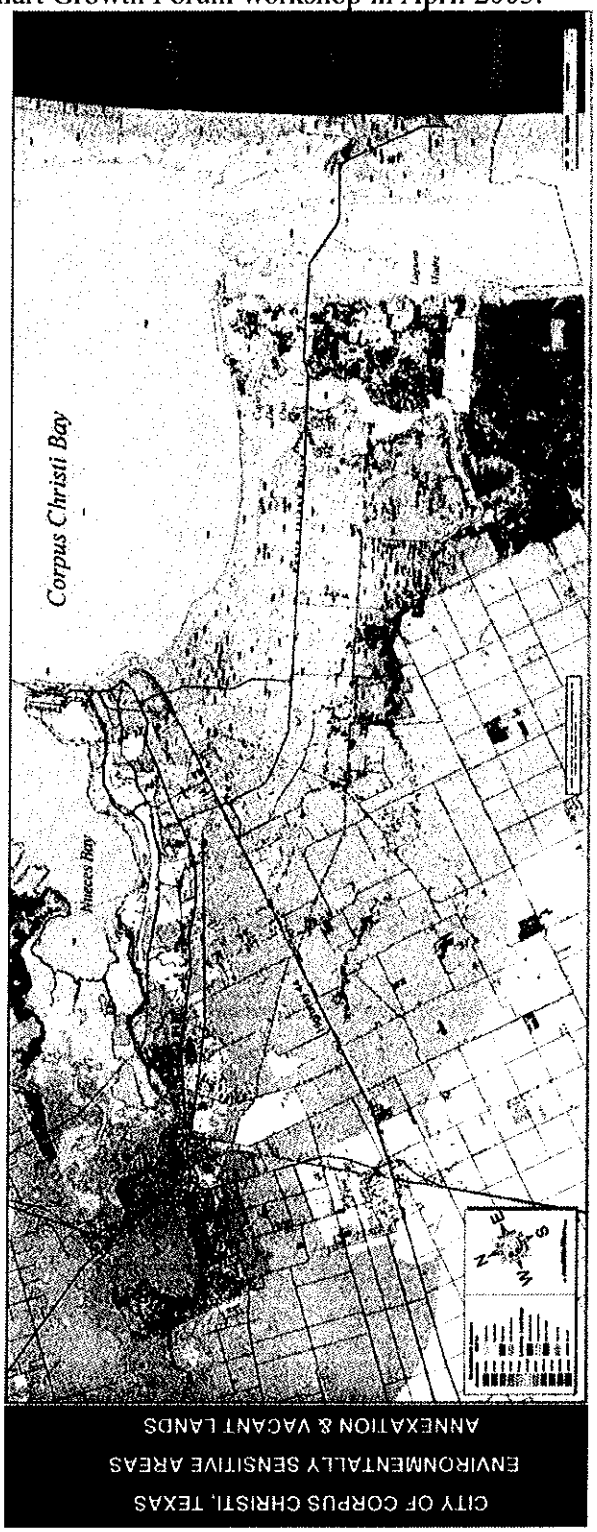
15	Invasive Species - Ward Island	uncontrolled spread of brazilian pepper, etc.	shoreline buffer	TAMU-CC	removal of invasive species	reestablishment of native species - demonstration project
16	**Botanical Gardens-CC**	**stormwater drainage**	**Palustrine habitat**	**City of CC**	**siltation control demonstration**	
17	May Property - Oso Creek	Shoreline Erosion	bay shoreline	Coastal Bend Land Trust	recontouring gullies/reestablishment vegetation	
18	May Property - Oso Creek	habitat degradation	tidal flats	Coastal Bend Land Trust	eliminate access of ATVs/recontour tire marks – demonstration project	
19	**Redhead Pond - Flour Bluff**	**Hydrologic Alteration**	**Palustrine habitat**	**TPWD/TNC**	**identify sources of hydrologic change**	**restore freshwater flows**
20	**Redhead Pond - Flour Bluff**	**uncontrolled spread of brazilian pepper, etc.**	**Palustrine habitat**	**TPWD/TNC**	**removal of invasive species**	**reestablishment of native species - demonstration project**

Appendix F. Final sites selected for development of project descriptions and attribute table information within Conservation Site GIS project file. Each project description is stored as a Microsoft Word file and hyperlinked to the GIS point for each project. Any additional information can be updated and saved in the Word document and accessed through the Conservation Site GIS project file.

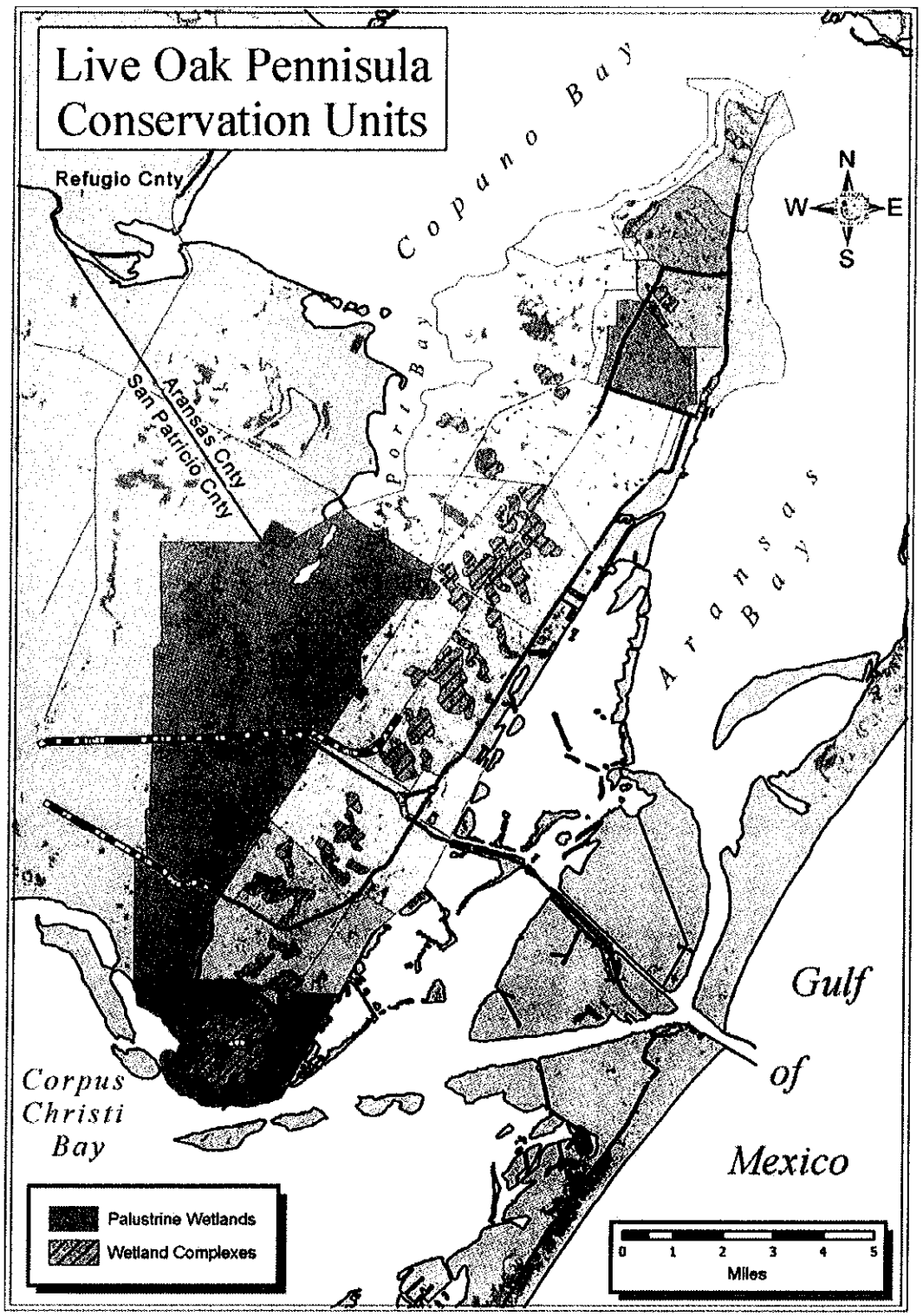


Name	Goals	Ownership	Habitat Type	Hyperlink to File
Aransas River Shoreline	Restoration	Private	Coastal Prairie	To be inserted at host computer
Black Point	Restoration	Private	Estuarine Intertidal Flats	"
Egery Flats	Restoration	Private	Estuarine Intertidal Flats	"
South of Francine Cohn Preserve	Restoration	Private	Estuarine Intertidal Flats	"
Redhead Pond	Restoration	Texas Parks & Wildlife		"
Corpus Christi Botanical Gardens	Restoration	City of Corpus Christi		"
Indian Point Peninsula	Restoration	Private/TGLO	Estuarine Intertidal Flats/Emergent Marsh/esSeagrasses	"

Appendix G. GIS database project file of Oso Creek watershed and associated City of Corpus Christi data used at a Smart Growth Forum workshop in April 2003.



Appendix H. GIS database file delineating conservation units within Live Oak Peninsula based on density of roads and wetland inventory data. Areas that exhibited high densities of palustrine wetlands were grouped as wetland complexes.



Appendix I. Potential project descriptions submitted as Microsoft Word files that are linked to the site locations within the Conservation Site GIS project file.

PROJECT SITE DESCRIPTIONS:
ARANSAS RIVER SHORELINE , COPANO BAY

Background Information

Geographic Location

The Aransas River and Delta is located within Refugio, San Patricio, and Aransas counties. The project site is located in Aransas County, and comprises the southern shoreline of the Aransas River prior to entering Copano Bay to the east.

Habitat Types

The uplands are primarily used for cattle grazing and are predominated by coastal Bermuda grass. Five stock ponds are located adjacent to the river and are primarily unvegetated along the shorelines. Native thorn scrub chaparral remnants are located along the river bluff, grading downward to narrow bands of coastal marsh. Intertidal flats are exposed during low tides prior to the main channel of the river.

Ownership

The wetland complex is currently under private ownership by one entity. The Coastal Bend Land Trust is currently in active discussion with the landowner to identify potential conservation options. This landowner is well aware of the value of Aransas River and Delta ecosystem, and has voiced a concern of the removal of native species along the river corridor prior to his acquisition of the property.

Introduction

Natural Resource Functions and Values

The site is located at the transition of Aransas River to Delta flowing into Copano Bay. The shoreline on this property extends over one mile facing the delta, and is currently vegetated with coastal Bermuda grass along the upland buffer area. The site historically was vegetated with Tamaulipan thorn chaparral species, but has been cleared for rangeland purposes. The shoreline is beginning to erode between the uplands and tidal delta flats.

Justification

Conservation Issues

This site was selected for restoration/enhancement potential for the following reasons: 1) riparian habitat along Texas Coastal Bend river systems has been identified as a priority habitat for restoration and conservation; 2) the location of the site in close proximity to the delta and bay increases its value as stopover habitat by neotropical migrants; 3) the

existing shoreline is eroding following the removal of native shrub corridor; and 4) the landowner is interested in restoring and preserving the bluff along the Aransas River complex.

Need

Acquisition/Conservation Easement Potential

The Coastal Bend Land Trust is in active discussion with the landowner concerning conservation options for the property. The landowner is interested in selling the property, but does understand the value of preserving the shoreline for wildlife and erosion control.

Restoration/Enhancement Potential

The Aransas River encompasses some of the most contiguous riparian corridor systems in the Texas Coastal Bend. The importance of riparian habitat to migrating neotropical birds increases when in proximity to river deltas. A low grazing management approach is being implemented on the site, therefore, the upland bluff is vegetated and the soil zone unaltered. These factors would increase the restoration success of revegetating the bluff with native brush species. The presence of several stock ponds in the site provides water for cattle, and the restoration area could be fenced without impacting cattle operations.

Education/Outreach Potential

This site could be used as a demonstration project highlighting the restoration activities in riparian/shoreline corridors at the discretion of the landowner.

Goals

To restore riparian corridors along river shorelines and provide essential habitat for migratory neotropical birds.

Objectives

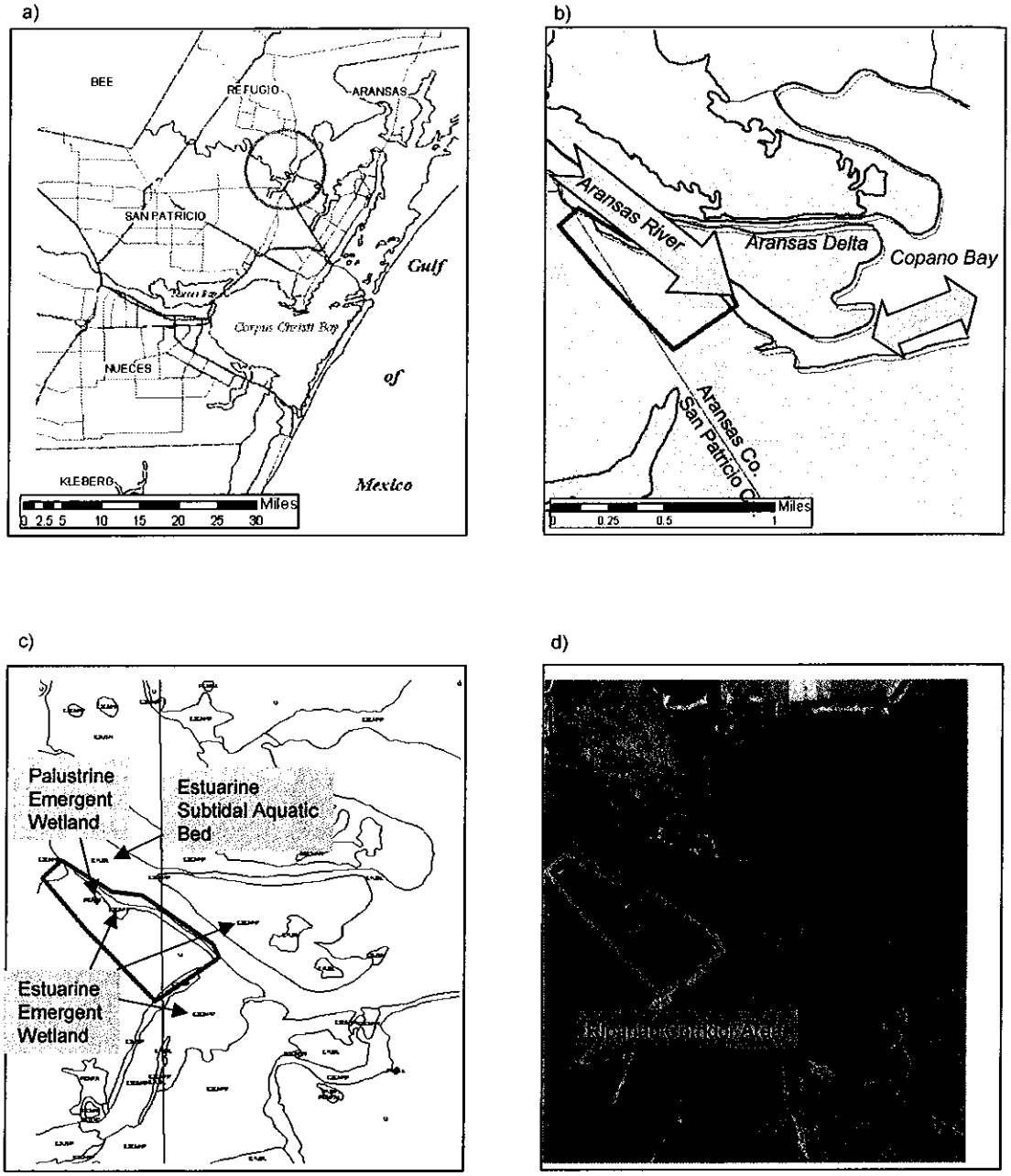
1) Develop planting design of native thorn chaparral plant species and implement planting along a corridor adjacent to Aransas River shoreline;
2) Monitor establishment of species planted, and use by neotropical migratory birds.

Budget

$$ (<$50,000)

Long-Term Plans

Similar restoration and enhancement projects have been implemented in the Lower Rio Grande Valley Corridor restoration program. This project would serve as a demonstration project in the Texas Coastal Bend that identified the importance of riparian systems that serve as essential stopover sites for migratory bird populations.



Project site descriptions for Aransas River Shoreline project depicting a) geographic location within the Texas Coastal Bend; b) hydrologic connection of site within the landscape; c) wetland habitats within the site area; and, d) potential locations for conservation action.

PROJECT SITE DESCRIPTIONS:
BLACK POINT SHORELINE, COPANO BAY

Background Information

Geographic Location

Black Point wetlands are located in Refugio County at the confluence of Aransas River Delta and Copano Bay. The wetland complex comprises the southernmost landform along the shoreline south of the Town of Bayside on FM 136. The project site is located on the eastern portion of the wetlands along Copano Bay.

Habitat Types

The Black Point wetland complex is subdivided into three distinct intertidal flats separated by emergent marsh ridges and connected by narrow tidal creeks. The flats are separated from Copano Bay to the east by a natural, shell hash shoreline that is bisected by a single tidal creek. This creek functions as the hydrologic connection to the bay for the wetland complex, and is routinely scoured tidal fluxes.

Ownership

The wetland complex is currently under private ownership by a single entity. The Coastal Bend Land Trust is currently in negotiations with the landowner for purchase of the wetlands, pending approval of a National Coastal Wetland Conservation Program Grant proposal submitted by Texas Parks and Wildlife in June 2003. The submerged portions of Copano Bay are owned by the State of Texas and managed by the Texas General Land Office.

Introduction

Natural Resource Functions and Values

During low tide conditions, the flats are exposed and support thousands of migrating shorebird populations. At high tides, the flats are flooded with sufficient water depths to harbor wading birds and waterfowl. Feeding activity is generally high during the day as shorebirds probe for benthic invertebrates in exposed flats, and wading bird forage for fish, shrimp, and crabs in the flooded flats and vegetated marshes. The hydrologic connections to Copano Bay and wetlands to the west of FM 136 are well developed through a natural tidal pass and road culvert, respectively. The bay shoreline shell hash and sands are actively reworked by extreme high tides and storm surges, supporting marsh vegetation at the higher elevations. This beach ridge protects the emergent marsh and intertidal flats of Black Point wetland complex.

Justification

Conservation Issues

This site was selected for restoration/enhancement potential for the following reasons: 1) the site can be effectively managed as an interconnected, functioning wetland complex; 2) the site is owned by a single entity interested in conservation and restoration of the wetlands; 3) the site is an important stopover point for migratory shorebirds and waterfowl, as well as site for resident avian species; and, 4) breaching of the bay shoreline into the wetlands will impact the ecologic integrity of the wetland complex.

Need

Acquisition/Conservation Easement Potential

Texas Parks and Wildlife has submitted a proposal to National Coastal Wetland Conservation Program to acquire and transfer ownership to the Coastal Bend Land Trust. If the current proposal is unsuccessful, efforts will continue to obtain funds to acquire or purchase a conservation easement.

Restoration/Enhancement Potential

The vulnerability of the Copano Bay shoreline to erosion is high as a result of onshore waves from southeasterly directions. Previous efforts by the Natural Resource Conservation Service to build onshore bulkheading, riprap, and smooth cordgrass planting has not been successful. offshore protectives measures through placement of a geotube or rock walls in other areas (e.g., COE 128A and 129 sites, Mitchell Energy Corp. creation sites, Shamrock Island, and Causeway Island) have largely been successful in protection shorelines while maintaining their functionality as natural beaches. By constructing an offshore barrier along the Copano Bay shoreline, the Black Point wetlands would maintain their functional integrity while ensuring that shell hash bay beach remains available for intertidal organisms. In addition, it is likely that seagrasses will establish between the offshore barrier and bay shoreline, further increasing habitat diversity in the site. The presence of oyster reefs in Copano Bay also provides the potential of oyster community establishment on the offshore barrier.

Education/Outreach Potential

The Black Point wetland complex is located immediately adjacent to FM 1360, Town of Bayside, and Texas Parks and Wildlife public boat ramp. In addition, the site is part of the Texas Coastal Birding Trail along the Central Coast, and is known for the broad diversity of bird use and viewing accessibility. The landowner has routinely granted permission for access and use in public school and university course programs. The integration of the site as a outreach location at the Wetlands Connection Center of Refugio County will increase education usage of the site.

Goals

To reduce bay shoreline shoreline erosion and protect the ecologic integrity of estuarine wetland complexes.

Objectives

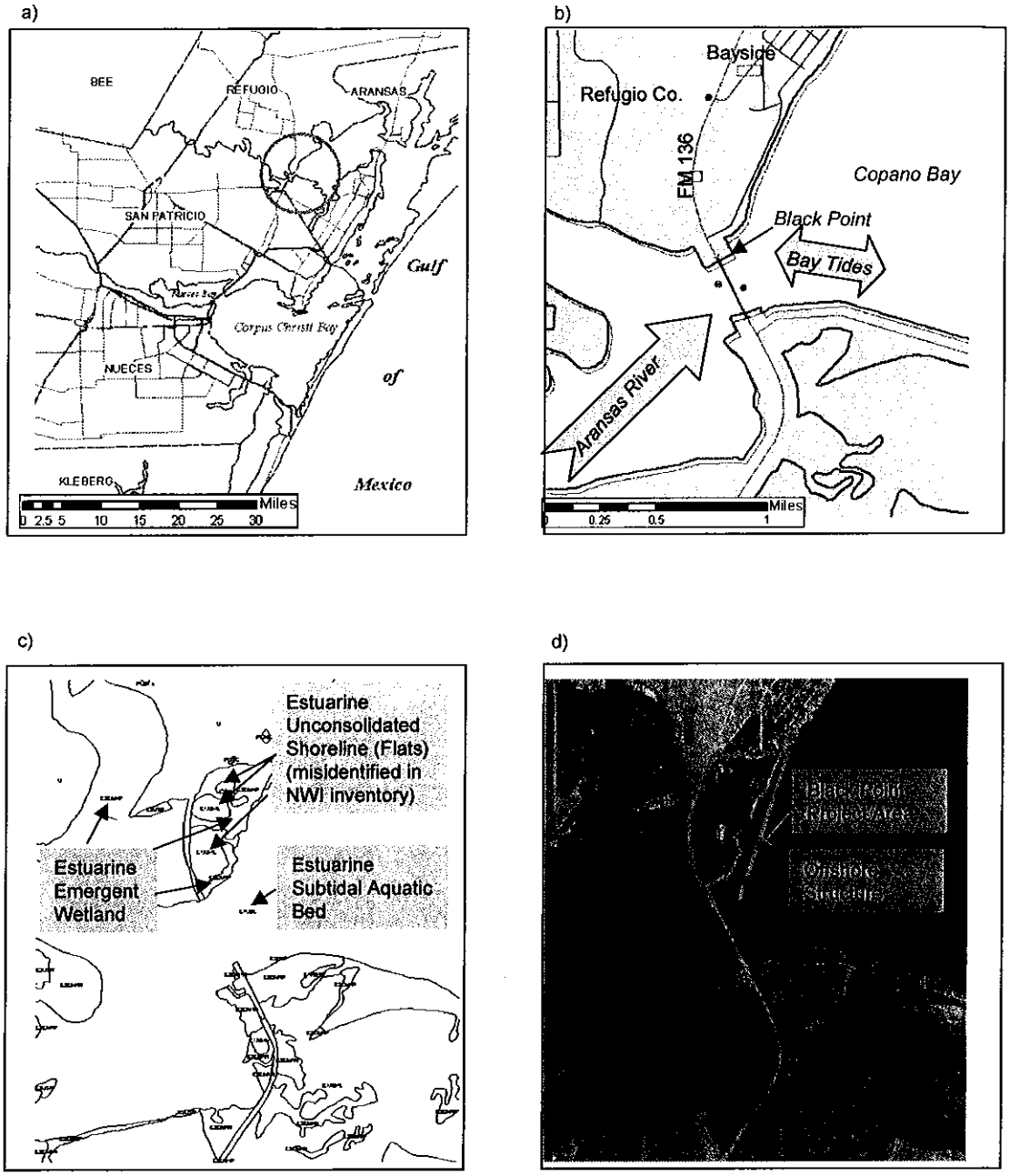
1) Design alternatives for appropriate type of offshore barrier at Black Point wetland complex in Copano Bay; and,
2) Construct offshore barrier that reduces potential of bay beach ridge erosion into Black Point wetland complex.

Budget

$$$ (refer to Causeway Island project costs for estimate)

Long-Term Plans

Similar restoration and enhancement projects have been implemented in the Texas Coastal Bend area. This project would serve as a demonstration project that identified the importance of Copano Bay wetland systems that serve as essential stopover and resident habitats for coastal bird populations.



Project site descriptions for Black Point wetland complex project depicting a) geographic location within the Texas Coastal Bend; b) hydrologic connection of site within the landscape; c) wetland habitats within the site area; and d) potential locations for conservation action.

PROJECT SITE DESCRIPTIONS:
EGERY FLATS, COPANO BAY

Background Information

Geographic Location

Egery Flats wetland complex is located in Aransas County at the confluence of Aransas River Delta and Copano Bay. The project site is located on the northern portion of the wetlands along Copano Bay adjacent to Egery Island Road.

Habitat Types

The Egery Flats wetland complex is comprised of extensive intertidal flats marginally separated by emergent marsh ridges, uplands to the east and south, and a shell hash bay shoreline to the north. The primary wetlands receive tidal waters from two culverts located underneath FM 136 on the western side of the wetland complex. Tidal energy is sufficient to alternately expose and inundate the flats in conjunction with lunar tides, as well as wind-driven tides and flooding from the Aransas River. Several semi-isolated wetland ponds are located on the northern portion of the wetland complex just south of Copano Bay shoreline.

Ownership

The wetland complex is currently under private ownership by several entities. The Coastal Bend Land Trust is currently in negotiations with the primary landowner in the northern area for purchase of the wetlands, utilizing funds from NOAA Coastal Impact Assessment Program. This landowner is well aware of the value of Egery Flats, and currently owns a 3-acre tract under a Conservation Easement managed by the Coastal Bend Land Trust.

Introduction

Natural Resource Functions and Values

During low tide conditions, the flats are exposed and support thousands of migrating shorebird populations. At high tides, the flats are flooded with sufficient water depths to harbor wading birds and waterfowl. Well-developed oyster patch reefs line the bay shorelines adjacent to the road culverts. Feeding activity is generally high during the day as shorebirds probe for benthic invertebrates in exposed flats, and wading bird forage for fish, shrimp, and crabs in the flooded flats, vegetated marshes, and patch reefs. The hydrologic connections to Copano Bay and wetlands to the west of FM 136 are well developed through two road culverts. The bay shoreline is composed of shell hash and sands, and is actively reworked by extreme high tides and storm surges. This beach ridge protects the emergent marsh and intertidal flats of Egery Flats wetland complex. It is

projected that the semi-isolated wetland ponds immediately adjacent to the beach ridge may receive bay waters laterally through the shell hash berm during high tides.

Justification

Conservation Issues

This site was selected for restoration/enhancement potential for the following reasons: 1) the road placement has eliminated tidal connectivity between the larger wetland complex and the wetland ponds; 2) the road is not a major thoroughfare, and is narrow; 3) the ponds provide additional habitat diversity when functioning; and 4) the landowner is interested in restoring and preserving the ecologic integrity of Egery Island wetland complex.

Need

Acquisition/Conservation Easement Potential

The Coastal Bend Land Trust is in active negotiations with the landowner concerning purchase of some wetlands area, and conservation easement actions on the remainder portions.

Restoration/Enhancement Potential

Egery Flats comprise a large expanse of coastal wetlands within the Copano Bay system. The diversity and quality of the habitats is high, primarily due to low development pressure in the area. The placement of Hwy 136 did isolate a major portion of Egery Flats wetland complex, however, the system has maintained functional tidal flats and emergent marshes. The placement of Egery Island road and recent improvements by raising the elevation of the road isolated the coastal ponds from the main wetland complex. The placement of several small culverts beneath Egery Island road would reconnect the ponds with tidal waters and provide an open connection for fisheries to utilize the wetland ponds. This restoration action would also ameliorate the high salinity conditions that prevail much of the time in the isolated ponds.

Education/Outreach Potential

The Black Point wetland complex is located immediately adjacent to FM 1360, Town of Bayside, and Texas Parks and Wildlife public boat ramp. In addition, the site is part of the Texas Coastal Birding Trail along the Central Coast, and is known for the broad diversity of bird use and viewing accessibility.

Goals

To improve water quality to coastal wetlands along bay shorelines and protect the ecologic integrity of estuarine wetland complexes.

Objectives

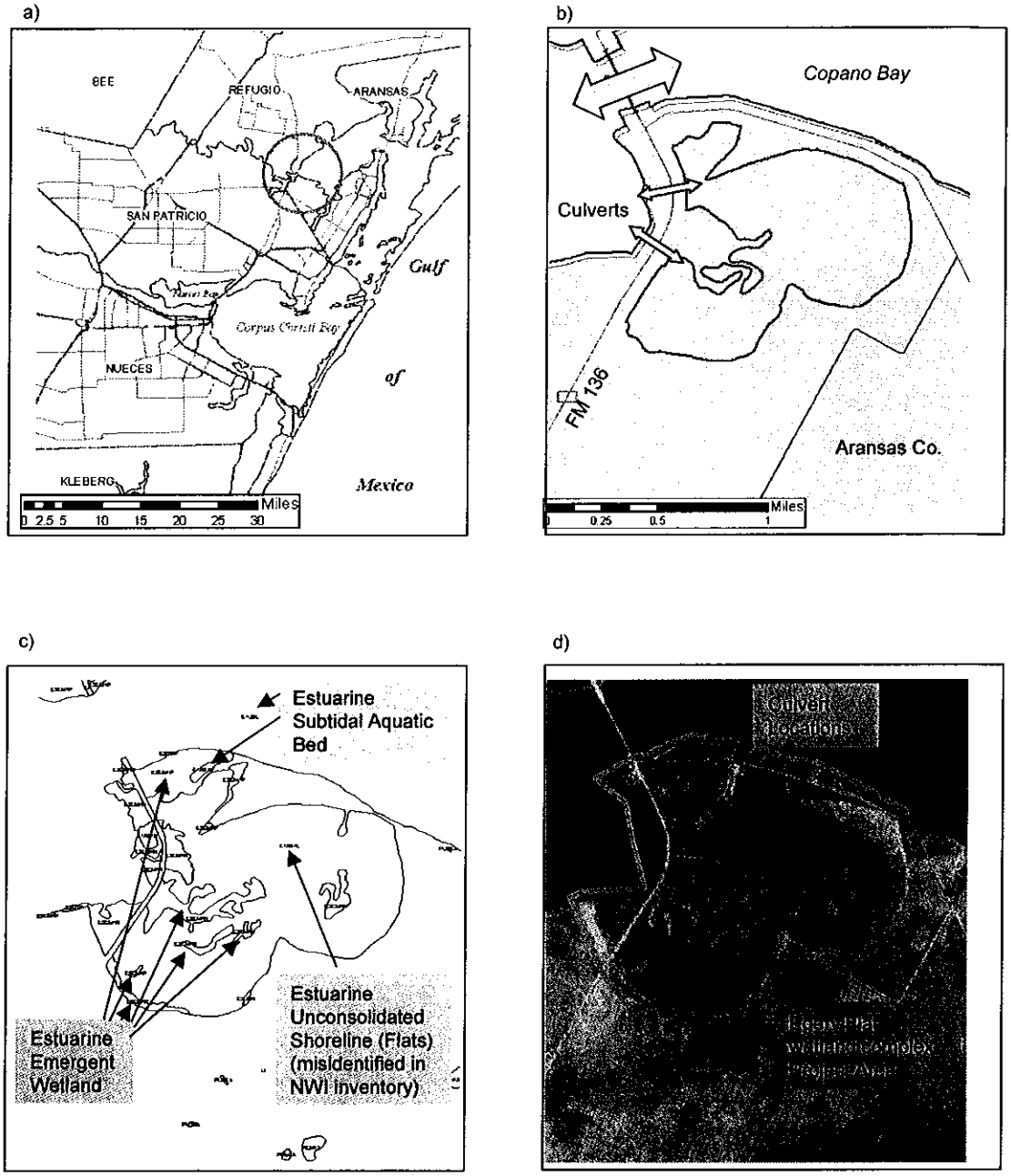
1) Design and install culverts at locations that will provide appropriate water exchange between Egery Flats wetlands and isolated wetland ponds along Egery Island Road in Copano Bay;
2) Provide demonstration project that identifies the need for maintaining wetland system integrity and assist willing landowners to conserve coastal natural resources.

Budget

$$ (<$50,000)

Long-Term Plans

Similar restoration and enhancement projects have been implemented in the Texas Coastal Bend area. This project would serve as a demonstration project that identified the importance of Copano Bay wetland systems that serve as essential stopover and resident habitats for coastal bird populations.



Project site descriptions for Egery Flat wetland complex wetland complex project depicting a) geographic location within the Texas Coastal Bend; b) hydrologic connection of site within the landscape; c) wetland habitats within the site area; and d) potential locations for conservation action.

PROJECT SITE DESCRIPTIONS:
SOUTH OF FRANCINE COHN PRESERVE, MUSTANG ISLAND

Background Information

Geographic Location

Francine Cohn Preserve is located on the eastern shoreline of Corpus Christi Bay on Mustang Island

Habitat Types

The Preserve encompasses shell hash, bay shorelines, intertidal flats and seagrass beds, as well as vegetated flats on the upland portions to the east. An intertidal pass is located on the northern extent of the property, connecting bay tidal water with Croaker Hole. This pass is well established and maintains constant interchange even during extreme low tides. Tidal influence is governed by bay tidal ranges, although increases in water levels often exceed lunar tides during occasional winter frontal passes. Conversely, water levels can be diminished by persistent, southeasterly winds pushing water away from the eastern Corpus Christi Bay shoreline.

Ownership

Francine Cohn Preserve is owned and managed by The Nature Conservancy of Texas. Acquisition of the Preserve was accomplished by an initial donation in 1999 by Marcus Cohn (22 acres) and purchase of the remaining lands (278 acres) through assistance from the Coastal Bend Bays and Estuaries Program, Inc., Koch Refining, and Citgo Petroleum Corporation The adjacent uplands and estuarine wetlands are privately owned by several landholders.

Introduction

Natural Resource Functions and Values

The Preserve is part of an ongoing effort by TNCT to protect ecological functions and values of the wetland and tallgrass coastal prairie systems of South Texas barrier islands. The 300-acre preserve is considered an important starting point to protect natural resources from coastal development, habitat fragmentation, point and nonpoint source pollution, off-road vehicle use, and loss of wetlands. The intertidal flats are essential to migrating and resident shorebirds, and vegetated marshes and shallow shoreline habitat provide foraging areas for wading birds. Redhead ducks and other waterfowl heavily utilize the lagoons during fall and spring migration. These habitats also provide habitat for juvenile and commercially important fisheries.

Justification

Conservation Issues

This site was selected for this study for several reason: 1) the site is large enough to be managed as a system; 2) alterations to water flow have occurred through the construction of a raised shell road with degraded culverts; and, 3) the landowner and adjacent landowners were interested in hydrologic restoration in conjunction with their road development plans. These road eliminates or minimizes to a large degreee water flows between two estuarine tidal lagoons along the bay shoreline

Need

Acquisition/Conservation Easement Potential

The Nature Conservancy is in active contact and dialogue with adjacent landowners addressing common management needs and strategies to maintain and enhance this back island system.

Restoration/Enhancement Potential

The site was evaluated for hydrologic restoration by the Center for Coastal Studies (CCS), Texas A&M University-Corpus Christi through a contract with the U.S. Fish and Wildlife Service. Culvert design and placement was completed utilizing this information, funded through a cooperative partnership of NOAA, US.FWS, CBBEP, TNC, and CCS. Monitoring of these improvements is essential and required within TNC management protocol.

The road leading to the Corpus Christi Bay and other private lands is located south of the Francine Cohn Preserve. Whereas tidal connectivity was originally functioning in the original restoration location, this southern road severely impedes tidal inflow and outflow from the wetlands to the south and eliminates the connectivity of the wetland to the bay waters. Existing culverts placed in the road are deteriorated and partially crushed. Elevation and tidal parameters are similar in both sites, therefore, the design developed for the Francine Cohn Preserve road could be modified for implementation in the south road. Water-level monitors should be placed on the north and south ends of the enhanced culvert area to assist in monitoring the project success.

Education/Outreach Potential

Roads that are constructed across wetlands and compartmentalize waters have impacts on wetland productivity and functional quality. This project would demonstrate best management practices employed on both conservation and private lands that benefit the natural resources and landowner access. The information gained from the monitoring program would be useful in implementing a similar approach at other sites in the Texas Coastal Bend.

Goals

To restore tidal flow to back-barrier island wetlands and lagoons and increase habitat diversity, productivity , and wildlife use.

Objectives

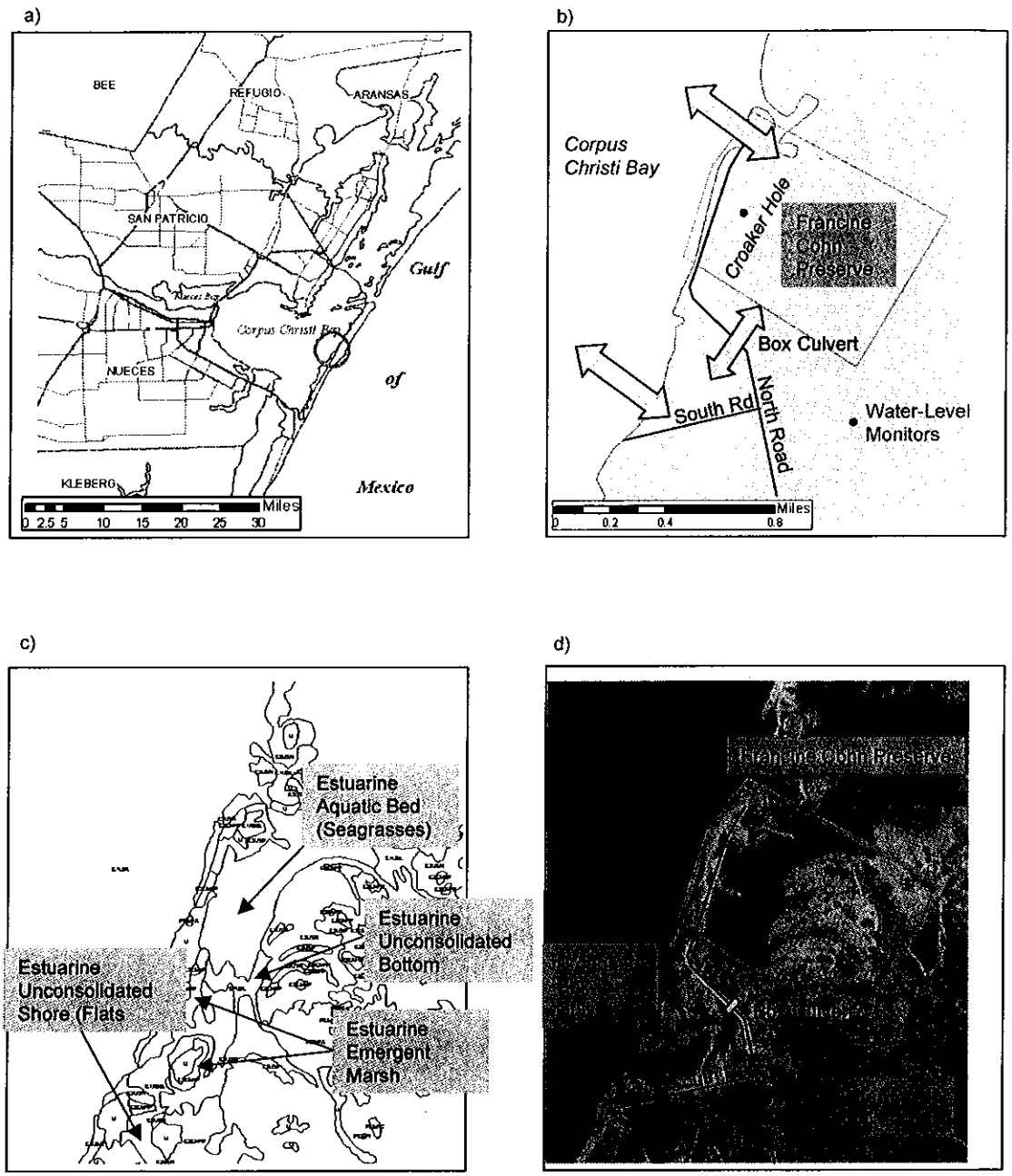
1) Design and construct culvert system on south road that increases tidal flow to isolated back-barrier wetland
2) Monitor success of restoration to provide recommendations to other similar wetland restoration project;

Budget

$$ - (<$50,000)

Long-Term Plans

Restoration and enhancement projects have been implemented in a variety of habitats and locations within the Texas Coastal Bend. This project site would serve as a demonstration of hydrologic restoration practices to restore wetland functions through partnerships private landowners, conservation organizations, and natural resource agencies.



Project site descriptions for Francine Cohn Preserve and surrounding wetland complex depicting a) geographic location with Texas Coastal Bend; b) hydrologic connection of site within the landscape; c) wetland habitats within the site area; and, d) potential locations for conservation action.

PROJECT SITE DESCRIPTIONS:
REDHEAD POND

Background Information

Geographic Location

Redhead Pond is located within the city limits of Corpus Christi, Texas, adjacent to upper Laguna Madre ecosystem. The area was initially prioritized for conservation as a traditional freshwater pond for wintering Redhead ducks. An estimated 10,000 individuals (10% of the continental population) utilized the pond each winter for decades as a fundamental source of drinking water, particularly during drought years. The proximity of the pond to upper Laguna Madre was particularly important, as Redheads feed almost exclusively on one species of seagrass, shoalgrass, which is predominant in this hypersaline lagoonal system.

Habitat Types

Redhead Pond is described as a palustrine wetland that holds water most years. The wetland is located adjacent to estuarine seagrass beds, and is also connected to drainage system of Flour Bluff, receiving some amounts of stormwater drainage. It is in close proximity to other palustrine and estuarine coastal ponds.

Ownership

The landowners of the property were interested in selling the pond and associated uplands in the interest of long-term conservation. Further discussions were initiated with adjacent landowners and The Nature Conservancy of Texas, U.S. Fish and Wildlife Service, and Texas Parks and Wildlife Department. The property was purchased by The Nature Conservancy, in part with a grant of $30,000, to Ducks Unlimited Foundation from the National Fish and Wildlife Foundation in 1990, as leveraging funds for the North American Waterfowl Management Plan program. Matching funds of $30,000 each was by provided Texas Parks and Wildlife Department, Ducks Unlimited, and The Nature Conservancy of Texas. An endowment ($40,000) was established by the National Fish and Wildlife Foundation to assist in permanent management of the property. The Nature Conservancy transferred the property to Texas Parks and Wildlife Department while retaining the conservation easement. Texas Parks and Wildlife developed a management plan to be primarily implemented by National Audubon Society, in conjunction with volunteer assistance by the Nature Conservancy, Ducks Unlimited, and local citizens.

Introduction

Natural Resource Functions and Values

The importance of Redhead Pond to Redhead ducks has been established historically, as an essential source of dietary freshwater. The wetland also receives stormwater drainage, and functions as a sink for that water. Wetland plants provide water quality improvement within the pond system. A overlook boardwalk was constructed to allow visitors safe access to the pond for birdwatching. The site is also used as an educational site for Flour Bluff ISD Adopt-a-Wetland teams.

Justification

Conservation Issues

The area was initially prioritized for conservation as a traditional freshwater pond for wintering Redhead ducks. An estimated 10,000 individuals (10% of the continental population) utilized the pond each winter for decades as a fundamental source of drinking water, particularly during drought years. The proximity of the pond to upper Laguna Madre was particularly important, as Redheads feed almost exclusively on one species of seagrass, shoalgrass, which is predominant in this hypersaline lagoonal system.

During the initial period when Redhead Pond was being acquired through the partnering agencies and conservation organizations, a hydrologic and ecologic survey was conducted. Salinities in the pond were typically below 10 ppt (parts per thousand), which was an appropriate source of drinking water for Redheads. A two-year monitoring survey was undertaken by the U.S. Geological Survey to assess water quality during and after the use of the ponds by thousands of ducks. They concluded that water quality was can be significantly impacted by high duck use but, generally recovers with enough rainfall. They recommended developing a flow-through water system for ponds that are utilized heavily.

During a period around mid-1990s, anecdotal accounts that a dramatic change occurred in the pond system. Ducks were no longer using the pond, the cattail surrounding the pond died, and no surface water was present during drier periods. Salinities were taken over the next several years, and were much higher than recorded when the pond was actively used by waterfowl. It appeared that the hydrology had changed, either through a drop in the water table, shifts in stormwater drainage management in the area, and/or a surface or subsurface connection with the Laguna Madre waters. The large numbers of redheads have not been observed for several years. A significant effort was undertaken by the original landowners, participating agencies and conservation organization undertook to conserve this important natural resource. It's geographic position along the Laguna Madre shoreline increases the importance of the wetland to long-term sustainability of Redhead populations. In addition, the location within an urban setting and adjacent to Flour Bluff Independent School District school and proposed FBISD

Laguna Madre Coastal Environment Lab provides an opportunity for a community-based restoration and education outreach approach.

Need

Acquisition/Conservation Easement Potential

Texas Parks & Wildlife Department owns the property, and the Conservation Easement is managed by The Nature Conservancy of Texas. TPWD is interested in transferring the title to a nonprofit organization, and efforts to establish a stewardship fund are ongoing.

Restoration/Enhancement Potential

The restoration of water quality parameter to <13 parts per thousands should be high priority for use by Redhead ducks. The perimeter of the wetland is surrounded by invasive shrubs, and management of these invasives would improve the habitat quality of the wetland site.

Education/Outreach Potential

The site has been used for education/monitoring purposes for Flour Bluff ISD, and should be incorporated into a coastal pond education/research system that allows the comparison of water quality and wildlife use by students.

Goals

1) Develop and implement long-term conservation strategies to enhance the living marine resources along upper Laguna Madre, Texas, including high priority species such as Redhead ducks, neotropical migrants, shorebirds and wading birds, in a watershed approach that includes freshwater and estuarine wetlands and upland vegetation communities.
2) Develop a community-based conservation program that will provide ongoing, participatory involvement in the stewardship of Laguna Shores Wetland Community.

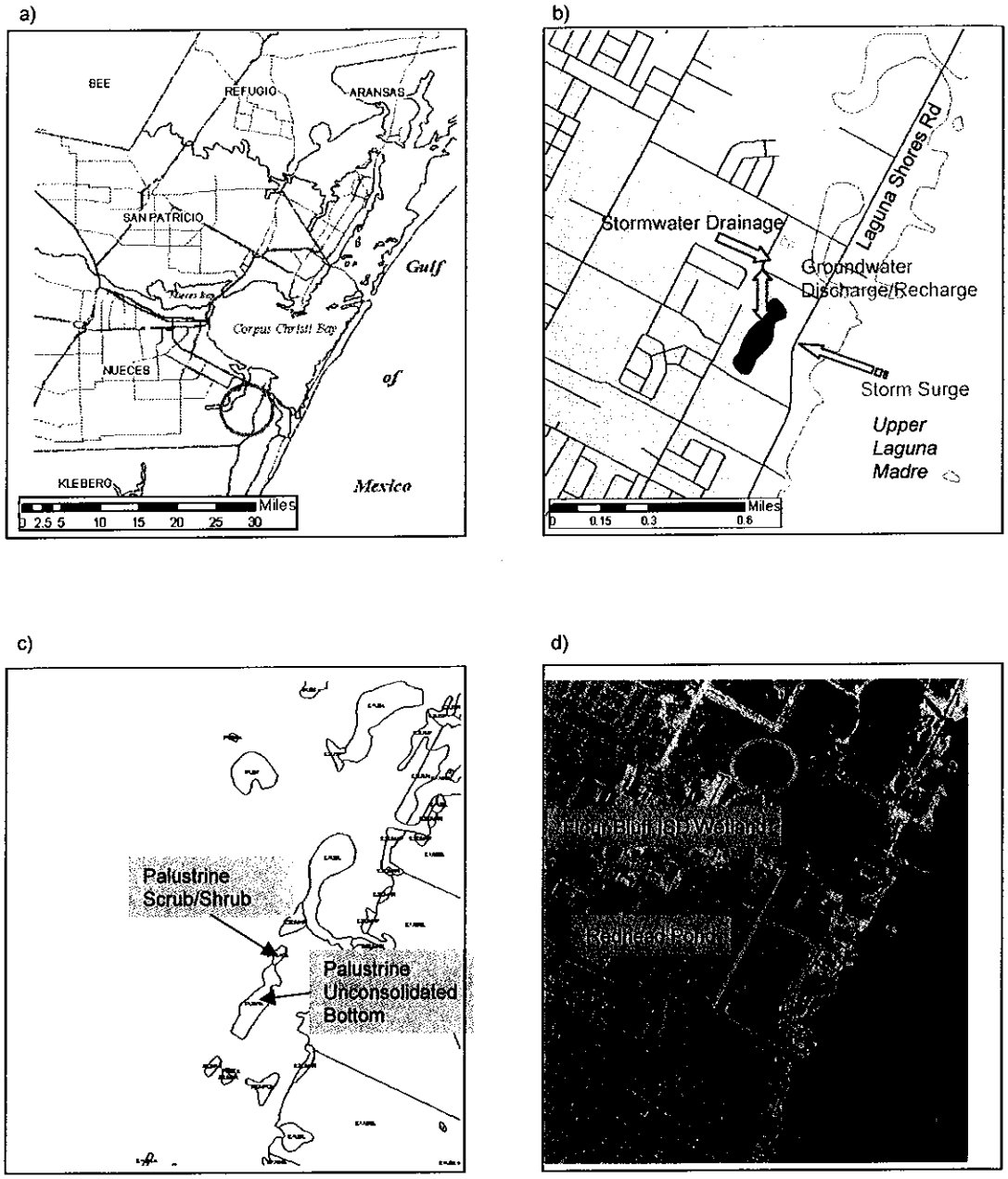
Objectives

1) Design a technically feasible approach that provides pertinent hydrologic, biological and engineering data necessary for developing restoration alternatives.
2) Establish a community-based restoration team composed of public schools, academic institutions, conservation and civic organizations, and agency biologists.
3) Implement water appropriate restoration strategies to improve water and habitat quality in Redhead pond, and monitor success

Budget $$$ (<$100,000)

Long-Term Plans

Redhead Pond serves as a prime example of multiple partnerships interested in achieving a common conservation goal. The evaluation, restoration, and monitoring of the site can be incorporated into learning programs at Flour Bluff Independent School District and Texas A&M University-Corpus Christi. The site is highly visible to the public and community participation should be encouraged as monitors and stewards. Interpretive signage explaining the importance of these habitats would further increase public awareness of Texas Coastal Bend residents and visitors.



Project site descriptions for Redhead Pond depicting a) geographic location with Texas Coastal Bend; b) hydrologic connection of site within the landscape; c) wetland habitats within the site area; and, d) potential locations for conservation action.

PROJECT SITE DESCRIPTIONS:
CORPUS CHRISTI BOTANICAL GARDENS

Background Information

Geographic Location

The Corpus Christi Botanical Gardens is located along the lower portion of Oso Creek watershed within the Corpus Christi City limits. The Gardens property shares boundaries with a residential subdivision, agricultural field, and South Staples Street.

Habitat Types

The Gardens encompass a diversity of habitat types that are representative of the Oso Creek watershed, including thorn scrub chaparral, coastal prairie, and estuarine and freshwater (palustrine) wetlands. The site has been enhanced with demonstration gardens, as well as native plantings for birds and butterflies. The large estuarine wetland, Cordgrass Wetland, has been enhanced by constructing a earthen levee and water-control structure designed to retain stormwaters and increase availability of water to wildlife. The wetland also serves as a biofilter for stormwater from adjacent drainages. The palustrine wetland, Gator Lake, receives water from street drainage, providing similar functions as Cordgrass Wetland.

Ownership

The land is owned by the City of Corpus Christi and leased to The Botanical and Nature Institute of South Texas, the entity that manages the Corpus Christi Botanical Gardens.

Introduction

Natural Resource Functions and Values

The Cordgrass Wetland receives stormwaters from the surrounding uplands as well as overbank flooding from Oso Creek during significant rainfall events. This function is important for desynchronizing flood velocities and temporary retention of floodwaters. The establishment of the levee was designed to maximize the potential to retain waters within the wetland for wildlife and to increase plant diversity across topographic zones.

Justification

Conservation Issues

After the funding was approved for the Cordgrass Wetland enhancement, the City of Corpus Christi excavated a new stormwater ditch draining into the western portion of the wetland. Best management practices were not employed after excavation, including revegetation, silt fencing, or refuse trap devices. After the first significant rainfall

occurred, stormwaters were channeled through this ditch and substantial channel erosion occurred. The sediment was deposited within the Cordgrass Wetland, covering both intertidal flats and vegetated marsh. This alluvial fan continued to develop with each successive rainfall, until a topographic berm became established at the base of the ditch and confluence of the wetland. Refuse and trash are also deposited in the enhanced wetland, degrading the aesthetic quality of the site. Without any vegetative biofilter in place, the untreated stormwaters are retained within the wetland for varying periods of time.

Need

Acquisition/Conservation Easement Potential

N/A

Restoration/Enhancement Potential

The recontouring of the eroded ditch and establishment of native vegetation should be implemented within this stormwater ditch. A trash collection structure should be constructed within the ditch to eliminate trash from flushing into the wetland. An evaluation of the sediment deposited in the wetland should be undertaken to determine if this soil can be used in recontouring the ditch. An evaluation of the impacts from the soil deposited in Cordgrass Wetland should be conducted to determine if remediation is necessary.

Education/Outreach Potential

Stormwater drainage systems are necessary in urban development infrastructure. However, efforts to minimize degradation of wetlands and creeks receiving the stormwater should be a high priority. Restoration of the Corpus Christi Botanical Gardens ditch would provide a good example of best management practice implementation. In addition, the project would provide a demonstration of a partnership among the City of Corpus Christi, developers, natural resource agencies, and environmental organizations.

Goals

To maintain and enhance water quality, wetlands, and wildlife habitat within the Oso Creek Watershed.

Objectives

1) To develop sound management and construction guidelines and practices so that stormwater drainage systems do not degrade natural systems.
2) To implement best management practices in the Corpus Christi Botanical Gardens drainage ditch flowing into Cordgrass Wetlands

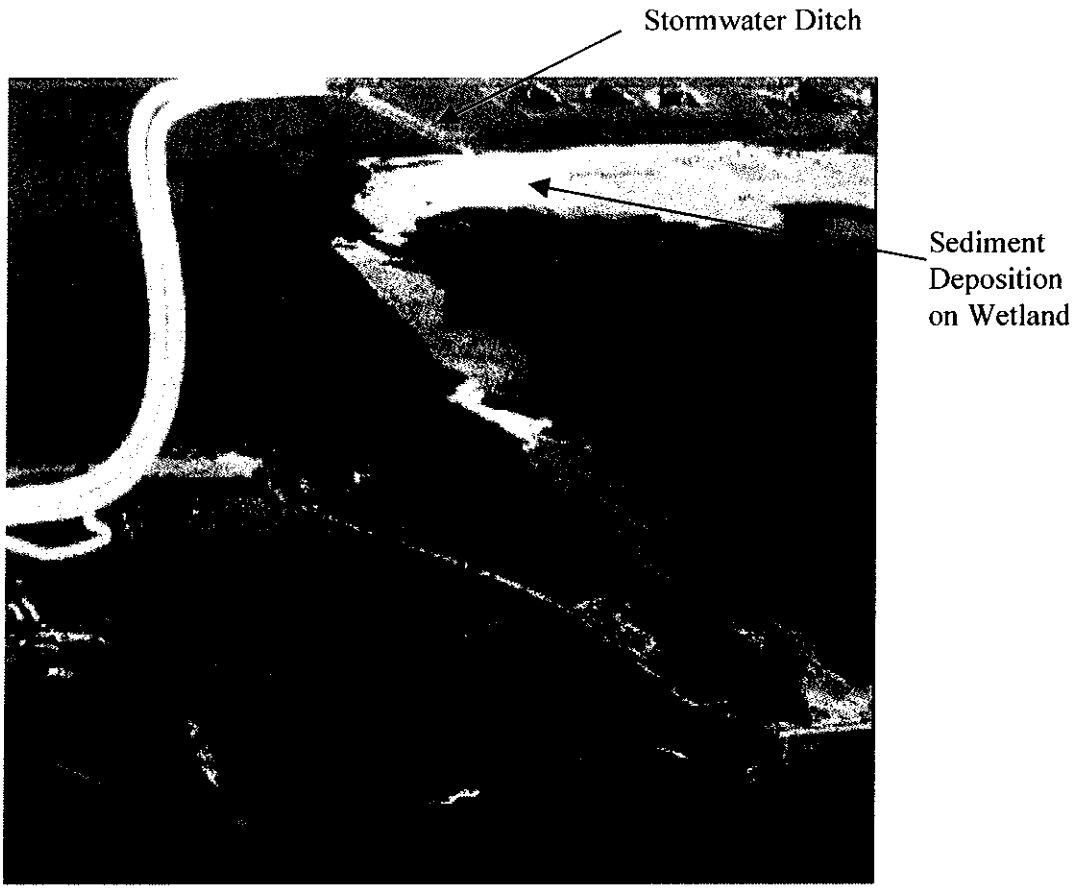
3) To establish a demonstration area and interpretive materials to increase public awareness about environmentally sound practices in drainage systems

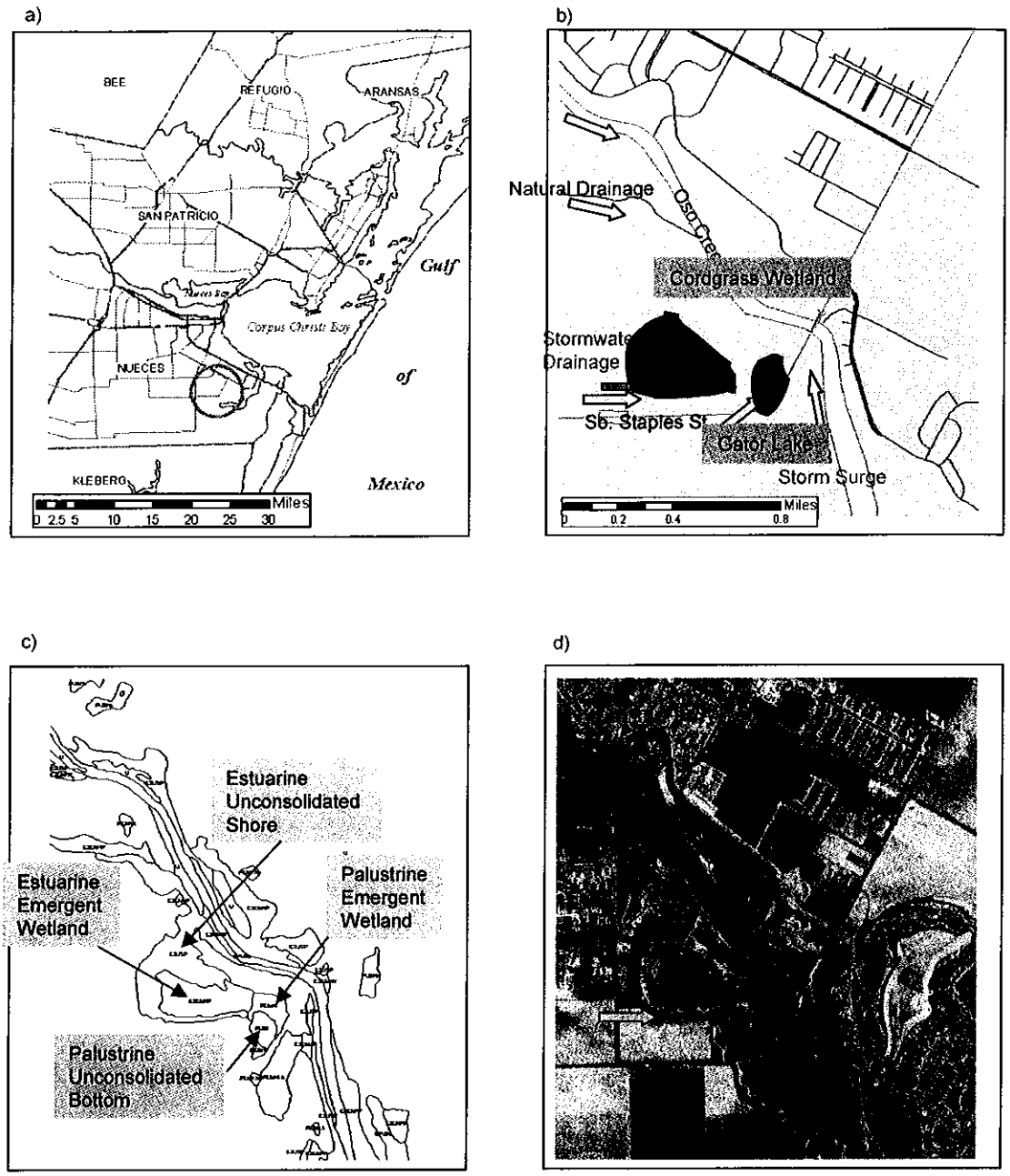
Budget

$$ (<$50,000)

Long-Term Plans

Since this approach is fairly new to South Texas, monitoring the effectiveness of the project is essential to continue implementing the practices throughout the drainage area.





Project site descriptions for Corpus Christi Botanical Gardens depicting a) geographic location with Texas Coastal Bend; b) hydrologic connection of site within the landscape; c) wetland habitats within the site area; and, d) potential locations for conservation action.

PROJECT SITE DESCRIPTIONS:
INDIAN POINT PENINSULA

Background Information

Geographic Location

Indian Point is located on the northern portion of Corpus Christi Bay at the confluence of Nueces Bay. Then land portion of the peninsula is within San Patricio County, whereas most of the submerged bay portions are within Nueces County.

Habitat Types

Indian Point peninsula is an elongate landform encompassing a large portion in estuarine wetlands, including bay shorelines, vegetated marshes, unvegetated tidal flats, coastal ponds, and a large excavated lake (Sunset Lake) located adjacent to Hwy. 181. Seagrass meadows are located in the bays along most of the shorelines.

Ownership

Indian Point is owned by the City of Portland east of Hwy. 181, and several private landowners on the area west of Hwy. 181. The Texas General Land Office owns and manages the submerged portions of the bay surrounding the peninsula.

Introduction

Natural Resource Functions and Values

Indian Point comprises a broad diversity of coastal habitats that are heavily used by migrating and resident wildlife. The shorelines support a variety of shorebirds, including the piping and snowy plover, listed species of concern. The redhead duck utilizes the seagrass meadows for foraging on shoalgrass. Wading birds and shorebirds feed in the coastal ponds within the interior of the peninsula and wading birds are often sighted in the intertidal smooth cordgrass marshes in Nueces Bay.

Justification

Conservation Issues

This site was selected for this study for several reason: 1) the site is large enough to be managed as a system; 2) the eastern portion of the peninsula is managed for wildlife viewing outdoor recreational uses; and, 3) the project area has been altered significantly and has potential for broad-scale restoration actions.

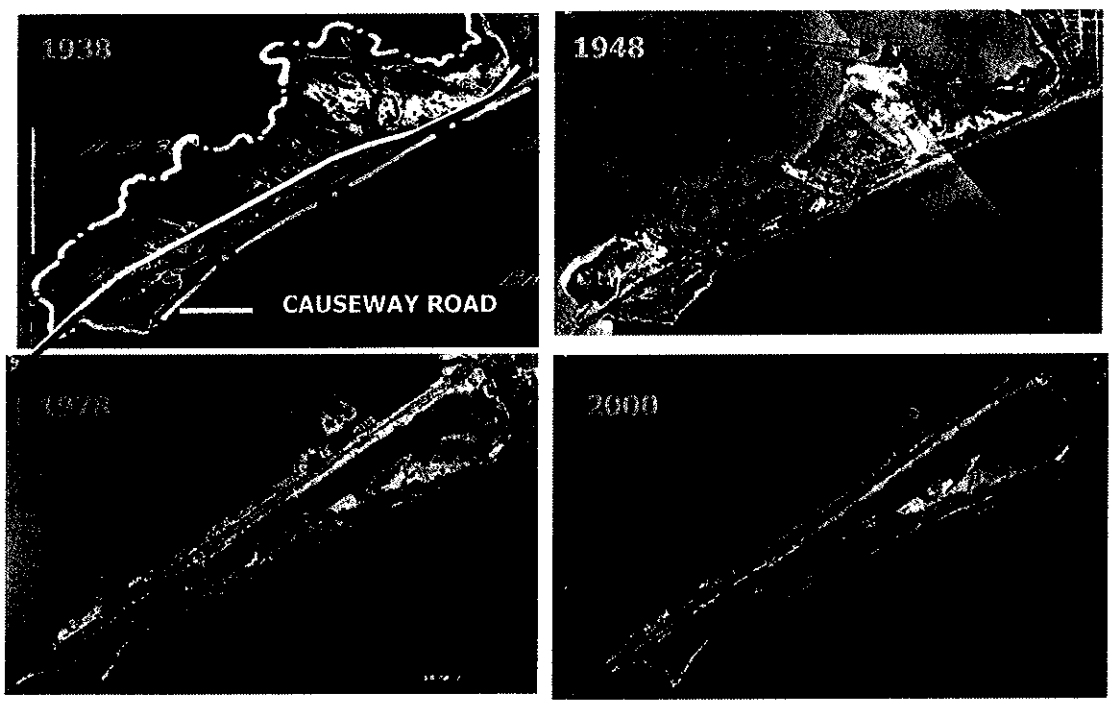
Need

Acquisition/Conservation Easement Potential

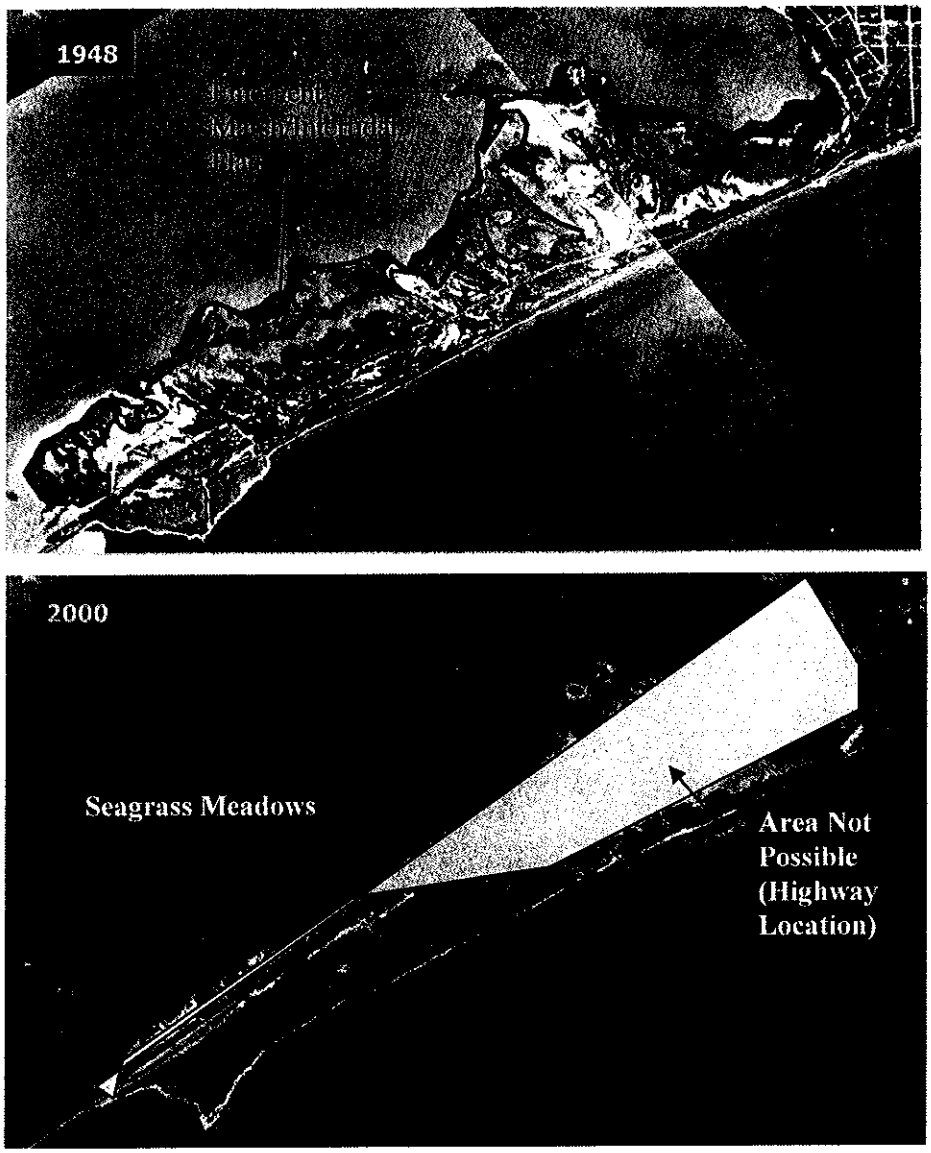
The project site is located primarily within the jurisdiction of Texas General Land Office, although one portion is privately owned northwest of the hotel and RV park. Acquisition of this portion would be a primary task.

Restoration/Enhancement Potential

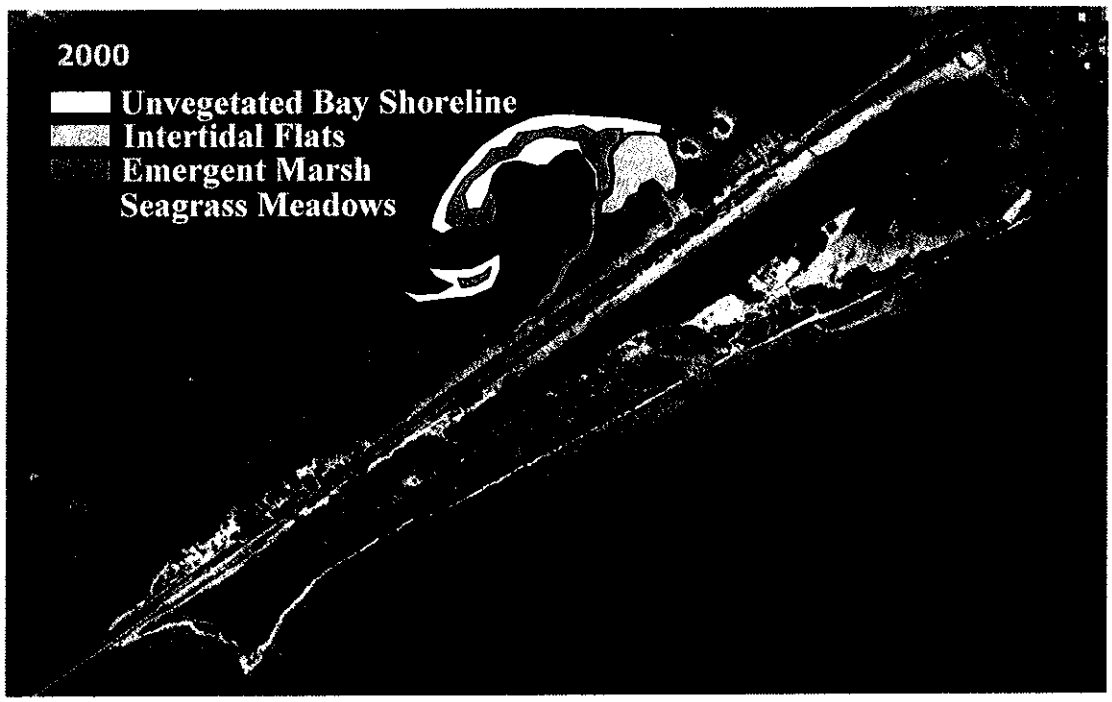
Alteration of Indian Point was evident in early aerial imagery, as the railroad, original causeway, and road to Indian Point were already constructed in 1938. Dredged material deposits and channel excavation for oil and gas exploration were evident in 1948. An improved highway was constructed along the length of peninsula effectively isolating the habitats on either side. Sunset Lake was formed through the excavation of materials for use as the highway roadbase. The lake was minimally influenced by tidal exchange through a small culvert beneath the highway near the motel site. The highway improvements currently underway include a larger culvert to improve water exchange to Sunset Lake. Other improvements to improve water quality were implemented in 2001 by increasing water exchange with Corpus Christi Bay via a channel and exchange between Sunset Lake and coastal ponds through two small culverts beneath the hike and bike trail.



The erosion that has continued along the western shoreline of Indian Point has decreased the areal extent of emergent marsh and tidal flat habitat. Much of the irregularly flooded flats at the higher elevations was lost with the construction of Hwy. 181 and excavation of Sunset Lake. An overlay of habitat from 1948 on 2000 imagery highlights the major changes that have occurred on the peninsula. The areas within the pale blue box cannot be restored, and are not considered as part of the potential restoration project. In addition, seagrass meadows have established along the westernmost areas of the Nueces Bay shoreline and should not be destroyed to create emergent marsh habitat.



Creation of additional shoreline along the existing small peninsula extending offshore from the western shoreline would provide additional bay shoreline and emergent marsh habitat. In addition, the landform would protect the subtidal bay bottom from north winds, thus improving water clarity. It is expected that seagrass meadows would establish in this protected area as water depth are less than five deep. An additional island(s) could be constructed to increase protection of the embayments well as a potential nesting and loafing site for colonial waterbirds.



Education/Outreach Potential

This creation/restoration design would increase the coastal habitat area for migrating and resident wildlife. The increase in seagrass meadow extent would be beneficial as a nursery for fisheries and foraging area for redhead ducks. Since the majority of the peninsula is set aside for public uses, this area could be designated as a preserve for viewing only, thereby serving as an example to the public of partitioning natural resources in a way that is beneficial to wildlife and people.

Goals

To increase coastal habitat complexes and maintain habitat diversity, productivity, and wildlife use.

Objectives

1) Develop creation and restoration alternatives on western shoreline of Indian Point Peninsula
2) Create and restore wetland complexes that collectively will increase coastal habitat extent in Texas Coastal Bend

Budget

$$$$ - (<$1,000,000)

Long-Term Plans

Restoration and enhancement projects have been implemented in a variety of habitats and locations within the Texas Coastal Bend. However, this project would provide an ecosystem approach to restoration. The project would be designed to allow phased development, and could be funded by multiple sources.

Date: 8 May 2003
To: Ray Allen
From: Liz Smith
Cc: Kendal Keyes, Leo Trevino, Joan Holt
Re: Preliminary List of Potential Restoration Sites in CBBEP Area

From: Teresa Carrillo
To: KK CBBEP

Please find attached a list of potential sites we have identified as priority areas for restoration, most of which are site specific and should be within $25,000-100,000 range. We note one exception, Site 12, which is a major restoration project sites and suggested in the context of landscape-level design example.

Site ID refers to the attached map to show general location of the potential project.
Project Name identifies the site by generally known geographic point.
Issue/Concern highlights the source of habitat degradation.
Habitat Focus identifies the major type of habitat altered and to be restored.
Ownership identifies the immediate landowner, or future landowner if title transfers are being negotiated. Please note that in all cases listed, private landowners have initiated an interest in restoration being conducted on their property.
Immediate Action generally lists the type needed in the next 1-2 years.
Long-term Action generally lists the type needed in next 5+ years.

In the interest of space, the information given summary achieves three objectives:

1) Identify sites to be considered in the FY2004-2005 funding cycle.
2) Provide information to generate discussion/clarification about particular sites of interest to CBBEP.
3) Allow additional sites to be added by the PAC of this project and STAC of CBBEP.

Please feel free to contact John Wood via e-mail: jwood@falcon.tamucc.edu with questions, additional suggestions, etc. during my absence 13-27 May. He will be able to solicit and summarize your potential sites into a comprehensive list. The current project will continue to refine the potential list and incorporate into a GIS layer for CBBEP. We are planning a PAC meeting in early June to continue the process.

Kendal - I forgot I have a 2:00 PM appt to go over the Nature Tourism Proposal. See my add'l comments for #15 & 20, & 17 & 18

Map ID	Project Name/Location	Issue/Concern	Habitat Focus	Ownership	Immediate Action	Long-term Action
1	Refugio Kayak Launch	managed access	riparian corridor	City of Refugio (soon?)	planning/design	preservation/reestablishment of native species
2	Invasive Species-Water Lettuce	uncontrolled spread	Palustrine habitat	Private	design/implement management practices demonstration project	
3	Black Point -So. Bayside	Shoreline Erosion	Wetland Protection - 150 ac Intertidal Flat	Private	Planning/Design	Construct offshore barrier
4	Egery Island Road Copano Bay	Hydrologic Alteration	Coastal Pond	Private	design/culvert placement	
5	Memorial Park	Limited Wetland Fringe	Palustrine habitat	City of Rockport	design/recontour slopes/plant	
6	Whitney Lake-Ingleside	Wetland Diversity	Palustrine habitat	City of Ingleside (soon?)	Planning/Design	establish vegetation along recontoured wetlands
7	Buccaneer Cove-Aransas Delta	Hydrologic Alteration	Intertidal Wetland	Coastal Bend Land Trust (soon?)	planning/removal or burying pipeline	
8	Aransas Delta Shoreline	vegetation diversity	transitional prairie	private	fencing/planting native species	
9	Rincon Bend Aransas River	Hydrologic Alteration	Palustrine habitat	private	planning/design to remove drainage ditch	recontouring to increase vegetation diversity
10	Hwy 77 Roadside Park	create wetland habitat	Palustrine habitat	TXDOT?	planning/design	recontour upland to create wetland for observation
11	Hwy 188/77 Expansion	highway expansion over pond	Palustrine habitat	private?	planning/design	relocate/expand existing pond into public viewing area
12	Indian Point-Nueces Bay	estuarine wetland loss	vegetated marsh	TGLO?	planning/design	reestablishment of bay peninsula/islands with emergent marsh and flats
13	Charlie's Pasture-Port Aransas	stormwater drainage	palustrine/estuarine	leased?	planning/design	beneficial use of stormwater management into wetlands
14	Francine Cohn Preserve-Mustang Island	Shoreline Erosion	bay shoreline	TNC	planning/design	soft shoreline protection practice (planting?)
✶15	Invasive Species - Ward Island	uncontrolled spread of brazilian pepper, etc.	shoreline buffer	TAMU-CC	removal of invasive species	reestablishment of native species - demonstration project
16	Botanical Gardens-CC	stormwater drainage	Palustrine habitat	City of CC	siltation control demonstration	
✶17	May Property - Oso Creek	Shoreline Erosion	bay shoreline	Coastal Bend Land Trust	recontouring gullies/reestablishment	

— Good project for NRCS partnership & Volunteer work w/ CBBF

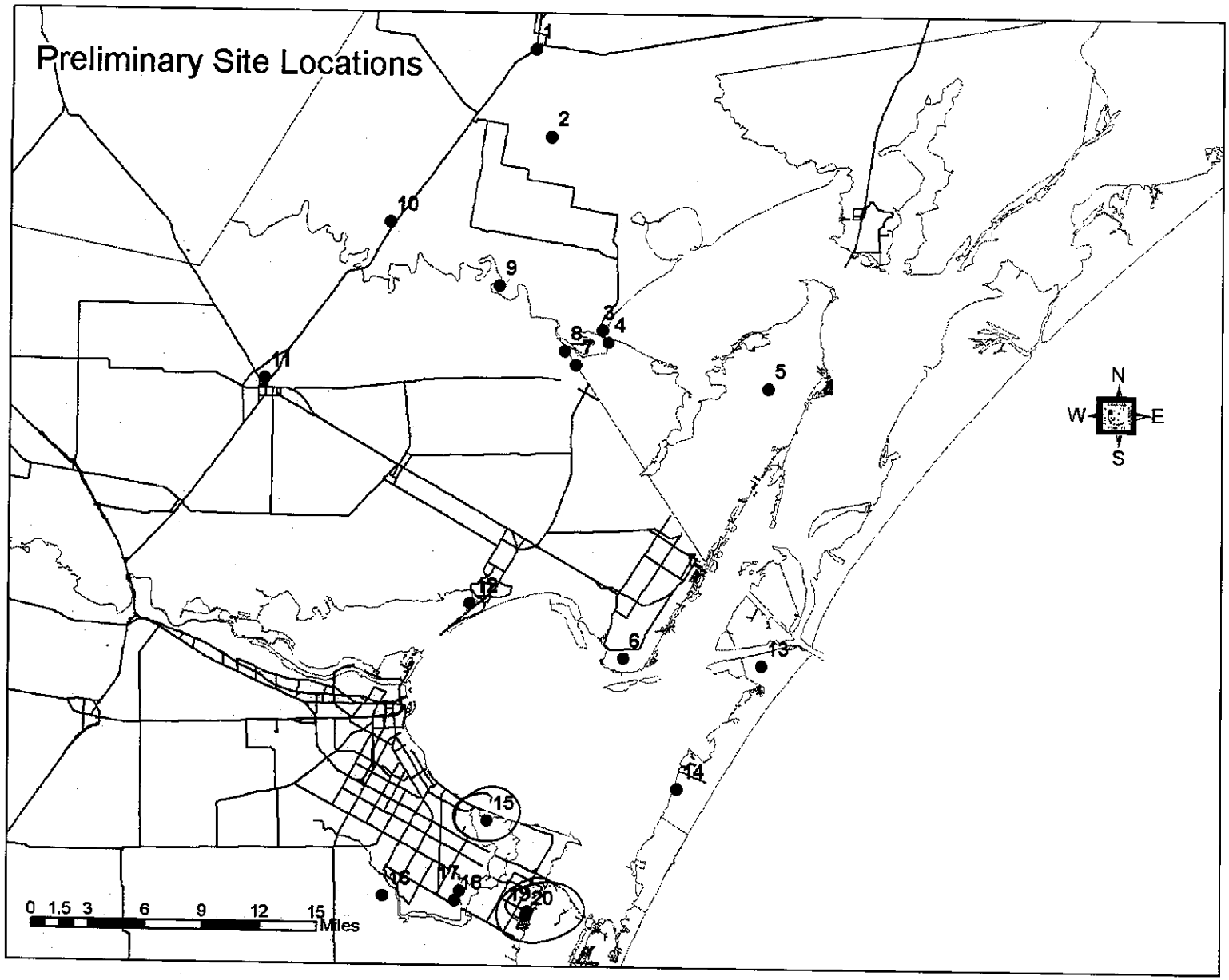
18	May Property - Oso Creek	habitat degradation	tidal flats	Coastal Bend Land Trust	vegetation eliminate access of ATVs/recontour tire marks – demonstration project	See comments on 17
✶ 19	Redhead Pond - Flour Bluff	Hydrologic Alteration	Palustrine habitat	TPWD/TNC	identify sources of hydrologic change	restore freshwater flows
20	Redhead Pond - Flour Bluff	uncontrolled spread of brazilian pepper, etc.	Palustrine habitat	TPWD/TNC	removal of invasive species	reestablishment of native species - demonstration project

15. The wind tidal flats of the Bleid Oso have historically supported large #'s of migrating shorebirds (many 10's of thousands)

Nesting Sp. include } Least terns, Wilson's Plovers, Black-Necked Stilts, Royal terns, and Willet.

~~Dredge~~ Hydrologic changes, siltation, & invasive species have all contributed to the loss of available shorebird feeding, loafing, roosting & nesting habitat. Are there restoration solutions?

20. Barney Davis Power Plant. Off line - Cooling Ponds will continue to de-water to Oso Bay (entire) What changes does this involve? Net "+" flow of water out of Bay will cease changes Sea grass most likely will decline. What other ~~changes~~ will occur? How does this affect migrating species?


Preliminary Site Locations
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List of Previous Proposed and Designated IBAs

Designated by Audubon w/o Criteria

La Mariposa Ranch
Plano Outdoor Learning Center
The Heard Museum
Hornsby Bend
Walnut Creek Ranch
Fort Hood
The San Ygnacio Sanctuary
Sabal Palm
Lost Maples State Park
Big Bend National Park

Designated by American Bird Conservancy as Global IBA

Angelina National Forest
Anahuac National Wildlife Refuge and Moody National Wildlife Refuge
Aransas National Wildlife Refuge
Attwater Prairie-Chicken National Wildlife Refuge
Balcones Canyonlands National Wildlife Refuge
Barton Creek Habitat Preserve
Bentsen-Rio Grande Valley State Park
Big Bend National Park
Big Bend Ranch State Park
Big Boggy National Wildlife Refuge
Big Thicket National Preserve and Martin Dies, Jr. State Park
Bolivar Flats Shorebird Sanctuary
Brazoria National Wildlife Refuge
Caddo Lake WMA Bottomlands
Davis Mountains Davis Mountains State Park and Davis Mountain Preserve
Davy Crockett National Forest
Devils River State Natural Area and Dolan Falls Preserve
Falcon Dam
Fort Hood Military Installation
Guadalupe Mountains National Park, Guadalupe River State Park, and Honey Creek State Natural Area
Guadalupe River Area
Hazel Bazemore Park Candy Cain Abshier Wildlife Management Area and Smith Point
High Island
Jones State Forest
Katy Prairie
Kenedy Ranch
Kerr Wildlife Management Area
Kickapoo Cavern State Park
King Ranch
Laguna Atascosa National Wildlife Refuge
Lost Maples State Natural Area
Lower Rio Grande Valley National Wildlife Refuge and Santa Ana National Wildlife Refuge
Mad Island Marsh Wildlife Complex, Mad Island Wildlife Management Area Mad Island Marsh Preserve
Matagorda Island State Park and Wildlife Management Area
McFaddin National Wildlife Refuge
Padre Island National Seashore, including South Padre Island Preserve
Pedernales Falls State Park
Roy E. Larsen Sandyland Sanctuary
Sabal Palm Grove Sanctuary
San Bernard National Wildlife Refuge
Sam Houston National Forest
Sea Rim State Park
Texas City Prairie Preserve

Listed as Proposed on Texas Audubon Website

Aransas NWR
Big Boggy NWR
Blucher Park
Choke Canyon SP
Connie Hagar Cottage Sanctuary
Goose Island SP
Egery Flats/Black Point
Guadalupe Delta WMA
Hazel Bazemore (Nueces County Park)
Indian Point (Portland)
Lake Corpus Christi SP
Lake Texana SP
Mad Island (TNC,TPWD)
Mansfield Cut (algal flats)
Matagorda Island
Mustang Island SP
Oso Bay (Corpus Christi)
Packery Channel

Padre Island National Seashore
Shamrock Island (TNC)
Baffin Bay
Balcones Canyonlands NWR
Buescher/Bastrop SP
Devil's Sinkhole
Dolan Falls (TNC)
Garner SP
Granger Lake
Kickapoo Caverns SP
Lost Maples SP
Meridian SP
Mitchell Lake
Pedernales Falls
Angelina National Forest
Big Thicket NP
Sam Rayburn Reservoir
Caddo Lake
Davy Crockett National Forest
Jones State Forest
Lake Bob Sandlin
Lake O' The Pines
Lower Neches Wildlife Management Area (Old River Unit)
Sabine National Forest
Sam Houston National Forest
Steinhagen Lake
Toledo Bend Reservoir
Sabine/Neches River bottomlands
Silsbee, Texas
Bentsen/Rio Grande SP
Boca Chica
Falcon SP
Laguna Madre
Las Palomas WMA
Lower Rio Grande Wildife Corridor NWR
Mission River (Fennessey Ranch)
NAS Sabal Palm Sanctuary
Santa Ana NWR
Laguna Atascosa NWR
Claiborne West Park
Hagerman NWR
Lake Tawakoni
Buffalo Lakes NWR
Caprock Canyons SP
Palo Duro Canyon SP
Rita Blanca National Grasslands
Playa lakes
Anahuac NWR
Atkinson Island (TPWD)
Attwater Prairie-Chicken NWR
Big Reef (Galveston)
Brazoria NWR
Brazos Bend SP
Candy Abshier WMA
Christmas Bay
Colombia Bottomlands
Eagle Lake
Galveston Island SP
Houston AS Bolivar Flats Sanctuary
Houston AS High Island Sanctuaries
J.D. Murphree WMA
Little Pelican Island
McFaddin NWR
NAS/Houston AS North Deer Island
Pleasure Island
Rollover Pass
San Bernard NWR
San Luis Pass
Sea Rim State Park
Texas Point NWR
TOS Sabine Woods
Trinity River Delta
Tyrrell Park, Beaumont (including Cattail Marsh).
West Galveston Island
Balmorhea SP
Big Bend NP
Big Bend Ranch SP
Black Gap WMA
Chinati Mountains SP
Devil's River SP
Fort Davis SP
Franklin Mountains
Guadalupe Mountains NP
Hueco Tanks SP
Lake Balmorhea
Seminole Canyon
Mount Livermore/Lympia Creek

label info that is confidential & include contact info.

Project Goals

Private owner Public ?

Map ID	Project Name/Location	Issue/Concern	Habitat Focus	Ownership	Immediate Action	Long-term Action
1	Refugio Kayak Launch	managed access	riparian corridor	City of Refugio (soon?)	planning/design	preservation/reestablishment of native species

Comments:

Recommendations:

2004 ☆

2	Invasive Species- Water Lettuce	uncontrolled spread	Palustrine habitat	Private	design/implement management practices demonstration project	

Comments:
demonstration project

Recommendations:

2004

3	Black Point -So. Bayside	Shoreline Erosion	Wetland Protection - 150 ac Intertidal Flat	Private	Planning/Design Geotech	Construct offshore barrier

Comments:
Spartina
permitting
landowner ? submerged TGLO ?

Recommendations:
landowner -
Martha Hornberg Beekler

2004

Map ID	Project Name/Location	Issue/Concern	Habitat Focus	Ownership	Immediate Action	Long-term Action
4	Egery Island Road Copano Bay	Hydrologic Alteration	Coastal Pond	Private	design/culvert placement	

Comments:
private ownership
sale of wetlands
CE on upland
maybe no match would be necessary

Recommendations:
restore wetland functions
Don Cartwright - landowner

5	Memorial Park	Limited Wetland Fringe	Palustrine habitat	City of Rockport	design/recontour slopes/plant	

Comments:
Reevaluate this

Recommendations:

6	Whitney Lake-Ingleside	Wetland Diversity	Palustrine habitat	City of Ingleside (soon?)	Planning/Design	establish vegetation along recontoured wetlands

Comments:

Recommendations:

Map ID	Project Name/Location	Issue/Concern	Habitat Focus	Ownership	Immediate Action	Long-term Action
7	Buccaneer Cove-Aransas Delta	Hydrologic Alteration	Intertidal Wetland	Coastal Bend Land Trust (soon?)	planning/removal or burying pipeline	
Comments: is pipeline active? who owns it? accreting on upstream side of pipeline Recommendations: 60 ac.						
8	Aransas Delta Shoreline	vegetation diversity	transitional prairie	private	fencing/planting native species	
Comments: 1 mi. of Aransas River frontage @ delta ~$350,000 Recommendations: needs water source for restoration 5 stock tanks Charlie Delcou - owner						fund stewardship fee + restoration
9	Rincon Bend Aransas River	Hydrologic Alteration	Palustrine habitat	private	planning/design to remove drainage ditch	recontouring to increase vegetation diversity
Comments: ditch drains the wetland @ Rincon Bend fill in ditch land has Beach Lace Cactus on it Recommendations: Bill Bates - willing landowner						

2004

2004

Map ID	Project Name/Location	Issue/Concern	Habitat Focus	Ownership	Immediate Action	Long-term Action
10	Hwy 77 Roadside Park	create wetland habitat	Palustrine habitat	TXDOT?	planning/design	recontour upland to create wetland for observation

Comments:
buy extra acreage to create wetland next to refurbished rest area

Recommendations:
timeline - may take awhile

2004

Map ID	Project Name/Location	Issue/Concern	Habitat Focus	Ownership	Immediate Action	Long-term Action
11	Hwy 188/77 Expansion	highway expansion over pond	Palustrine habitat	private?	planning/design	relocate/expand existing pond into public viewing area

Comments:
TxDOT / Sinton

Recommendations:

2004

Map ID	Project Name/Location	Issue/Concern	Habitat Focus	Ownership	Immediate Action	Long-term Action
12	Indian Point-Nueces Bay	estuarine wetland loss	vegetated marsh	TGLO?	planning/design	reestablishment of bay peninsula/islands with emergent marsh and flats

Comments:
bring in material, too deep for seagrass / Spartina

Recommendations: expensive project

Map ID	Project Name/Location	Issue/Concern	Habitat Focus	Ownership	Immediate Action	Long-term Action
13	Charlie's Pasture-Port Aransas	stormwater drainage	palustrine/estuarine	leased?	planning/design	beneficial use of stormwater management into wetlands
Comments:						
Recommendations:						
14	Francine Cohn Preserve-Mustang Island	Shoreline Erosion	bay shoreline	TNC	planning/design	soft shoreline protection practice (planting?)
Comments: Spartina & mangroves to reduce erosion						
Recommendations:						
15	Invasive Species - Ward Island	uncontrolled spread of brazilian pepper, etc.	shoreline buffer	TAMU-CC	removal of invasive species	reestablishment of native species - demonstration project
Comments: SE side by dormitories						
Recommendations:						

2004

2004

Map ID	Project Name/Location	Issue/Concern	Habitat Focus	Ownership	Immediate Action	Long-term Action
16	Botanical Gardens-CC	stormwater drainage	Palustrine habitat	City of CC	siltation control demonstration	

Comments: impacts to land leased by Botanical Gardens

Recommendations: filling in pond w/ sediment & trash

17	May Property - Oso Creek	Shoreline Erosion	bay shoreline	Coastal Bend Land Trust	recontouring gullies/reestablishment vegetation	

Comments:

Recommendations:

18	May Property - Oso Creek	habitat degradation	tidal flats	Coastal Bend Land Trust	eliminate access of ATVs/recontour tire marks	

Comments:

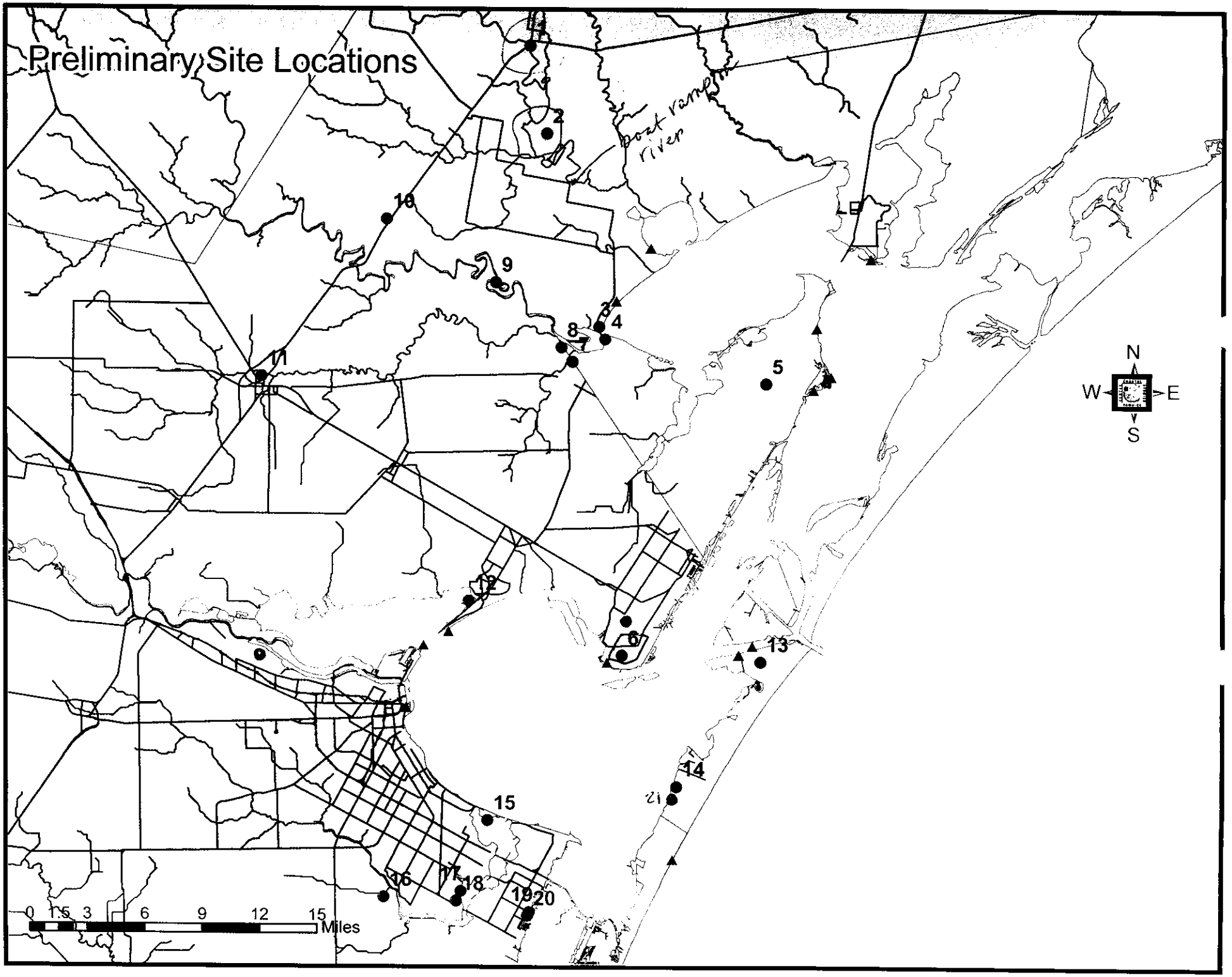
Recommendations:

Map ID	Project Name/Location	Issue/Concern	Habitat Focus	Ownership	Immediate Action	Long-term Action
19	Redhead Pond - Flour Bluff	Hydrologic Alteration	Palustrine habitat	TPWD/TNC	identify sources of hydrologic change	restore freshwater flows
Comments:						
Recommendations:						
20	Redhead Pond - Flour Bluff	uncontrolled spread of brazilian pepper, etc.	Palustrine habitat	TPWD/TNC	removal of invasive species	reestablishment of native species - demonstration project
Comments:						
Recommendations:						

21 Mustang Is. S. of F Cohn Preserve, install culvert restore hydrology private landowner

22 Brazilian Pepper plant @ Hans Suter Park

23 " " " ~~find~~ inventory, ~~data~~ characterization


Preliminary Site Locations
boat ramp in river
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QUARTERLY REPORT #3

Section 1. Title page

Project Name: Identify Potential Restoration and Enhancement Sites

Contract No: 0319

Name(s) of Key Personnel: E.H. Smith
Name(s) of Performing Party: Center for Coastal Studies, TAMU-CC
Address(es): NRC 3200, 6300 Ocean Dr., Corpus Christi, TX 78412
Phone/fax Number(s): 361/825-6069; 361/825-2770

Name of CBBEP Project Manager: Kendal Keyes
Coastal Bend Bays & Estuaries Program, Inc.
1305 N. Shoreline, Suite 205
Corpus Christi, Texas 78401
(361) 885-6245
e-mail: kkeyes@cbbep.org

Reporting Date of Quarterly Report: March 1, 2003 – May 31, 2003

Submittal Date of Quarterly Report: June 6, 2003

Section 2. Description of tasks completed (Only those COMPLETED)

Task (a) Collect and integrate conservation sites and project data
Not completed during this quarter.

Task (b) Develop selection criteria for potential wetland project sites,
Not completed during this quarter.

Task (c) Select potential wetland project sites,
Not completed during this quarter.

Task (d) describe potential wetland projects.
Not completed during this quarter.

Section 3. Status of tasks

Task (a) Collect and integrate conservation sites and project data
90% complete
Work continued on the completion of integrating additional site and project data into the CBBEP GIS. GIS layer for Coastal Management Program and Coastal Impact Assistance Program, Coastal Erosion, Protection, Restoration Act Program sites from Texas General Land Office were received from Texas General Land Office and integrated into the project site data layer. Information from these program sites were utilized to overview the geographic coverage of sites, as well as evaluate potential sites that are adjacent and would increase the conservation/restoration area.

Potential sites data layers remained separate according to habitat type (e.g., Estuarine, Palustrine) individually. Attribute tables within each habitat type layer for each site were developed as fields for the following information. Project goals were defined as acquisition (A), conservation easement (CE), management plan (M), and restoration (R). Property ownership was categorized at private, local government, county government, state government, federal government, Texas Department of Transportation (TXDOT), school district, nongovernmental organization (NGO), and other. Habitat types were generally grouped as Estuarine, Palustrine, and Estuarine/Palustrine. The following fields were defined: funding source(s), budget, site boundaries, endangered/threatened species, permanent photo points, etc. These fields have not been incorporated into the attribute tables as they will only be used for final project sites selected.

Twenty-one sites were selected as potential project sites for further evaluation by using selection criteria and scientific/technical expertise and regional/historical knowledge (see Task b). A new data layer was developed in GIS identifying the site by Number, Project Name/Location, Issue/Concern, Habitat Focus, Ownership, Immediate Action (with type of action), and Long-term Action (with type of action). A site map and spreadsheet was submitted for further review to the Project Advisory Committee (PAC).

Task (b) Develop selection criteria for potential wetland project sites,
95% complete

Selection criteria were refined to include parameters incorporated in GIS database attribute table as well suggestions from PAC members. Project sites that could satisfy the following criteria were selected for the preliminary project site list: immediate need for conservation or restoration; ownership (current landowner willing to implement conservation action), diversity of habitat types, regional coverage of geographic area, and interest by potential funding sources.

Task (c) Select potential wetland project sites,
90% complete

Sites that were classified as potential wetland sites were further evaluated using the site selection criteria and PAC recommendations to develop a "short" list of 21 sites (see attachment). This draft list was submitted to CBBEP and PAC during this quarter, however, responses were not received by the PAC by end of the quarter.

A watershed map was constructed delineating all natural habitat priority areas along Oso Creek for display and discussion at a Smart Growth Forum IV workshop held in April. <a[s

Task (d) describe potential wetland projects.
65% complete

Draft project descriptions were completed for Laguna Shores Wetland Complex, upper, middle, and lower Oso Creek Watershed, Newport Pass, Francine Cohn Preserve, Indian Point, Carbon Black, Barney Davis CP&L ponds, Egery Flats, Buccaneer Cove, Black Point, and Fennessey Ranch, as these sites are currently being evaluated for conservation action by agencies and nongovernmental organizations.

Section 4. Plans for next quarter (by task)

Task (a) Collect and integrate conservation sites and project data
A PAC meeting is scheduled for June 3, 2003, to evaluate each potential project site and reduce the number of sites to be evaluated further, and project site descriptions and proposal information developed. Site visits will be coordinated to accomplish any ground-truthing necessary, as well as define conceptual project site boundaries.

Task (b) Develop selection criteria for potential wetland project sites,

Recommendation of standardization or development of categories of the criteria will be undertaken to assist in future selection processes. Recommendations will be given regarding the use of the CBBEP GIS to conduct queries by using varying suites of selection criteria within the attribute tables to assist in watershed or regionwide conservation/restoration efforts.

Task (c) Select potential wetland project sites,

The PAC meeting in June 3, 2003 will accomplish reducing the potential project site list. This working list will be submitted to the CBBEP in mid-June for review and comment.

Task (d) describe potential wetland projects.
Project site descriptions will be submitted for review with the following information: background information, introduction, justification, need, goals, objectives, budget(s), and long-term plans. Associated aerial and ground photographs will be submitted to assist in future planning, and project proposal development.

Section 5. Adherence to project timeline

The final project site determination was not completed by this quarter; therefore, draft project descriptions were not submitted. The contractor does intend to refine the project site list in early June following PAC meeting, and submit draft project descriptions to CBBEP project manager by 15 June. No delays in accomplishing project tasks by end date are anticipated.

QUARTERLY REPORT #2

Section 1. Title page

Project Name: Identify Potential Restoration and Enhancement Sites

Contract No: 0319

Name(s) of Key Personnel: E.H. Smith
Name(s) of Performing Party: Center for Coastal Studies, TAMU-CC
Address(es): NRC 3200, 6300 Ocean Dr., Corpus Christi, TX 78412
Phone/fax Number(s): 361/825-6069; 361/825-2770

Name of CBBEP Project Manager: Kendal Keyes
Coastal Bend Bays & Estuaries Program, Inc.
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(361) 885-6245
e-mail: kkeyes@cbbep.org

Reporting Date of Quarterly Report: December 1 2002 – February 28, 2003

Submittal Date of Quarterly Report: March 10, 2003

Section 2. Description of tasks completed (Only those COMPLETED)

Task (a) Collect and integrate conservation sites and project data
Not completed during this quarter.

Task (b) Develop selection criteria for potential wetland project sites,
Not completed during this quarter.

Task (c) Select potential wetland project sites,
Not completed during this quarter.

Task (d) describe potential wetland projects.
Not completed during this quarter.

Section 3. Status of tasks

Task (a) Collect and integrate conservation sites and project data
40% complete
Work undertaken during this quarter included developing rules of inclusion for mitigated sites in coordination with Texas Parks and Wildlife. Historically, most sites do not have a geographic position data associated with the permit application. However, the broader-scale projects were identified and included in the GIS database. We have not received a GIS layer for Coastal Management Program and Coastal Impact Assistance Program sites from Texas General Land Office, although they may be available on their website before the completion of this task.

Task (b) Develop selection criteria for potential wetland project sites,
30% complete
A variety of selection criteria methods are being compiled by the contractor from other national estuary program areas, as well as those utilized by conservation organizations (e.g., The Nature Conservancy, National Audubon Society, Land Trust Alliance members, etc.). Potential sites will be categorized in relation to their habitat type, geographic location, and functions and values the site would provide if conservation and restoration efforts were implemented. Baseline assessment sheets were developed by modifying several components from other conservation entities. A meeting with a local engineering firm was conducted to determine the appropriate chronology to complete wetland restoration projects.

Task (c) Select potential wetland project sites,
50% complete
Data from the National Wetland Inventory 1992 survey were utilized to query both Estuarine and Palustrine System in relation to their adjacency (within 100 m) of a road, highway, dam, or railroad track. Two PAC meetings were conducted to solicit input on each site. Each site was evaluated based upon knowledge of the area (e.g., adequacy of tidal flow through culverts or bridges, separation of wetland systems by the construct system, etc.). Sites with varying potential for wetland restoration were determined within the study area as "1 = should be reviewed for further restoration, 2 = may need further evaluation, or 3 = appears to have

appropriate wetland function and value". Sites adjacent to conservation sites where restoration would restore connectivity or a corridor among habitats were also evaluated.

Task (d) describe potential wetland projects.
50% complete
Several sites were further evaluated by utilizing the "Letting List" provided by PAC member representative from TXDOT. Sites where bridges were being redesigned were highlighted as potential access points for passive and active recreation. Areas that were being landscaped or hike and bike trails designed were selected as potential for wetland demonstration projects. One major renovation and one major construction project of a TXDOT rest area were identified on Hwy 77 between Sinton and Woodsboro, where a wetland demonstration project may be incorporated.

Extensive use of the GIS database was undertaken to evaluate the following sites for restoration and conservation: Lake Whitney, Laguna Shores Wetland Complex, upper, middle, and lower Oso Creek Watershed, Newport Pass, Francine Cohn Preserve, Indian Point, Carbon Black, Barney Davis CP&L ponds, Lakeview Park, Egery Flats, Buccaneer Cove, Black Point, and Fennessey Ranch. Data included 1995 DOQQ, TXDOT roads, etc., NWI 1992, soils, and landownership for those sites within Corpus Christi City Limits.

Section 4. Plans for next quarter (by task)

Task (a) Collect and integrate conservation sites and project data
Work will continue on integrating existing site and project data into the CBBEP GIS. Information will be compiled within the attribute table for each site including project goals, funding source(s), budget, site boundaries, property ownership, habitat types, endangered/threatened species, permanent photo points, etc. Site visits will be coordinated to accomplish any ground-truthing necessary.

Task (b) Develop selection criteria for potential wetland project sites,
PAC will meet to develop selection criteria based on a standard functions and values criteria, and suggestions for potential funding and partnerships will be requested.

Task (c) Select potential wetland project sites,
Potential wetland site locations and associated information will be compiled and submitted in draft form to CBBEP project manager.

Task (d) describe potential wetland projects.
A subset of potential sites will be selected and descriptions will be developed that will include background information, introduction, justification, need, goals, objectives, budget(s), and long-term plans. Associated aerial and ground photographs will be submitted to assist in planning.

Section 5. Adherence to project timeline

No delays to the project timeline are anticipated.

QUARTERLY REPORT #1

Section 1. Title page

Project Name: Identify Potential Restoration and Enhancement Sites

Contract No: 0319

Name(s) of Key Personnel: E.H. Smith
Name(s) of Performing Party: Center for Coastal Studies, TAMU-CC
Address(es): NRC 3200, 6300 Ocean Dr., Corpus Christi, TX 78412
Phone/fax Number(s): 361/825-6069; 361/825-2770

Name of CBBEP Project Manager: Kendal Keyes
Coastal Bend Bays & Estuaries Program, Inc.
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Reporting Date of Quarterly Report: November 1- November 30, 2002

Submittal Date of Quarterly Report: December 16, 2002

Section 2. Description of tasks completed (Only those COMPLETED)

Task (a) Collect and integrate conservation sites and project data
Not completed during this quarter.

Task (b) Develop selection criteria for potential wetland project sites,
Not completed during this quarter.

Task (c) Select potential wetland project sites,
Not completed during this quarter.

Task (d) describe potential wetland projects.
Not completed during this quarter.

Section 3. Status of tasks

Task (a) Collect and integrate conservation sites and project data
20% complete
Work began on 1 November 2002 to contact all Project Advisory Committee members and determine the availability of current conservation site and project information. A PAC meeting was conducted on 14 November 2002 where the project objectives and tasks were reviewed. Several datasets that were available were discussed including partial project site descriptions used for mitigation. The data will need to be integrated into a GIS layer. A GIS layer for Coastal Management Program and Coastal Impact Assistance Program sites may be obtained from Texas General Land Office.

Task (b) Develop selection criteria for potential wetland project sites,
10% complete
A variety of selection criteria methods are being compiled by the contractor from other national estuary program areas, as well as those utilized by conservation organizations (e.g., The Nature Conservancy, National Audubon Society, Land Trust Alliance members, etc.). Potential sites will be categorized in relation to their habitat type, geographic location, and functions and values the site would provide if conservation and restoration efforts were implemented.

Task (c) Select potential wetland project sites,
0% complete
No work has been undertaken for this task at this time.

Task (d) describe potential wetland projects.
0% complete
No work has been undertaken for this task at this time.

Section 4. Plans for next quarter (by task)

Task (a) Collect and integrate conservation sites and project data
A series of meetings are planned to integrate existing site and project data into the CBBEP GIS. Information will be compiled within the attribute table for each site including project goals, funding source(s), budget, site boundaries, property ownership, habitat types, endangered/threatened species, permanent photo points, etc. Site visits will be coordinated to accomplish any ground-truthing necessary.

Task (b) Develop selection criteria for potential wetland project sites,
A preliminary draft of selection criteria methodology will be compiled and disseminated to PAC members for review. Revisions to the methods will be completed for use in identifying potential wetland project sites.

Task (c) Select potential wetland project sites,
Potential wetland site locations and associated information will be compiled and submitted in draft form to CBBEP project manager.

Task (d) describe potential wetland projects.
A subset of potential sites will be selected and descriptions will be developed that will include background information, introduction, justification, need, goals, objectives, budget(s), and long-term plans. Associated aerial and ground photographs will be submitted to assist in planning.

Section 5. Adherence to project timeline

Although the contract was not implemented until 1 November 2002, no delays to the project timeline are anticipated.