

Galveston ReLeaf

A Strategic Plan for Replanting



Prepared by

City of Galveston Tree Committee
Galveston Island Tree Conservancy
Texas Forest Service

November 2010



Letter from the Mayor



Joe Jaworski was elected Mayor of Galveston, Texas, in May 2010



Dear Reader:

In 2008, Hurricane Ike affected the community of Galveston more than any other storm since The Great Storm of 1900, which killed 6,000 to 8,000 people and led the survivors to reshape their island home. We are in the midst of a similar reshaping effort in terms of our economic base, housing, public infrastructure and city budgets.

One highly visible city asset lost after Hurricane Ike was the city's tree cover. During the painful tree removal process, 4,636 trees on public property and 9,102 private property trees were cut and hauled away by city contractors. Thankfully, some of this woody debris found its way into the hands of local artists, wood turners and lumbermen, who created many beautiful pieces of artwork and have helped refit two wooden sailing vessels—the *Charles W. Morgan* at Mystic Seaport Maritime Museum and *The Galvestown*, a replica sailing ship being built in Spain. This effort also resulted in no woody debris being sent to a landfill—a remarkable achievement for a city of our size.

During the tree removal process, another remarkable thing happened: citizens of this community came together to form two new entities devoted to replanting our lost trees. In July 2009, city council approved the formation of an official city Tree Committee to support city staff and to report back regularly on tree issues in Galveston. A few months earlier, the Galveston Island Tree Conservancy formed to serve as a broad-based non-profit group that could support fundraising and develop citizen support for tree programs in the city.

What follows in this *Galveston ReLeaf* plan is the result of more than a year of meetings and discussions by these two groups, with technical support from the Texas Forest Service. I hope you will join me in support of this strategic plan and help any way you can to bring the projects identified and prioritized here to fruition and re-green our community for the generations of Galvestonians to follow.

Sincerely,

A handwritten signature in black ink that reads "Joe Jaworski". The signature is written in a cursive, flowing style.

Mayor Joe Jaworski

Contents

<i>Impact of Hurricane Ike</i>	1
<i>Vision, Goal & Guiding Principles</i>	3
<i>Reasons to Plant Trees</i>	
Economic	5
Environmental	6
Social	7
<i>Our Strategic Plan</i>	9
<i>Community Landscapes</i>	11
<i>Planting Tactics</i>	
Custom Plan	12
NeighborWoods	12
Tree Giveaways	13
Partner Projects	13
<i>Project Planning</i>	
Planting Design	15
Establishment Watering	15
Public Infrastructure Conflicts	15
Species	16
Size	16
Planting Method	17
Partnerships	17
Business Process	18
Funding	18
<i>Project Inventory & Timeline</i>	21
<i>Related Strategies</i>	
Education	25
Tree Maintenance	26
Advocacy	27
<i>References & Acknowledgements</i>	29
<i>Appendices</i>	
A. Project Inventory List	30
B. Project “Parking Lot”	36
C. Recommended Species	38

*Give me a land of boughs in leaf
A land of trees that stand;
Where trees are fallen there is grief;
I love no leafless land.*

-- A.E. Housman

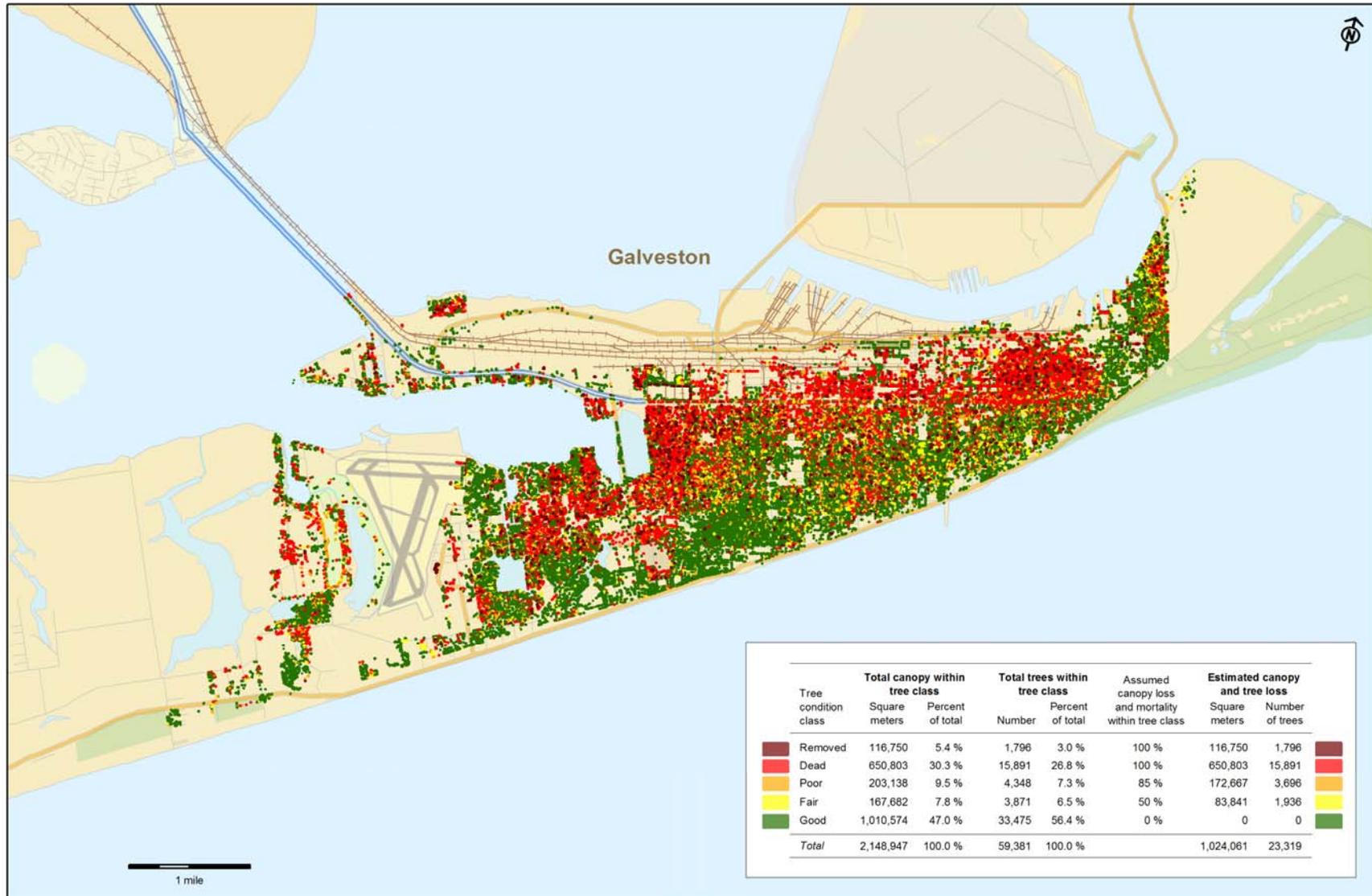
If a tree dies, plant another in its place.

-- Linnaeus

**Every oak tree started out as a
couple of nuts who decided to
stand their ground.**

-- Unknown

Figure 1: Estimated tree canopy loss in the city of Galveston, Texas, between 2008-2009 as a result of Hurricane Ike



Impact of Hurricane Ike

On September 12-13, 2008, Hurricane Ike slammed into Galveston, Texas, with 110-mph winds and a 15-foot storm surge, inundating most of the city. In addition to flooded homes and businesses, many of the city's historic trees also were damaged or destroyed. While initial damage assessments were limited to toppled trees, it quickly became apparent that almost all trees in Galveston were suffering from excessive salt exposure—either from wind-borne salt spray, the storm surge or both. Within weeks, most trees and plants showed brown leaves that quickly dropped. With the exception of palms, very few tree species were spared.

Visits to the island in March 2009 showed little had changed following spring green-up: many of Galveston's trees still had few or no leaves. In April, Texas Forest Service (TFS) and Galveston County Master Gardeners evaluated a sample of street trees to determine the extent of the salt poisoning. The results: an estimated 10,840 dead and dying trees of all sizes on city right-of-ways (ROW) and up to 30,000 dead trees on private property.

This study led to a cooperative effort between TFS, the Federal Emergency Management Agency (FEMA) and the city to identify and remove all dead and dying trees on public property. In June and July, teams of TFS foresters and FEMA inspectors surveyed city streets, parks and public building sites for dead and dying trees, marking those deemed unlikely to survive. Crews paid special attention to live oaks, allowing those trees with at least one-third of their canopies to remain. A total of 4,636 trees were marked for removal from public property during this process.

Another study conducted by TFS compared aerial images of Galveston Island before and after the hurricane. By mapping tree canopies that existed in 2008 and comparing them to imagery from June 2009, foresters could assess canopy loss and estimate the likelihood of survival for each tree. The map shown in **Figure 1** (opposite page) is not a map of trees removed, but rather an estimate of the total tree canopy loss caused by Hurricane Ike. Results show that 39% of trees—and more than 47% of canopy cover—was lost following the storm.

Most citizens appreciated the removal of dead trees from their parks and streets. Many even participated in a program to remove dead trees on private property. But there was resistance among some residents to removing trees with even the slightest evidence of life. This passion for saving trees led not only to closer reviews of the oaks slated for removal along Broadway Boulevard, but to a major effort to replant the city. The creation of a Tree Committee by city council and the work of the new Galveston Island Tree Conservancy (GITC) have set the stage for a strategic plan for replanting trees in Galveston.





Our Vision

Restore a shady tree canopy to Galveston’s streets, neighborhoods and public spaces.

Planting Goal

Distribute and plant **25,000 trees over five years** on private and public property combined. Achieving this goal would replace most of the trees lost as a result of Hurricane Ike.

Guiding Principles

Galveston has a rich history and diverse population—of both people and trees. Our challenge is to make lasting connections between Galvestonians and their trees if new planting programs are to be effective in the long run. The strategic plan and project priorities shall be established in accordance with the following principles:

- **Proportionality:** neighborhoods suffering the greatest tree loss should receive priority as new tree planting projects and programs are developed.
- **Equal Opportunity:** the premise that new shade is planned for and accessible to residents of all neighborhoods and socio-economic levels.
- **Volunteer Participation:** projects are more likely to succeed when citizens take an active role—during plan development and on the day of planting. Tree planting and care are the only “public works” activities where citizens can be actively involved.
- **Public Input:** projects conducted on public property require public input through a formal process.
- **Adjacent Homeowner Choice:** since the ultimate success of residential street tree plantings is directly related to the maintenance performed by individual homeowners, the choice to either “opt-in” or “opt-out” of planting projects will be an important component of street tree plantings.
- **Education:** we believe that citizens who understand how trees grow and thrive will ensure the trees we plant develop into the community shade we seek to create.
- **Land Ethic:** as stewards of the barrier island on which we live, we remain mindful of wasting precious water resources and will resist introducing plant species that can invade and degrade natural environments.
- **Project Diversity:** while focused on creating new shade, the plan will deliver tree planting projects that include a healthy diversity of species, tree sizes and funding methods.
- **Hurricane Resistance:** Galveston remains susceptible to major storms so tree planting and maintenance programs will attempt to build a storm-resistant population of trees.

Top:
12th Street ROW
looking north, adjacent
to Adoue Park in
Galveston, Texas, on
Nov. 25, 2009



Bottom:
Same view of 12th
Street ROW after
digital installation of
pecan and jacaranda
trees.



Visualization images in this report were created by Matt Weaver,
Texas Forest Service, using CanVis software available from the USDA
National Agroforestry Center, Lincoln, Nebraska: <http://www.unl.edu/nac/>.

Reasons to Plant Trees

The decision to plant a certain tree in a certain place often is an intuitive combination of aesthetic preference and site constraints. The outcome—the net benefits generated over time, both to the individual and to society—is derived in equal parts from the initial planting design, the care the tree receives over its life and time.

Trees are a unique “technology” because they produce many benefits at the same time. The primary reason for planting doesn’t limit the overall benefit to society. Plant a tree to shade a window and the tree still cleans pollution from the air and increases property values. New calculators exist that identify and explain these cumulative benefits (www.treebenefits.com). For example: a single, healthy, 20-inch diameter live oak planted in a residential area in Galveston could generate benefits worth \$147 each year.

Economic:

- **Real Estate Value:** real estate professionals recognize the “curb appeal” created by well-placed trees during the sale of a home. Some studies estimate the impact of shade trees to between 10% and 23% of the price home buyers are willing to pay. The Houston’s Regional Forest report calculated the total landscape replacement value of trees in the eight-county region at *\$205 billion*.
- **Tourism:** Every year, Galveston welcomes tens of thousands of tourists who together generate millions of dollars in economic activity. Tree planting in historic neighborhoods, the Strand District and other tourist destinations will create attractive and shady places that will continue to add to the economic vitality of this historic city.
- **Business:** retail shopping districts can benefit from strategic placement of trees. Research by Dr. Kathleen Wolf at the University of Washington (www.naturewithin.info) has demonstrated the impact of trees on shopper attitudes, preferences and spending habits. Surveyed shoppers said they would be willing to spend up to 12% more for goods and services in an area with a well-tended urban forest.

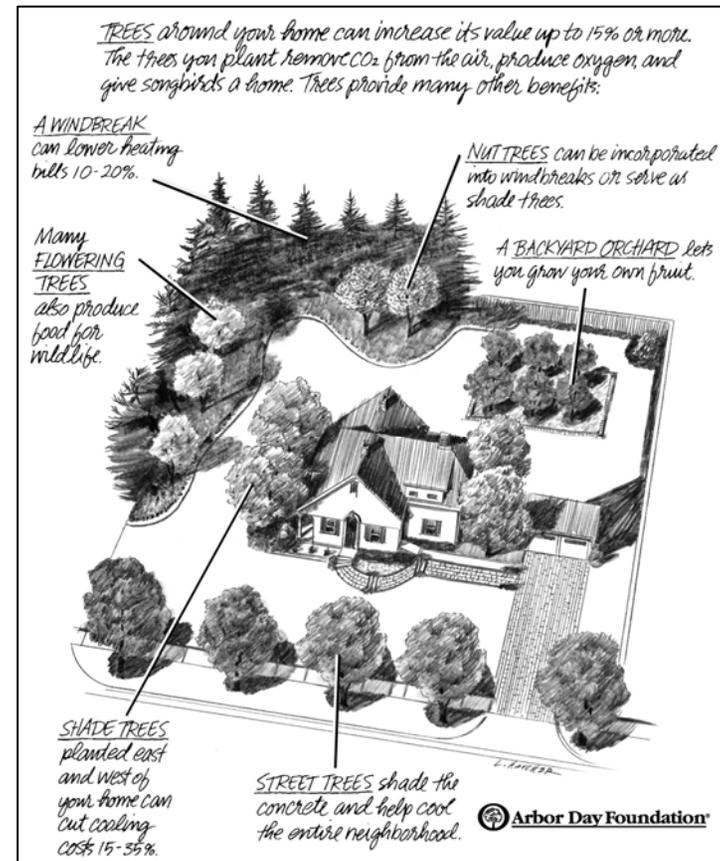


More Reasons to Plant Trees

Environmental:

- 🌿 **Water Quantity & Quality:** studies have shown that tree canopies intercept rainfall and lower the demand on storm water systems in cities, especially those with limited capacity. Newer research has shown that tree roots and surrounding green space can lower pollutant levels in surface runoff.
- 🌿 **Air Quality:** in 2005, TFS published a study for the eight-county Houston area (www.houstonregionalforest.org) estimating that trees in the region removed more than 60,000 tons of criteria air pollutants (as designated by the Clean Air Act), a process valued at almost \$300 million annually.
- 🌿 **Energy Efficiency:** with global attention on energy systems, any method that lowers energy consumption and reduces power plant emissions is considered “low hanging fruit.” Strategic tree planting to shade windows, walls and rooftops has demonstrated direct savings for homeowners and indirect savings to the utility industry by reducing peak demand and the need for new power plants (see www.sactree.com).
- 🌿 **Urban Heat Islands:** cities are built using materials that absorb and reflect heat from the sun, causing urban temperatures to be higher than suburban or natural areas nearby. Trees in cities can reduce ambient air temperatures through the process of transpiration, during which water from leaf surfaces evaporates and cools the air.
- 🌿 **Climate Change:** Texas is a hot place in the summer and, if the Intergovernmental Panel on Climate Change (IPCC) is correct, it may get even hotter over the next half-century. Efforts to reduce carbon emissions will have long-term benefits, but in the short run, tree planting offers one of the best methods available to take carbon out of the atmosphere.

- 🌿 **Wildlife Habitat:** Galveston is a Gulf Coast barrier island that provides migrating songbirds their first chance to rest following their long flights from Central and South America each spring. Tree canopies are important feeding stations that allow many species to recuperate before continuing their journey to nesting areas farther north. Locally, trees and natural areas are permanent homes to a wide variety of wildlife species.





Social:

- 🌳 **Human Comfort:** shade may be the most intuitive—and tangible—benefit that people identify with trees. We select park benches, walk on one side of the street over the other and park our cars based on the available shade produced by trees. Streetscapes without trees make summertime pedestrian travel exceedingly uncomfortable; park playscapes without shade can even be dangerous for children.

- 🌳 **Wellness:** recent studies show that patients with access to nature and gardens have speedier recoveries, and health care providers with the same access have reduced stress levels (summarized in Ulrich, 1999). In addition, outdoor recreation activities—and their attendant health benefits—are more likely to take place in areas with tree canopy. Galveston city parks, school playgrounds, streets and the UTMB campus offer excellent opportunities to use tree planting to achieve such health benefits.

- 🌳 **Sense of Place:** Galveston residents fully appreciate what trees mean to their community. Hurricane Ike's impact on tree cover in Galveston has altered the relationship between residents and trees, such that trees are no longer taken for granted. Planting trees is seen as a new civic duty that links citizens of today with the residents who survived the Great Storm of 1900 and rebuilt Galveston.

Top:
*Ball Street ROW
looking west, adjacent
to Adoue Park, in
Galveston, Texas, on
Nov. 25, 2009*



Bottom:
*Same view of Ball
Street ROW after
digital installation of
pecan and Texas
ebony trees.*



Our Strategic Plan

The planting challenge in Galveston is overwhelming to consider. Where do we begin? How much will it all cost? Although many people will plant trees at their homes and businesses as part of their personal recovery effort, there remain many more planting opportunities than current resources will allow. Reaching our goal of planting 25,000 trees over five years will require prioritization. This plan is designed to pool resources from a variety of sources and distribute them through the community based on community priorities, infrastructure constraints and volunteer effort.

During the first year following Hurricane Ike, much attention was given to disposing of dead trees, leaving little time to plan for replanting. Year 1 focused on several high-profile projects and took advantage of special donations from outside the community. Projects were developed in each major landscape category and spread across the city to benefit as many citizens as possible. These first projects set the stage for Years 2 through 5 of the plan (see **Table 2**).

✦ **Divide and conquer:** the city can be separated into different community landscape types and then into smaller, more defined planting projects (**Appendix A**). Each project then can be assigned to a particular year of the plan (**Table 2**) based on tree loss and community priorities, which were assigned during a public meeting in Galveston on June 30, 2010. Individual projects will vary in numbers of trees, species, design, funding source and ownership, but all will have in common certain key elements that need to be addressed before work can begin (**Table 1**).

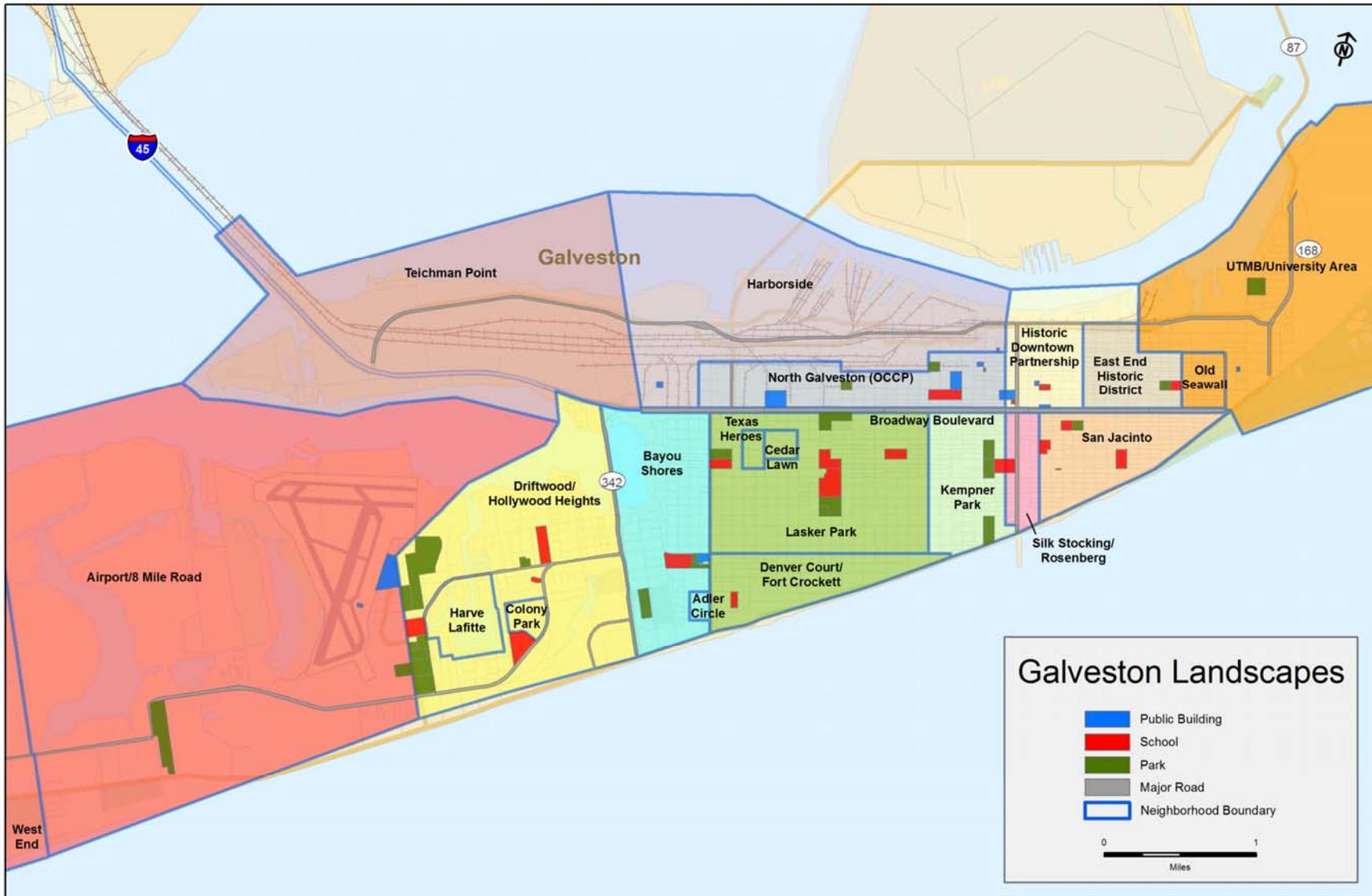
Some potential projects or landscapes fall to such a low priority in this plan that they simply can be listed separately (see **Appendix B**). These projects may not have suffered tree loss, may not fall within the scope of our plan or may already have been completed by the property owner. By listing them in a “project parking lot” we document the fact that the projects were considered, knowing that they can be re-prioritized in later years, if necessary.

✦ **Focus on neighborhoods:** It is tradition in Galveston for homeowners to form active neighborhood groups that provide a forum for public input on a variety of community issues. Organizing those homeowners to plant and maintain new city trees is one way to rebuild citizen leadership within neighborhoods and improve living conditions for those that have returned to the island. In addition, the majority of the publicly-owned urban forest lost as a result of Hurricane Ike was on city street ROW, often in front of someone’s home.

Our plan takes advantage of this neighborhood geography (see **Figure 2**) by scheduling one or more project in each landscape type—schools, parks and streets—within a neighborhood boundary in the same year we begin a street tree planting program there. By affecting all landscapes in a neighborhood a short period of time, we hope to create a climate of success that strengthens the entire neighborhood and promotes rebuilding.

✦ **Remain flexible:** One major challenge is to secure adequate funding to make the plan a reality. Matching projects to donors as they present themselves can help. Conversely, community preferences can prioritize projects and help set goals for fundraising. This plan is flexible enough so that new donors with a strong preference to complete a particular project can do so, as long as funding for the project also balances volunteer effort and other resources that may be required.

Figure 2: Map of the eastern portion of Galveston Island showing neighborhoods and other key community landscapes



Community Landscapes

The first step is to break the island into separate landscape types, each sharing common elements. These are:

- 🏡 **Parks & Cemeteries:** open spaces for outdoor recreation or peaceful reflection
- 🏢 **Public Buildings:** places citizens go to conduct public business
- 🛣️ **Major Roads & Boulevards:** thoroughfares with center medians and travel corridors without adjacent homeowner frontage
- 🏠 **Neighborhood Street ROW:** city streets where single-family residential properties dominate the street frontage
- 🏪 **Commercial/Industrial Neighborhood ROW:** districts where retail shops or industrial properties are the dominant land use
- 🎒 **Schools:** often the focal point for neighborhoods and the community at large because of their emphasis on children and education
- 🎓 **Colleges & Universities:** settings of higher education for young adults
- 🏠 **Residential Property:** the private homes and rental units where island residents live
- 🏪 **Businesses:** commercial enterprises where citizens purchase goods and services as part of daily life on the island
- 🏛️ **Churches:** places of worship that bring people together on a regular basis
- 🌲 **Natural Areas:** state park lands and subdivision common areas that are designed to function in a natural state and are open to the public

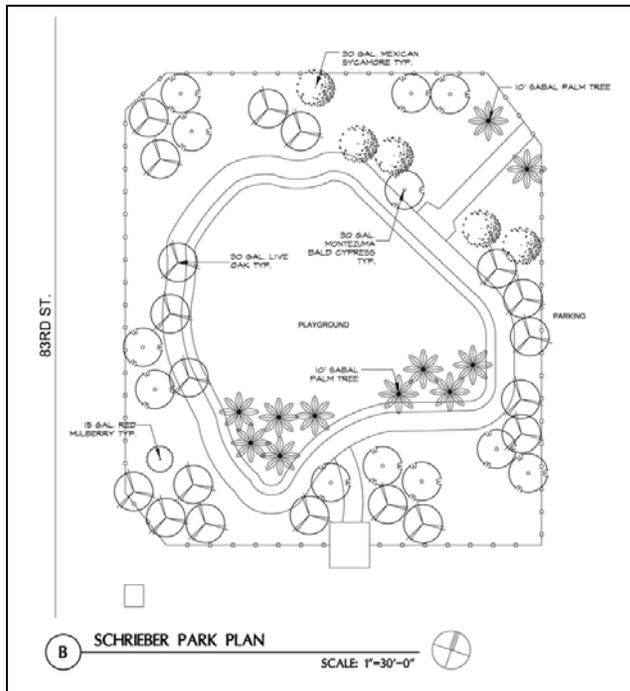
Planting Tactics

Each landscape type within the community lends itself to a particular planting approach or tactic.

Custom Plan:

Projects on most property owned and maintained by the City of Galveston will require plans or drawings along with detailed specifications to go through the bid process. They likely will involve irrigation systems and contracted planting. This approach is most appropriate for:

- Parks & Cemeteries
- Public Buildings
- Major Roads & Boulevards
- Commercial/Industrial Neighborhood ROWs



NeighborWoods:

This proven tree planting model is a perfect fit for Galveston. It targets existing neighborhoods and offers residents one or more free street trees (15-gallon) to plant in the public ROW in front of their home. In return, the homeowner/resident agrees to water and care for each tree. Using grant funds to buy the trees and neighborhood volunteers to plant them provides an excellent value for large numbers of trees. This “opt-in” program works best for:

- Neighborhood Street ROWs

Tree Giveaways:

Residents of Galveston need only the slightest encouragement to plant trees on their property. An effective way to influence the species choices they make is to offer free trees they can pick up and take home. Thousands of 5-gallon container-grown trees can be distributed each year at very low cost. This strategy may be the largest single way to reach annual tree planting goals, though it must be acknowledged that perhaps only 75% of trees distributed in this manner will survive. It is most effective for these landscapes:

- ❑ Residential Property
- ❑ Businesses
- ❑ Churches
- ❑ Natural Areas



Partner Projects:

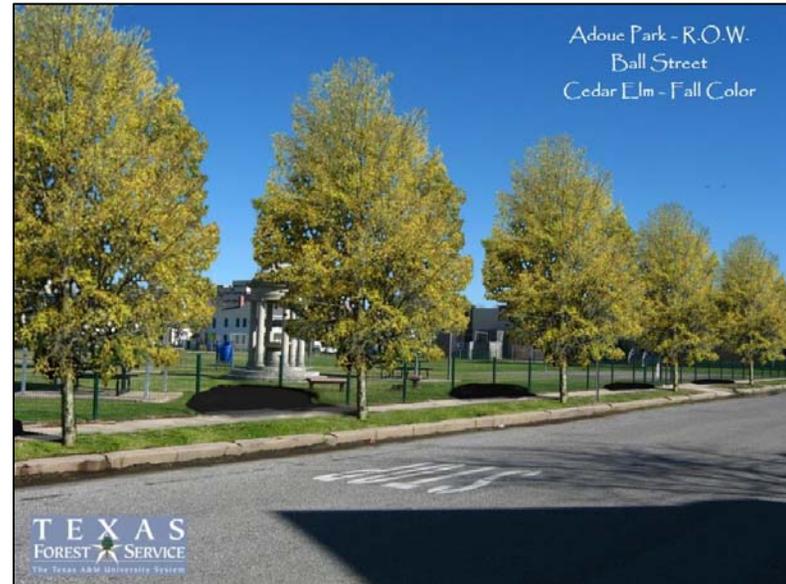
Because Hurricane Ike had such a visible effect on the trees of Galveston, several tree groups from other Texas communities (*Trees For Houston, Houston Area Urban Forestry Council, Austin's TreeFolks*) already have made contributions for replanting the city. It makes sense to involve these tree groups when their existing programs and funding sources match particular projects in Galveston. Landscapes most suited to receive partner assistance include:

- ❑ Schools
- ❑ Colleges & Universities

Top:
*Ball Street ROW
looking north, adjacent
to Adoue Park in
Galveston, Texas, on
Nov. 25, 2009*



Bottom:
*Same view of Ball
Street ROW after
digital installation of
cedar elm trees.*



Project Planning

Planting the “right tree” in the “right place” requires a detailed mix of considerations in order to design, install and properly maintain each project. **Table 1** shows the relationship between these project plan elements and community landscapes.

Planting Design:

- 🌳 **Professional:** landscape architects can play a valuable role in designing attractive projects that meet desired objectives. Planting and irrigation drawings can be included in bid specifications for turn-key contracted services. Costs for these services must be included in project budgets.
- 🌳 **Do-It-Yourself (DIY):** some projects are simple enough that professional designs are unnecessary. In particular, ROW plantings lend themselves to this approach since neighborhood input and individual homeowner choice often take precedence over more formal designs.

Establishment Watering:

- 🌳 **Irrigation:** In general, lawn sprinkler systems are not adequate for tree establishment. Subsurface drip or tree bubbler systems, managed on a separate circuit from lawn sprinklers, will minimize wasted water and maximize survival and growth of young trees.
- 🌳 **Hand-Watering:** Some settings will make it difficult or impractical to install irrigation, so hand-watering will be required. Whether accomplished by contractors, city crews or individual homeowners, watering rates and schedules must be established to deliver sufficient water to allow trees to survive and grow. Watering bags (tree “gators,” Ooze Tubes) may support these efforts.

Public Infrastructure Conflicts:

- 🌳 **Overhead Power Lines:** tree limbs that grow to within 10 feet of electrified power lines must be pruned regularly by the local utility provider. The single best way to manage these conflicts is to plant only small-statured species underneath overhead utilities. See the recommended list of small trees in **Appendix A**.
- 🌳 **Underground Utilities:** most underground public utilities (gas, electric, sewer, water) are sufficiently deep that they rarely prevent the planting of new trees at the surface. As a precaution, however, every project *must* include contact with city utility managers and utility locator services to pre-locate all utility lines before digging.
- 🌳 **ROW Guidelines:** Galveston is blessed with ample planting space between the sidewalk and curb in many neighborhoods. To minimize the future damage to paved infrastructure, a set of city ROW guidelines has been established. Variances to these guidelines may be made through a permit process. In general, all ROW trees should be planted a *minimum* of:
 - 2.5' from curb or sidewalk, in a tree lawn at least 5' wide
 - 45' from traffic signals; 30' from corners; 15' from alleys
 - 10' from hydrants, utility poles and street lights
 - 5' from driveways or walkways
 - 30'-50' apart for medium/large trees; 20' apart for small trees



More Project Planning

Species:

- ❖ **Diversity:** overall diversity of species is important in creating a storm-resistant urban forest. The species in **Appendix C** have been chosen for their historical performance in Galveston, windfirmness, low water requirement, salt tolerance, natural form and longevity. Species diversity should be part of every project in this plan.
- ❖ **ROW-Friendly:** For street ROW plantings (between the sidewalk and the curb), it is important to select species with innate tendencies to grow in a manner that minimizes maintenance requirements and long-term damage to surrounding hardscape, while maximizing the benefits trees provide to the community.
- ❖ **Yards & Other Settings:** many homes in Galveston occupy relatively small lots, leaving only small areas to plant new trees. Since free tree giveaways will be the primary mechanism for supplying trees for these spaces, it is important to offer choices of flowering, fruiting and accent trees in addition to large shade trees.
- ❖ **“Heirloom” Species:** Galveston was known for its historic and shady neighborhoods. Pecans, magnolias, live oaks, sycamores and Canary Island date-palms were distinctive reminders of a bygone era. Restoring these species alongside the historic homes of the island will be a true measure of hurricane recovery.

Size:

- ❖ **Seedlings:** tree seedling giveaways often have very limited success. However, the educational value for schoolchildren sometimes makes such programs worth the effort. In particular, using seedlings to establish school mini-nurseries can involve children in community reforestation efforts.
- ❖ **Container-Grown Trees:** the most common trees sold at retail landscape nurseries in Texas are container-grown, ranging in size from 5-gallon to 65-gallon and larger. Giveaway programs should concentrate on 5-gallon stock, while more visible public projects should focus on 15-gallon to 65-gallon material.
- ❖ **Large Trees:** there is an understandable desire to create “instant shade” by planting very large trees (5” to 10”-caliper trunk size). Certain high-profile projects (i.e. Broadway Boulevard) deserve this treatment, but the high cost of large trees makes this option only one part of a replanting program.



Planting Method:

- ✿ **Contractor:** there are many qualified landscaping contractors available for professional installation of trees. Often, contracted installation and initial maintenance can bring with it guaranteed survival. Complex projects with infrastructure constraints or traffic concerns are best handled through this method.
- ✿ **Homeowner:** tree giveaway programs depend on homeowners to plant the trees once they bring them home. Other street tree projects may involve homeowners by offering street trees in return for planting and watering them for several years.
- ✿ **Volunteers:** organized, trained volunteers are perhaps the most cost-effective way to get new trees planted and improve survival rates. Combining neighborhood volunteers with trained Master Gardeners as part of a “NeighborWoods” project is the most effective model for ROW street tree planting in neighborhoods.



Partnerships:

- ✿ **City of Galveston (COG):** city staff, equipment and plan review are critical components for the success of each project in the plan. By providing manpower, security, traffic control, meeting space and other support, the city can leverage donations and replant city property at very low cost. The official city Tree Committee serves as the primary contact with city council and staff for accepting projects, donations and public input.
- ✿ **Galveston Island Tree Conservancy (GITC):** this new civic group provides organizational support for the process of accepting grants and donations for reforestation projects. By providing leadership and funding for projects, GITC fills a critical role in all reforestation efforts.
- ✿ **Galveston Alliance of Island Neighborhoods (GAIN):** to fully utilize the “NeighborWoods” model for replanting street trees, GAIN is the logical network to use to generate interest among neighborhood groups as well as support for weaker organizations.
- ✿ **State Tree Groups:** there is some interest among organized tree groups across the state to support the work in Galveston. Austin’s **TreeFolks, Inc.** helped organize the first tree giveaway for citizens, and **Trees For Houston** has installed several turn-key planting projects at Galveston schools.
- ✿ **Volunteer Groups:** many different groups have been involved in Galveston’s recovery, including many who worked to restore or replace housing for residents. As projects for tree planting get larger and more complex, seeking out these groups to help plant and distribute trees is a logical extension of the work to build and restore neighborhoods. Local college student groups with an environmental ethic can bring energy to any planting project.

Business Process:

- ❖ **Competitive Bids:** seeking bids from vendors is important to ensure there is an adequate supply of trees to plant and that donated funds are efficiently used. Negotiation has its place in any contracting situation, but marketplace competition—especially for commodities such as containerized trees—should be the starting place for most projects.
- ❖ **Tree Planting Coordinator:** establishing a point-of-contact for all projects under this plan can add consistency, quality control and improved coordination between partners. Through a special grant from Texas Forest Service, GITC has hired this position in 2010.
- ❖ **Record-keeping:** one key aspect of grant management by non-profit groups is the ability to document project results and cost reports to funding entities.

Funding:

- ❖ **Grants & Foundations:** much of the fundraising that is required to fulfill this plan will come about through formal proposals to regional, state and national philanthropic organizations. A unified approach to grant writing (involving the Tree Committee, GITC and city staff) will ensure that high-priority projects receive funding first.
- ❖ **Sponsors:** a variety of citizens, businesses and donors will be interested in supporting specific projects, ranging from a single tree to a grove of trees. Having a mechanism to accept, track and acknowledge these gifts can allow smaller projects to take place or larger projects to be completed. Programs for “signature trees” or “memorial trees” are important and should be established early on to help sponsors give without affecting overall project design.



- ❖ **Micro-fundraising:** citizens at all income levels should be able to contribute towards the overall goal of reforesting Galveston. By allowing donations through GITC’s website as well as collections at other public events, many more civic groups can participate in fundraising activities. The Tree City USA program suggests \$2/capita per year, which is a useful target for Galveston’s residents.
- ❖ **Public Funding:** the economic climate in Galveston is challenging for a variety of reasons, but some public funding for tree planting projects may have a place in this plan—especially for high-visibility projects such as Broadway Boulevard. Hotel/motel taxes, storm water fees or other dedicated fund sources can be tapped to limit the use of the city’s General Fund.

More Project Planning

Table 1: Relationship between project plan elements and community landscapes.

Project Plan Element	Landscape Type								Private Property			
	Public Buildings	Parks	Major Roads	School Campuses	Park & School ROW	Neighborhood ROW	Com'cial/Industrial ROW	Colleges & Universities	Residential	Nat. Areas	Business	Churches
Planting Design												
Professional	x	x	x				x	x				
Do-it-yourself	x		x		x	x		x	x	x	x	x
Watering												
Irrigation	x	x	x		x		x	x		x	x	x
Hand-watering				x	x	x	x		x	x	x	x
Public Infrastructure Conflicts												
Overhead power lines	x				x	x	x		x		x	x
Underground utilities	x	x	x	x	x	x	x	x	x		x	x
ROW guidelines		x		x	x	x	x					
Species												
Diversity	x	x	x		x	x	x	x	x	x	x	x
ROW-friendly		x		x	x	x	x					
"Heirloom" species	x		x	x		x			x			
Size												
Seedlings to 5-gallon containers			x						x	x	x	x
15 to 65-gallon containers	x	x	x		x	x	x	x			x	x
Large trees	x	x		x				x				
Planting Method												
Contractor	x	x	x		x		x	x			x	x
Homeowner				x		x			x			
Volunteers	x		x		x	x		x		x		x
Partnerships												
City of Galveston	x	x			x	x	x					
GITC	x	x	x	x	x	x	x	x	x	x	x	x
GAIN		x		x		x			x			
Other tree groups			x		x							
Volunteer groups			x	x	x	x		x		x		x
Funding												
Grants & foundations	x	x			x	x	x					
Sponsors	x	x	x	x	x		x		x		x	x
Micro-fundraising			x	x	x	x	x		x		x	x
Public funding	x	x		x			x					

Top:
*Broadway Boulevard
median between 25th &
26th Streets looking
east, on March 3, 2010*



Bottom:
*Same view of
Broadway after digital
installation of large
diameter live oak trees.*



Project Inventory & Timeline

At the “heart” of this plan is our desire to educate and empower Galvestonians to take part in the reforestation of the island. But the “brains” of the plan is the objective assessment of landscape types, the determination of which planting programs are likely to work best, and the details of each particular project so that a comprehensive budget and timeline can be created.

The first step in this process was to list as many potential projects as we could identify, as well as those that already had been planted. We then held a public “visioning” session on June 30, 2010, to help set relative priorities for each potential project. The priorities were based on the available data of tree loss at each site and the local knowledge of each participant about what different sites mean to the community. These community priority rankings and tree loss statistics are shown in **Appendix A**.

Following the visioning session, Texas Forest Service foresters visited each project site to estimate the number and size of trees that might be planted. This basic design work completed the inventory by filling in number of potential trees, size, watering plan, role of contractors, etc., so that a cost estimate could be derived.

The last step involved taking the tree budgets for each project in the inventory and assigning those numbers to each year of the plan. **Table 2** follows the strategies outlined on page 9 and includes all of the projects in the inventory to arrive at an overall budget totaling **25,136** trees at an estimated cost of **\$3,364,996**.

Project Timeline

Table 2: List of completed and planned tree planting projects in Galveston, Texas, from 2009-2014.

Landscape Type	Year 1 (2009-10)			Year 2 (2010-11)		
	project	trees	cost	project	trees	cost
Residential Neighborhoods ("opt-in" ROW program)	East End Historic District	182	\$9,584	East End Historic District	200	\$10,000
				San Jacinto	200	\$10,000
				Silk Stocking/Rosenberg	100	\$5,000
				Lasker Park	100	\$5,000
				Old Seawall	100	\$5,000
Commercial/Industrial Neighborhoods ("opt-out" ROW program)				Historic Downtown (planning)		
				North Galveston (OCCP)	100	\$20,000
subtotals for neighborhoods:		182	\$9,584		800	\$55,000
Parks & Cemeteries	Adoue Park	17	\$10,000	San Jacinto Park (GISD) & ROW	40	\$12,500
	Adoue Park ROW	23	\$7,131	Gus Allen Sr. Park & ROW	11	\$1,500
	Wright-Cuney Park	33	\$8,135	Shield Park & ROW	35	\$11,000
	Schreiber Park	47	\$14,060	Old & New City Cemeteries ROW	30	\$9,000
	Spoor Field (GISD) ROW*	29	\$0	Lasker Park & ROW	20	\$6,000
				Sandhill Crane Park Soccer Fields	100	\$30,000
subtotals for parks:		149	\$39,326		236	\$70,000
Public Buildings	City Hall/Fire Station #1	4	\$2,940	City Hall Parking Lots & ROW	50	\$15,000
				Island Transit/Bersinger Bldg. ROW	30	\$7,500
subtotals for public buildings:		4	\$2,940		80	\$22,500
Major Roads #avg. \$5,000/tree	north Rosenberg/25th St. medians	81	\$74,300	south Rosenberg/25th St. medians	60	\$60,000
	#Broadway medians (24th-26th)	16	\$129,000	#Broadway medians (26th-37th)	86	\$430,000
				#Broadway medians (13th-24th)	160	\$800,000
subtotals for major roads:		97	\$203,300		306	\$1,290,000
Schools *Trees For Houston partner project; avg. \$300/tree, incl. maintenance	Satori School ROW	4	\$0	Austin Middle School & ROW*	20	\$0
	Trinity Episcopal School*	28	\$0	AIM High School (San Jacinto)*	20	\$0
	Rosenberg Elementary & ROW*	20	\$0	O'Connell Catholic High School & ROW*	20	\$0
	Central Middle School ROW*	38	\$0	Galveston Catholic School & ROW*	40	\$0
	Parker Elementary*	12	\$0	Ball High School & ROW*	108	\$0
	subtotals for schools:		102	\$0		208
Private Property Tree Giveaways	Trees For Galveston I (11/21/09)	2,000	\$1,196	Trees For Galveston III (Nov. 20, 2010)	2,000	\$1,000
	Trees For Galveston II (2/27/10)	1,500	\$1,000	Trees For Galveston IV (Feb./Mar. 2011)	2,000	\$1,000
subtotals for giveaways:		3,500	\$2,196		4,000	\$2,000
Annual Totals:		4,034	\$257,346		5,630	\$1,439,500

(colors presented in this table attempt to match the neighborhood map on page 10)

Year 3 (2011-12)			Year 4 (2012-13)			Year 5 (2013-14)		
project	trees	cost	project	trees	cost	project	trees	cost
East End Historic District	100	\$5,000	UTMB/University Area	100	\$5,000	Airport/8 Mile Road/West End	200	\$10,000
Bayou Shores/Adler Circle	100	\$5,000	Bayou Shores	100	\$5,000	Bayou Shores	100	\$5,000
Kempner Park	100	\$5,000	Driftwood/H'wood Hts./Harve Lafitte	150	\$7,500	Driftwood/H'wood Hts./Colony Park	150	\$7,500
Lasker Park/Texas Heroes/Cdr. Lwn.	100	\$5,000	Lasker Park/Denver Court/Ft. Crockett	200	\$10,000	Teichman Point	50	\$2,500
Historic Downtown (Phase I)	200	\$60,000	Historic Downtown (Phase II)	200	\$60,000			
North Galveston (OCCP)	100	\$20,000	North Galveston (OCCP)	100	\$20,000	North Galveston (OCCP)	100	\$20,000
subtotals for neighborhoods:	700	\$100,000		850	\$107,500		600	\$45,000
McGuire-Dent Rec. Center & ROW	95	\$30,000	Lindale Park ROW	10	\$2,000	Hooper Baseball/Softball Field	12	\$3,000
Kempner Park ROW	35	\$10,000	Jones Park & ROW	27	\$9,000	Bernard Davis College B'ball Field	25	\$7,500
Courville Stadium & Parking ROW	55	\$16,500	Buccaneer & Rotary Fields (LL)	100	\$25,000	GISD Softball & Baseball Fields	24	\$6,000
Crockett Park & ROW	11	\$2,750	Memorial/Municipal Cemetery ROW	50	\$12,500	Lassie League Softball Fields	50	\$12,500
Milligan & Colombo Fields	10	\$2,500	Alamo Park (GISD) & ROW	70	\$17,500			
subtotals for parks:	206	\$61,750		257	\$66,000		111	\$29,000
						Airport Terminal & Parking Lots	30	\$15,000
						Fire Station #4	2	\$300
						Fire Station #7	2	\$300
						Fire Station #8	2	\$300
subtotals for public buildings:							36	\$15,900
61st St. medians (B'way-Hearde Ln.)	25	\$10,000	61st St. (Hearde Ln. to Seawall)	40	\$12,000	Ferry Rd. medians (H'side-Seawall)	20	\$20,000
#Broadway medians (37th-48th)	93	\$465,000	#Broadway medians (6th-13th)	65	\$130,000	Stewart Road (61st-81st)	50	\$12,500
#Broadway medians (48th-59th)	103	\$515,000	Ferry Rd. medians (Harborside-ferry)	35	\$35,000			
			Jones Dr. (81st to Stewart Rd.)	150	\$37,500			
subtotals for major roads:	221	\$990,000		290	\$214,500		70	\$32,500
Galveston Early College & ROW*	31	\$0	Oppe Elementary ROW*	30	\$0			
Morgan Elementary & ROW*	25	\$0	Weis Middle School & ROW*	45	\$0			
subtotals for schools:	56	\$0		75	\$0			
Trees For Galveston V (Nov. 2011)	2,000	\$1,000	Trees For Galveston VII (Nov. 2012)	2,000	\$1,000	Trees For Galveston IX (Nov. 2013)	2,000	\$1,000
Trees For Galveston VI (Mar. 2012)	2,000	\$1,000	Trees For Galveston VIII (Mar. 2013)	2,000	\$1,000	Trees For Galveston X (Mar. 2014)	2,000	\$1,000
subtotals for giveaways:	4,000	\$2,000		4,000	\$2,000		4,000	\$2,000
	5,183	\$1,153,750		5,472	\$390,000		4,817	\$124,400
						Five-Year Totals:	25,136	\$3,364,996

Top:
*Ball Street ROW
looking west, adjacent
to Adoue Park in
Galveston, Texas, on
Nov. 25, 2009*



Bottom:
*Same view of Ball
Street ROW after
digital installation of
baldcypress, live oak,
pecan, cedar elm and
Texas ebony trees.*



Related Strategies

This plan is primarily focused on the successful establishment of new trees in Galveston. But if our vision is to “**restore a shady tree canopy to Galveston’s streets, neighborhoods and public spaces,**” then we must pursue three related strategies to ensure that the trees we plant survive and grow in a way that maximizes their lifespan and their benefits to society.

Education:

- **Teach the Basics:** many residents have the desire to plant and care for new trees, but may not have the knowledge to do so. An ongoing series of neighborhood-level training sessions should be established, in part to promote available tree planting programs and also to develop the proper skills among residents.



- **“Citizen Foresters”:** some residents will want to volunteer to give back to the community. One way to harness this spirit is to develop and train a volunteer group dedicated to caring for newly planted trees. Having even a small set of motivated and trained volunteers can make sure that new trees on public property get the care they need in a timely fashion.
- **Private Nurseries:** many trees will continue to be purchased and planted by private nurseries and landscape contractors. In order to advance our fundamental issue of species diversity, outreach to these retail nurseries will be necessary to ensure that suitable species are available for purchase.
- **Tree Care Contractors:** the professional practice of tree care—known as “arboriculture”—is not always evident in Galveston. To raise the professionalism and technical skill level of private and government workers, an arborist workshop aimed at local landscapers and tree workers should be organized and delivered somewhere in Galveston each year.
- **Schools:** most successful long-term campaigns to raise awareness about the benefits of trees involve school-aged children. Engaging schools in reforestation Galveston by having students and teachers grow trees, plant them on their campus or volunteer for projects in their neighborhood can instill in them a lifelong appreciation for trees.

More Related Strategies

Tree Maintenance:

- **Young Tree Pruning:** recent research conducted in Florida by Dr. Ed Gilman (hort.ifas.ufl.edu/woody/) focuses on developing trees that can resist strong winds, especially those brought by hurricanes. Structural pruning of young trees to prevent major defects as trees grow is often cited as the most cost-effective approach to municipal tree maintenance. Some cities make an effort to prune and evaluate newly planted trees at least once each year for the first five years. Much of this work can be accomplished by trained volunteers, stretching municipal budgets that are often asked to do more with less.
- **Municipal Pruning Program:** although Galveston lost almost half of its tree cover, many living trees remain along the public ROW. Maintenance of these trees by city staff is infrequent and unplanned, with pruning delegated to the adjacent property owner. Only emergencies involve city personnel to deal with tree issues in the ROW. While this may limit budgeted municipal costs for tree maintenance, the overall impact on the tree population can be negative, with poor maintenance practices contributing to diminishing returns for overall benefits.

A limited, well-planned municipal program designed to address public trees in Galveston—combined with more effective ordinance language concerning trees—could improve and clarify the relationship between public ROW trees, the city and adjacent property owners. Perhaps the best landscape to initiate such a public tree care program is along Broadway Boulevard (6th Street to 59th Street), where the city should begin a tree maintenance program for all trees, both within the center medians and along the ROW.



Advocacy:

- **Local Policy:** citizen activism often can stimulate policy changes, especially at the local level. Galveston has a long-standing tradition of citizen involvement in government activities, including tree issues. Developing improved standards for tree care to be considered alongside a new ordinance for public tree care could help the city attain Tree City USA recognition and improve the level of service to residents.
- **Arbor Day:** this community event is a great moment to celebrate the work that many groups and partners perform throughout the year to plant and maintain a city's trees. Planning a high-quality event is an excellent role for non-profit partners, such as GITC, which could assist city staff with an official, public ceremony each year.



- **Awards:** the partners in this plan should continue to look for ways to acknowledge the efforts of all organizations, individuals, sponsors, donors and volunteers by applying for a variety of awards at local, state and national levels. Such recognition can keep individuals motivated toward longer-term goals and raise the profile of the awarded institution or person. This can have positive benefits for fundraising as well.
- **Publicity:** weaving together our messages of “right tree, right place” with tree planting projects and educational programs for both children and adults will require an organized publicity campaign. Having a single, comprehensive website and listserv that serves as the clearinghouse for all things tree-related will unify the effort to plant trees. Connections to media outlets to promote upcoming events also will be important.

Top:
*Rosenberg/25th Street
@ Postoffice Street
looking north, on
Jan. 11, 2010*



Bottom:
*Same view of
Rosenberg/25th Street
median after digital
installation of
orchidtrees, Canary
Island date palms, and
live oak trees.*



Acknowledgements

City of Galveston

Barbara Sanderson, Director of Parks & Recreation
Roger Johnson, Park Superintendent
Alicia Cahill, Public Information Officer

Galveston Tree Committee

Dr. Jackie Cole, DVM, At-large (chair)
Marcy Hanson, District 1
Catherine Conlon-Townsend, District 2
David Schuler, District 3
Janet Hassinger, District 4
Steven Conway, District 5
Edward Sulzberger, District 6
Mary Jo Singleton, At-large
Donna Liebbert, At-large
Kathlynn Joel-Reich, At-large
Dancie Ware, Mayor's Appointment
Suzanne Sullivan, Ex-officio
Chris Gonzalez, City Council, Ex-officio

Galveston Island Tree Conservancy

Dr. Jackie Cole, DMV, President
Ed Sulzberger, Treasurer
Cathy Conlon-Townsend, Secretary
Kat Joel-Reich, Board Member
Margaret Canavan, Board Member
Mary Jo Singleton, Board Member
Steve Conway, Board Member
Priscilla Files, Tree Planting Coordinator

Texas AgriLife Extension Service

Dr. William Johnson, County Extension Agent
Dr. Don Wilkerson, Extension Horticulturist

Texas Forest Service

Mickey Merritt, Regional Urban Forester—Houston
Matt Weaver, Urban Forester—Houston
Pete Smith, Staff Forester—College Station

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Citations:

Galveston Street Tree Survey Report & Addendum:
<http://txforests.tamu.edu/main/article.aspx?id=1813>
Houston's Regional Forest: <http://www.houstonregionalforest.org/>
Sacramento Tree Foundation: <http://www.sactree.com/>
Effects of Gardens on Health Outcomes: Theory and Research, Roger S. Ulrich, John Wiley & Sons, 1999
University of Florida storm research (Dr. Ed Gilman):
<http://hort.ifas.ufl.edu/woody/stormy.shtml>

Resources:

USDA Forest Service, Urban & Community Forestry:
<http://www.fs.fed.us/ucf/>
i-Tree tools: <http://www.itreetools.org/>
Arbor Day Foundation: <http://www.arborday.org/>
Alliance for Community Trees: <http://actrees.org>
TreeLink: <http://www.treelink.org/>
International Society of Arboriculture: <http://www.treesaregood.com/>
National Tree Benefit Calculator: <http://www.treebenefits.com/>
Urban Natural Resources Institute: <http://www.unri.org/>
Center for Urban Forest Research:
<http://www.fs.fed.us/psw/programs/cufr/>
Green Cities: Good Health: <http://depts.washington.edu/hhwb/>
Urban Forestry South: <http://www.urbanforestrysouth.org>
Florida Tree Nursery Grades & Standards:
<http://www.doacs.state.fl.us/pi/pubs.html>
International Society of Arboriculture—Texas Chapter: <http://isatexas.com/>
Aggie Horticulture: <http://aggie-horticulture.tamu.edu/>
Texas Tree Selector Tool: <http://texastreeplanting.tamu.edu>
Texas Forest Service tree planting & care videos:
<http://www.youtube.com/user/TexasForestService>
Trees For Houston: <http://www.treesforhouston.org/>
Houston Area Urban Forestry Council: <http://www.haufc.net/>
City of Galveston: <http://www.cityofgalveston.org/>
Galveston Island Tree Conservancy:
<http://www.galvestonislandtreeconservancy.org/>

Appendices

Appendix A: List of completed and potential tree planting projects in Galveston, Texas, from 2009-2014, ranked by Community Priority Score (high to low)

Parks & Cemeteries		Tree Loss			Design & Execution			
Project	Location or Section	Est. Number of Trees	Percent Canopy Loss	Community Priority Score	Infrastructure/Utility Conflict	Planting Design	Water Plan	Tree Size
Adoue Park	12th & Ball Sts.	17	93%	very high	low	DIY	irrigation	50" B&B
Adoue Park ROW	12th, Ball, and Winnie Sts.	9	93%	very high	low	DIY	irrigation	24" box
Wright-Cuney Recreation Center	41st & Winnie Sts.	14	97%	very high	low	pro	irrigation	30-gal.
Schreiber Park	83rd & Airport Rd.	7	82%	very high	low	pro	irrigation	30-gal.
Spoor Field ROW (GISD)	41st & Ave. Q	0	0%	medium	low	DIY	contract	15-gal.
Sandhill Crane Park Soccer Fields	Stewart Rd. & 7-mile Rd.	5	93%	11	low	pro	irrigation	30-gal.
Shield Park & ROW	33rd & Church St.	3	18%	10	moderate	pro	irrigation	30-gal.
Old & New City Cemeteries ROW	Avenue K, between 40th & 43rd	31	94%	10	moderate	DIY	irrigation	30-gal.
McGuire-Dent Rec. Center & ROW	28th & Seawall Blvd.	0	0%	9	moderate	pro	irrigation	30/45-gal.
Gus Allen, Sr. Park & ROW	28th & Church Sts.	0	0%	8	low	DIY	irrigation	30-gal.
Jones Park & ROW	71st & Jones Dr.	15	62%	8	low	pro	irrigation	30-gal.
Courville Stadium & Parking Lot ROW (GISD)	27th & Ave. M	0	0%	8	high	pro	contract	30-gal.
San Jacinto Park (GISD) & ROW	19th & Avenue L	4	50%	7	low	DIY	contract	30-gal.
Lasker Park & ROW	43rd & Avenue Q	2	20%	7	low	DIY	irrigation	30-gal.
Lassie League Softball Fields	83rd between Airport & Cessna	0	0%	7	low	pro	irrigation	15-gal.
Kempner Park & ROW	27th & Avenue O	11	17%	5	moderate	DIY	irrigation	30-gal.
Lindale Park ROW	Marine Dr. & Albacore	17	14%	5	low	DIY	irrigation	30-gal.
Memorial/Municipal Cemetery ROW	59th & Ave. T	2	81%	5	low	DIY	irrigation	15-gal.
Alamo Park (GISD) & ROW	51st & Ave. M 1/2	7	43%	4	low	DIY	contract	15-gal.
Crockett Park & ROW	53rd & S½ Sts.	0	0%	4	low	DIY	contract	15/30-gal.
Hooper Baseball/Softball Field	83rd & Frank Guisti Dr.	17	50%	4	low	pro	contract	15-gal.
Bernard Davis College Baseball Field	81st & Frank Guisti Dr.	0	0%	4	low	pro	contract	30-gal.
Milligan & Colombo Fields (LL)	54th & Ave. S	1	3%	4	low	pro	contract	15-gal.
High School Baseball & Softball Fields (GISD)	83rd & Frank Guisti Dr.	0	0%	3	low	pro	contract	15-gal.
Buccaneer & Rotary Fields (LL)	81st & Dominique	1	5%	0	low	pro	contract	15-gal.

*green-shaded rows represent projects completed in 2009-2010

Parks & Cemeteries	Design & Execution, cont'd		Plan Estimates			
	Planting Method	Maintenance Plan	Target Number of New Trees	Estimated or Actual GITC Cost	Donors and Grants to GITC	Partners
Project						
Adoue Park	contract	PARD	17	\$10,000	McCoy's	COG PARD (irrigation)
Adoue Park ROW	contract	1-yr.	23	\$7,131	Kempner Fund, Lynch Family	COG PARD (irrigation)
Wright-Cuney Recreation Center	contract	1-yr.	33	\$8,135	Home Depot Found., Recovery Fund	COG PARD (irrigation)
Schreiber Park	contract	1-yr.	47	\$14,060	Home Depot Found., Recovery Fund	COG PARD (irrigation)
Spoor Field ROW (GISD)	contract	2-yr.	29	\$0	n/a	Trees For Houston
Sandhill Crane Park Soccer Fields	contract	2-yr.	100	\$30,000		
Shield Park & ROW	contract	2-yr.	35	\$11,000		COG PARD (water)
Old & New City Cemeteries ROW	contract	2-yr.	30	\$9,000		COG CDBG?
McGuire-Dent Rec. Center & ROW	contract	2-yr.	95	\$30,000		
Gus Allen, Sr. Park & ROW	volunteer	PARD	11	\$1,500	Episcopal Diocese?	COG PARD (irrigation)
Jones Park & ROW	contract	2-yr.	27	\$9,000		
Courville Stadium & Parking Lot ROW (GISD)	contract	2-yr.	55	\$16,500		GISD?
San Jacinto Park (GISD) & ROW	contract	2-yr.	40	\$12,500		GISD?
Lasker Park & ROW	contract	2-yr.	20	\$6,000		
Lassie League Softball Fields	contract	2-yr.	50	\$12,500		
Kempner Park & ROW	contract	2-yr.	35	\$10,000		
Lindale Park ROW	contract	PARD	10	\$2,000		COG CDBG?
Memorial/Municipal Cemetery ROW	contract	2-yr.	50	\$12,500		COG CDBG?
Alamo Park (GISD) & ROW	contract	2-yr.	70	\$17,500		GISD?
Crockett Park & ROW	contract	2-yr.	11	\$2,750		
Hooper Baseball/Softball Field	contract	2-yr.	12	\$3,000		
Bernard Davis College Baseball Field	contract	2-yr.	25	\$7,500		
Milligan & Colombo Fields (LL)	volunteer	PARD	10	\$2,500	Little League?	Little League?
High School Baseball & Softball Fields (GISD)	contract	2-yr.	24	\$6,000		GISD?
Buccaneer & Rotary Fields (LL)	contract	2-yr.	100	\$25,000	Little League?	Little League?

Major Roads & Boulevards		Tree Loss			Design & Execution			
Project	Location or Section	Est. Number of Trees	Percent Canopy Loss	Community Priority Score	Infrastructure/Utility Conflict	Planting Design	Water Plan	Tree Size
Rosenberg/25th St. (north medians)	Harborside to Broadway	80	69%	very high	moderate	pro	irrigation	mix
Broadway Boulevard medians	24th to 26th Sts.	19	66%	very high	moderate	DIY	irrigation	72" box
Broadway Boulevard medians	37th to 48th Sts.	108	87%	11	high	pro	irrigation	72" box
Broadway Boulevard medians	13th to 24th Sts.	243	86%	11	high	pro	irrigation	72" box
Broadway Boulevard medians	26th to 37th Sts.	125	73%	10	high	pro	irrigation	72" box
Broadway Boulevard medians	48th to 59th Sts.	80	73%	10	high	pro	irrigation	72" box
Rosenberg/25th St. (south medians)	Broadway to Seawall	57	34%	8	moderate	pro	irrigation	mix
61st St.	Hearde Ln. to Seawall	10	24%	7	high	DIY	contract	30-gal.
Broadway Boulevard	6th to 13th Sts.	39	55%	6	high	pro	irrigation	60" box
Ferry Road medians	Harborside to Ferry launch	58	52%	6	moderate	pro	irrigation	mix
Jones Dr.	81st St. to Stewart Rd.	12	58%	5	moderate	DIY	contract	15-gal.
Ferry Road medians	Seawall to Harborside	13	30%	5	moderate	pro	irrigation	mix
61st St. medians	Broadway to Hearde Ln.	1	1%	2	moderate	pro	irrigation	12' palms
Stewart Road	81st to 61st Sts.	21	40%	1	moderate	DIY	contract	15-gal.
School Campuses								
Satori School ROW	25th & Sealy	2	73%	high	low	DIY	adjacent	15/65-gal.
Central Middle School ROW	Sealy, Ball, 30th, & 33rd	15	100%	very high	low	DIY	contract	15-gal.
Trinity Episcopal School	23rd & Ball Sts.	3	37%	high	low	DIY	contract	15-gal.
Parker Elementary	68th & Jones Dr.	13	72%	very high	low	DIY	irrigation	15-gal.
Rosenberg Elementary/KIPP & ROW	10th & Ball Sts.	15	88%	very high	low	DIY	contract	15/30-gal.
Morgan Elementary & ROW	37th & Ave. M 1/2	32	50%	9	low	DIY	contract	15-gal.
AIM High School (San Jacinto) & ROW	21st & Ave. L	13	48%	7	low	DIY	contract	15-gal.
Oppe Elementary ROW	81st & Dominique	16	39%	7	low	DIY	contract	15-gal.
Weis Middle School & ROW	7100 Stewart Rd.	10	30%	7	low	DIY	contract	15-gal.
Galveston Catholic School & ROW	26th & Ave. N	31	29%	7	low	DIY	contract	15-gal.
Austin Middle School & ROW	15th & Ave. N 1/2	12	19%	5	low	DIY	contract	15-gal.
Ball High School & ROW	41st & Ave. O	3	14%	4	low	DIY	contract	15-gal.
Galveston Early College School (Scott)	41st & Ave. N 1/2	1	2%	4	low	DIY	contract	15-gal.
O'Connell Catholic High School	23rd & Ave. M	5	33%	3	low	DIY	contract	15-gal.

*green-shaded rows represent projects completed in 2009-2010

More Appendices (Appendix A, cont'd)

Major Roads & Boulevards	Design & Execution, cont'd		Plan Estimates			
	Planting Method	Maintenance Plan	Target Number of New Trees	Estimated or Actual GITC Cost	Donors and Grants to GITC	Partners
Project						
Rosenberg/25th St. (north medians)	contract	1-yr.	81	\$74,300	various	COG PARD
Broadway Boulevard medians	contract	2-yr.	16	\$129,000	Apache Corp.	COG PARD
Broadway Boulevard medians	contract	2-yr.	93	\$465,000		
Broadway Boulevard medians	contract	2-yr.	160	\$800,000		
Broadway Boulevard medians	contract	2-yr.	86	\$430,000		
Broadway Boulevard medians	contract	2-yr.	103	\$515,000		
Rosenberg/25th St. (south medians)	contract	2-yr.	60	\$60,000	McGovern Foundation	Galveston Found.?
61st St.	contract	2-yr.	40	\$12,000		
Broadway Boulevard	contract	2-yr.	65	\$130,000		
Ferry Road medians	contract	2-yr.	35	\$35,000		TxDOT?
Jones Dr.	contract	2-yr.	150	\$37,500		
Ferry Road medians	contract	2-yr.	20	\$20,000		TxDOT?
61st St. medians	contract	2-yr.	25	\$10,000		TxDOT?
Stewart Road	contract	2-yr.	50	\$12,500		
School Campuses						
Satori School ROW	volunteer	adjacent	4	\$0	n/a	Tree Town, HAUFC
Central Middle School ROW	contract	2-yr.	38	\$0	n/a	Trees For Houston
Trinity Episcopal School	contract	??	28	\$0	n/a	Trees For Houston
Parker Elementary	contract	2-yr.	12	\$0	n/a	TFH, Sierra Club
Rosenberg Elementary/KIPP & ROW	volunteer	2-yr.	20	\$0	n/a	Trees For Houston
Morgan Elementary & ROW	contract	2-yr.	25	\$0	n/a	Trees For Houston?
AIM High School (San Jacinto) & ROW	contract	2-yr.	20	\$0	n/a	Trees For Houston?
Oppe Elementary ROW	contract	2-yr.	30	\$0	n/a	Trees For Houston?
Weis Middle School & ROW	contract	2-yr.	45	\$0	n/a	Trees For Houston?
Galveston Catholic School & ROW	contract	2-yr.	40	\$0	n/a	Trees For Houston?
Austin Middle School & ROW	contract	2-yr.	20	\$0	n/a	Trees For Houston?
Ball High School & ROW	contract	2-yr.	108	\$0	n/a	Trees For Houston?
Galveston Early College School (Scott)	contract	2-yr.	31	\$0	n/a	Trees For Houston?
O'Connell Catholic High School	contract	2-yr.	20	\$0	n/a	Trees For Houston?

More Appendices (Appendix A, cont'd)

Public Buildings		Tree Loss			Design & Execution			
Project	Location or Section	Est. Number of Trees	Percent Canopy Loss	Community Priority Score	Infrastructure/Utility Conflict	Planting Design	Water Plan	Tree Size
City Hall Fire Station #1	25th & Sealy	2	100%	very high	low	DIY	irrigation	large
City Hall Parking Lots & ROW	Sealy, Ball, & 26th St.	21	100%	12	low	DIY	irrigation	30-gal.
Island Transit/Bersinger Building ROW	30th-32nd, Market to Church	0	0%	0	low	DIY	irrigation	15-gal.
Scholes Field Airport Terminal	83rd & Terminal Dr.	12	43%	7	moderate	pro	irrigation	30/45-gal.
Fire Station #4	8700 Cessna	0	0%	4	low	DIY	hand	45-gal.
Fire Station #7	3902 Buccaneer	0	0%	3	low	DIY	hand	45-gal.
Fire Station #8	21710 Shelby Dr. South	0	0%	2	low	DIY	hand	45-gal.
Neighborhood ROW								
North Galveston (OCCP)	54th to 26th, Church & Postoffice to Broadway	584	92%	11	moderate	DIY	contract	15-gal.
Historic Downtown	26th to 19th, Harborside to Broadway	589	82%	10	high	pro	contract	30-gal.
Driftwood/Hollywood Heights	83rd to 61st, Broadway to Seawall	593	39%	10	moderate	DIY	adjacent	15-gal.
East End Historic District	19th to 14th & 10th, Market to Broadway	1175	93%	9	moderate	DIY	adjacent	15-gal.
Bayou Shores	61st to 53rd, Broadway to Seawall	783	68%	8	moderate	DIY	adjacent	15-gal.
Lasker Park	53rd to 33rd, Broadway to Ave. S	1371	36%	8	moderate	DIY	adjacent	15-gal.
UTMB/University Area	14th & 10th to Ferry Road & East Beach	515	45%	5	moderate	DIY	adjacent	15-gal.
Texas Heroes	subdivision inset (Lasker Park)	28	40%	5	moderate	DIY	adjacent	15-gal.
San Jacinto	23rd to 6th, Broadway to Seawall	405	31%	5	moderate	DIY	adjacent	15-gal.
Kempner Park	33rd to 26th, Broadway to Seawall & Ave. S	359	26%	4	moderate	DIY	adjacent	15-gal.
Harve Lafitte	subdivision inset (Driftwood/Hollywood Hts.)	51	31%	3	moderate	DIY	adjacent	15-gal.
Denver Court/Fort Crockett	53rd to 31st, Ave. S to Seawall	69	9%	3	moderate	DIY	adjacent	15-gal.
Teichman Point	Teichman Point to 59th	115	52%	2	moderate	DIY	adjacent	15-gal.
Silk Stocking/Rosenberg	26th to 23rd, Broadway to Seawall	180	37%	2	moderate	DIY	adjacent	15-gal.
West End	San Luis Pass to 8 Mile Rd.	N/A	low	0	moderate	DIY	adjacent	15-gal.
Jamaica Beach	City of Jamaica Beach, TX	N/A	low	0	moderate	DIY	adjacent	15-gal.
Airport/8 Mile Road	8 Mile Rd. to 83rd & Scholes Field	655	32%	0	moderate	DIY	adjacent	15-gal.
Cedar Lawn	subdivision inset (Lasker Park)	21	14%	0	moderate	DIY	adjacent	15-gal.
Colony Park	subdivision inset (Driftwood/Hollywood Hts.)	4	4%	0	moderate	DIY	adjacent	15-gal.
Adler Circle	subdivision inset (Bayou Shores)	1	2%	0	moderate	DIY	adjacent	15-gal.

*green-shaded rows represent projects completed in 2009-2010

Public Buildings	Design & Execution, cont'd		Plan Estimates			
Project	Planting Method	Maintenance Plan	Target Number of New Trees	Estimated or Actual GITC Cost	Donors and Grants to GITC	Partners
City Hall Fire Station #1	partner	PARD	4	\$2,940	Galveston Recovery Fund	various
City Hall Parking Lots & ROW	contract	2-yr.	50	\$15,000		COG CDBG
Island Transit/Bersinger Building ROW	contract	2-yr.	30	\$7,500		COG CDBG
Scholes Field Airport Terminal	contract	2-yr.	30	\$15,000		
Fire Station #4	volunteer	GFD	2	\$300	Firefighters Union?	
Fire Station #7	volunteer	GFD	2	\$300	Firefighters Union?	
Fire Station #8	volunteer	GFD	2	\$300	Firefighters Union?	
Neighborhood ROW						
North Galveston (OCCP)	contract	contract	400	\$80,000	USFS, other?	??
Historic Downtown	contract	contract	400	\$120,000		D'town Partnership
Driftwood/Hollywood Heights	volunteer	adjacent	300	\$10,000		
East End Historic District	volunteer	adjacent	500	\$25,000	Home Depot Foundation, USFS	EEHDA
Bayou Shores	volunteer	adjacent	300	\$15,000		
Lasker Park	volunteer	adjacent	400	\$25,000		
UTMB/University Area	volunteer	adjacent	200	\$10,000		
Texas Heroes	volunteer	adjacent	n/a			
San Jacinto	volunteer	adjacent	200	\$10,000	USFS	San Jac NA
Kempner Park	volunteer	adjacent	100	\$5,000		
Harve Lafitte	volunteer	adjacent	n/a			
Denver Court/Fort Crockett	volunteer	adjacent	n/a			
Teichman Point	volunteer	adjacent	50	\$2,500		
Silk Stocking/Rosenberg	volunteer	adjacent	100	\$5,000		
West End	volunteer	adjacent	??			
Jamaica Beach	volunteer	adjacent	??			
Airport/8 Mile Road	volunteer	adjacent	200	\$10,000		
Cedar Lawn	volunteer	adjacent	n/a			
Colony Park	volunteer	adjacent	n/a			
Adler Circle	volunteer	adjacent	n/a			

Appendix B: List of potential tree planting projects considered but rejected as part of this plan.

Project	Location or Section	Comments
Public Parks & Cemeteries		
Galveston Island State Park	FM 3005 & Park Rd. 66	State park priority is ecological restoration
Seawolf Park (Park Board of Trustees)	Seawolf Parkway	
Beach Parks (Park Board of Trustees)	various	
Fort Crockett Seawall Park (Galveston Co.)	48th & Seawall	beautification planned as part of TxDOT STEP grant
Public Buildings & NGO's		
Galveston County Courthouse	722 Moody	completed by county August 2009
Ashton Villa	24th & Broadway (maintained by GHF)	completed by GHF in FY 2010
Moody Mansion	27th & Broadway	completed FY 2010
Galveston Housing Authority properties	various	managed and planned by GHA
Rosenberg Library	23rd & Sealy	completed by library in FY 2010
Bersinger Building	30th & Market	planned for demolition?
New Pump Station	30th & Church	new landscaping installed with new building, FY 2010
Police Station	54th St.	located at county justice center
Fire Station #2	428 Church	already has new trees
Fire Station #5	5728 Ball	located at county justice center
Island Community Center (GHA)	47th & Broadway	already has new trees
Galveston Island Humane Society	53rd & Ave. S	moving location to Broadway, taking trees with them
Salvation Army	22nd & Broadway	moving location to 51st St.?
Public Works Office/Pump Station	30th & Ball	offices moving? Building planned for demolition?
St. Vincent's House	28th & Postoffice	completed FY 2010, incl. ROW
ADA Women's Center	1st & Strand	one spot on site: invite to tree giveaway
The Children's Center	confidential	5-6 spots inside fence: invite to tree giveaway
The Jesse Tree	2622 Market	no room for trees (one palm in ROW?)
Galveston AIDS Foundation	23rd & Winnie	ROW only, include in downtown ROW plan
Boys & Girls Clubs of Galveston County	44th & Ave. P	completed FY 2010

More Appendices

Project	Location or Section	Comments
Major Roads & Boulevards		
Harborside Dr.	14th St. to Ferry Rd.	maintained by UTMB
Harborside Dr.	28th to 14th Sts.	no room for trees in ROW
Harborside Dr.	Gulf Fwy. to 28th St.	little room for trees
Rosenberg/25th St. (north ROW)	Broadway to Harborside	include with Historic Downtown Partnership plantings
6th St./University Blvd.	Broadway to Market	maintained by UTMB; all palms
51st St.	Broadway to Postoffice	industrial/on-ramp; not much planting space
Seawall Blvd.	Cove View to Ferry Rd.	beautification planned as part of TxDOT STEP grant
Central City Blvd.	61st to Seawall Blvd.	has palms already, no tree loss
Stewart Road	7 Mile Rd. to 81st St.	road has rural character
Stewart Road	Pabst Rd. to 7 Mile Rd.	road has rural character
Stewart Road	13 Mile Rd. to Pabst Rd.	road has rural character
FM 3005	Seawall to San Luis Pass	state-maintained highway
Neighborhood ROW		
Harborside Industrial	59th to 26th, Harborside to Market	very few residential property owners
School Campuses		
Burnet Elementary (closed)	55th & Ave. S.	closed after Hurricane Ike
Alamo Elementary (closed)	52nd & Ave. N 1/2	closed after Hurricane Ike
Odyssey Academy	61st & Stewart Rd.	rental property?
Magical Journey Montessori School	21st & Ave. N 1/2	private residence; capture during NeighborWoods
Green Earth Montessori (closed)	6910 Yucca	Zion Lutheran Church
Ambassador Academy	51st & Ave. U	ownership Fertitta
Colleges & Universities		
Galveston College	4015 Avenue Q	outlet for leftover giveaway trees?
University of Texas Medical Branch (UTMB)	301 University Blvd.	separate campus landscape plan
Texas A&M University-Galveston	Seawolf Parkway	outlet for leftover giveaway trees?

More Appendices

Appendix C: List of recommended tree species for Galveston, Texas.

Large/Medium Trees & Palms	
Recommended	Also Worth Considering
live oak (<i>Quercus virginiana</i>)	American holly (<i>Ilex opaca</i>)
baldcypress (<i>Taxodium distichum</i>)	common persimmon (<i>Diospyros virginiana</i>)
Montezuma baldcypress (<i>Taxodium mucronatum</i>)	swamp chestnut oak (<i>Quercus michauxii</i>)
cedar elm (<i>Ulmus crassifolia</i>)	black hickory (<i>Carya texana</i>)
pecan (<i>Carya illinoensis</i>)	Mexican white oak (<i>Quercus polymorpha</i>)
magnolia (<i>Magnolia grandiflora</i>)	Aleppo pine (<i>Pinus halapensis</i>)
bur oak (<i>Quercus macrocarpa</i>)	American elm (<i>Ulmus americana</i>)
overcup oak (<i>Quercus lyrata</i>)	American sycamore (<i>Platanus occidentalis</i>)
Compton's oak (hybrid of <i>Q. virginiana</i> X <i>Q. lyrata</i>)	jacaranda (<i>Jacaranda mimosifolia</i>)
Eastern redcedar (<i>Juniperus virginiana</i>)	honey mesquite (<i>Prosopis glandulosa</i>)
Mexican sycamore (<i>Platanus mexicana</i>)	slash pine (<i>Pinus elliotii</i>)
anacua (<i>Ehretia anacua</i>)	southern catalpa (<i>Catalpa bignonioides</i>)
Texas ebony (<i>Ebenopsis ebano</i> or <i>Pithecellobium flexicaule</i>)	camphor-tree (<i>Cinnamomum camphora</i>)
Norfolk-Island-pine (<i>Araucaria heterophylla</i>)	sugarberry (<i>Celtis laevigata</i>)
Italian stone pine (<i>Pinus pinea</i>)	Shumard oak (<i>Quercus shumardii</i>)
Texas sabal palm (<i>Sabal mexicana</i>)	goldenraintree (<i>Koelreuteria paniculata</i>)
California fanpalm (<i>Washingtonia filifera</i>)	Chinese pistache (<i>Pistacia chinensis</i>)
Florida sabal palm (<i>Sabal palmetto</i>)	sweetgum (<i>Liquidambar styraciflua</i>)
Canary Island date palm (<i>Phoenix canariensis</i>)	blackgum (<i>Nyssa sylvatica</i>)
	boxelder (<i>Acer negundo</i>)
(suitable for ROW plantings)	(better in a yard setting)

Small Trees (<20' tall at maturity)	
Recommended	Also Worth Considering
yaupon (<i>Ilex vomitoria</i>)	Mexican plum (<i>Prunus mexicana</i>)
crapemyrtle (<i>Lagerstroemia indica</i>)	red buckeye (<i>Aesculus pavia</i>)
Jerusalem-thorn or retama (<i>Parkinsonia aculeata</i>)	yellow-bells (<i>Tecoma stans</i>)
desert-willow (<i>Chilopsis linearis</i>)	hawthorn (<i>Crataegus spp.</i>)
possumhaw (<i>Ilex decidua</i>)	vitex or licac chastetree (<i>Vitex agnus-castus</i>)
Eve's-necklace (<i>Sophora affinis</i> or <i>Styphnolobium affine</i>)	waxmyrtle (<i>Myrica cerifera</i> or <i>Morella cerifera</i>)
orchidtree (<i>Bauhinia spp.</i>)	huisache (<i>Acacia farnesiana</i> or <i>A. smallii</i>)
Texas redbud (<i>Cercis texensis</i>)	Chinese fringetree (<i>Chionanthus retusus</i>)
Japanese black pine (<i>Pinus thunbergii</i>)	Mexican-olive or anacahuite (<i>Cordia boissieri</i>)
Japanese yew (<i>Podocarpus macrophylla</i>)	Mexican poinciana or bird-of-paradise (<i>Caesalpinia mexicana</i>)
windmill palm (<i>Trachycarpus fortunei</i>)	
flameleaf sumac (<i>Rhus lanceolata</i>)	
(suitable for ROW plantings)	(better in a yard setting)

