WCG
WESTBURY COMMUNITY GARDEN

MASTER PLAN

DECEMBER 2016

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EXECUTIVE SUMMARY




Founded seven years ago in the Westbury area of southwest Houston, Westbury Community Garden (WCG) has become, in almost every measurable way, a model for community-initiated and community-led parks and open spaces. The *Westbury Community Garden Master Plan*, completed in 2016, is an effort to both take stock of this place as it exists today and provide site planning recommendations to guide the future of this highly valued community resource.

While it is customary for institutions to plan for their future, this master planning effort began from everyday needs. As long as it has been the Westbury Community Garden, this 7-acre site has suffered from regular nuisance flooding following rain events and deep rutting of the landscape at parking and regular circulation areas. The severity of these issues reached a point where action was needed. At the same time, the WCG was navigating other complex issues including the expansion of programs, resources and membership, evolving relationships with other site stakeholders including primary site partner Plant It Forward Farms, and the realization that what was once an experiment in community activism had become a community fixture. The Master Plan was thus conceptualized as a way of not only addressing the immediate needs of the physical site in regard to drainage, grading and hardscape for circulation but also the broader needs of the site and its increasingly diverse user base as it looks to expand the role of the site within the community and surrounding city. As a means of promoting the garden's mission and ongoing work to the more people, the Master Plan is seeking the Sustainable SITES certification, the most far-reaching and rigorous certification process for landscape design projects. Once certified, this project is expected to become the first site in Houston certified under this ambitious program.

Given that WCG was established through strong community partnerships and its continued success has relied on many of these same partnerships, community involvement was a critical component of the master planning process. The planning work was structured around two community meeting events and numerous smaller meetings with a steering committee formed to vet master planning progress and share the interests of the broader community. In addition, many of the site's longtime stakeholder organizations were interviewed directly to best assess their past contributions to the WCG and how they could continue to support the site.

The *Master Plan* document includes chapters which document existing conditions at the site and those which specify recommendations for the future of the site. Between these chapters, and as a prelude to the recommendations, is a chapter devoted to the community engagement efforts at the heart of the master planning process. The existing conditions are treated broadly as both *Area Context* and *Site Context* to best understand the challenges and opportunities presented by the conditions surrounding the site as much as those on the site itself. The recommendations are primarily focused on site development guidelines with a companion chapter devoted to strategies for master plan implementation.

The master plan recommendations are all embodied in the *site plan* (below) which represents the culmination of the master planning process, a graphic distillation of the many ideas advanced during that process, and most importantly a consensus on how to best preserve and enhance what makes Westbury Community Garden such a unique asset. The recommendations are organized into eight separate sections covering a range of site issues, and representing both immediate and longterm consequences for the site: Circulation; Grading and Drainage; Program Spaces; Planting; Site Resources; Lighting; Signage; and Site Furnishings. Each of these sections includes a summary of intent, a plan graphic specific to that issue, and a set of recommendations.

With their range of focus and specificity, the master plan recommendations are difficult to summarize in any singular way. There are however themes which cut across all site issues including a commitment to ecological education of the broader public and the diverse site programs to support this, maximum resource efficiency, biodiversity, and improved accessibility and connectivity to better link program spaces and enable the site to best fulfill its mission as a hub for the surrounding community. Throughout, the *Westbury Community Garden Master Plan* provides guidance to site users that strikes a unique balance between providing new ideas and features to enhance the site with preservation of the existing features that have truly formed the identity of the site as we know it today.

Site Plan from the *Westbury Community Garden Master Plan*

1. Existing garden with improved drainage
2. Parking area with pervious paving
3. Reforestation Area
4. Enhanced Storage Shed
5. Apiary
6. Loop roadway with pervious paving
7. Drainage Swale
8. Flexible open space for events
9. Pedestrian connections to future expansion
10. Nature Play Area
11. Deck and shade trellis
12. Rain garden connected to existing cistern
13. Existing pavilion with solar panels on roof and attached Demonstration Platform
14. Primary vehicular entry with identity signage
15. Parking Area with pervious paving
16. Dedicated Farm Stand
17. Compost windrows
18. Composting restroom
19. Enclosed dumpster
20. Greenhouse
21. Parking Area with pervious paving
22. Drainage Swale
23. Future Training Farm
24. Pedestrian Path
25. Existing Plant It Forward Farms
26. Pedestrian Entry
27. Future Area - Passive Park
28. Future Area - Food Forest / Orchard
29. Future Area - Agri-Ecology / Native Grains
30. Observation platform
31. Pocket prairie
32. Sidewalk
33. Drainage swale connection to storm sewer
34. Identity signage

INTRODUCTION

Scenes from Westbury Community Garden

MASTER PLAN VISION AND GOALS

"I will walk in a garden like this in paradise."
- statement from a cancer patient visiting the Westbury Community Garden

The modest 2-acre community garden project first conceived by Becky Edmondson and Ray Sher in 2009 is now a 7-acre site with a dedicated and diverse garden membership of more than 100 persons and where hundreds of area residents regularly participate in multiple programs throughout the year beyond community gardening. With growth and popularity come an increasing need for planning and visioning.

The *Master Plan* addresses many of the core challenges facing the garden as it expands its membership, programs and resources, and looks to build partnerships with neighboring organizations including Plant It Forward Farms which has played a large and active role on the site since 2014. But a primary point of departure is simply the condition of the site itself. This is a resilient site but one that shows many scars from the punishing Houston climate in the form of regular flooding and rutted areas difficult to navigate. The master plan will address these landscape concerns by focusing on optimal strategies for site circulation, drainage and grading, and how these improvements can be done sensitively in the context of the existing site amenities. Other key themes of the master plan will include general land use strategy, program development, planting guidelines, new and enhanced site resources, lighting, signage and site furnishings. In all of these areas, the *Master Plan* aims to find sensitive strategies that defer to the existing site and appreciate the labor and time that have given this place its identity.

This document features a thorough understanding of the existing site, the site users, the interests of stakeholders, and the area context, all necessary to provide the insight needed to ensure an implementable master plan tailored to the Westbury Community Garden. For this reason, a significant amount of time has been invested in this due diligence work. The work is multi-faceted in that it involves extensive data collection from digital sources, field work to gain up-to-date and site-specific information, engagement with site users, stakeholders and those who know the site best, and research on the context of the larger area. This analysis has resulted in a deep understanding of the ecological, social, cultural, and historical site context and is organized in a way that facilitates innovative design and planning in the master plan recommendations. Paramount to this effort is a set of recommendations that are actionable and can be implemented incrementally over time as funds are raised and become available.

The project aims to become the first project in Houston to gain the Sustainable SITES certification, the most far-reaching and rigorous certification process for landscape design projects. Sustainable SITES provides a comprehensive rating system designed to distinguish sustainable landscapes, measure their performance and elevate their value over time. The garden is already guided by many of the same standards and principles that distinguish this certification. The master planning process will do much to clarify, promote, and expand the ongoing efforts to manage Westbury Community Garden for long-term sustainability goals.

WESTBURY COMMUNITY GARDEN HISTORY

"The Westbury Community Garden educates adults and children about good nutrition and ecology, strengthens community spirit, provides organically-grown food, and serves as a gathering place for the community." - Westbury Community Garden Mission

At only seven years-old, Westbury Community Garden is young but its short history has been remarkably eventful and full of key milestones. Originally owned by the Houston Housing Authority, the 7-acre site has existed as park space in some form for nearly 30 years.

The site's early history as a park began in 1982 when the Westbury Civic Club filed suit against the Houston Housing Authority for violations of statutes related to their plans to build an apartment complex on this site. An out-of-court agreement was reached, and it was decided that this acreage would be a good site for a city park due to its location next to an existing 930 unit apartment complex. The Houston Parks and Recreation Department then leased and maintained the land for almost 30 years.

In 2009, a group of volunteers seeking to build a community garden in the Westbury area discovered this 7-acre site within the Westbury SuperNeighborhood boundaries. The long-term lease of the site by the Houston Parks and Recreation Department had just expired, so the garden volunteers sought a lease with the Houston Housing Authority. City Council Member Anne Clutterbuck negotiated a lease from the HHA on behalf of the Westbury Civic Club on 2 acres of the site in December of 2009. In 2011, the lease was modified to include the entire 7-acre site and it formally became a joint project of the Westbury SuperNeighborhood, the Westbury Civic Club, and the Westbury Area Improvement Corporation.

Thanks to Keep Houston Beautiful, Keep America Beautiful, and Scott's Miracle-Gro, the first garden beds were constructed in March of 2010. Today there are 64 raised beds, a 900 sqft covered outdoor learning pavilion, orchards, compost areas, a rainwater collection system, and a certified butterfly garden with native plants.

2009: First garden meeting and Former Council member Anne Clutterbuck negotiates 2 acre lease for the future garden site.

2010: The first 48 beds and waterlines are installed through an outpouring of community generosity.

2011: Leadership Houston's Class XXVIII donates and builds the June Holly Educational Pavilion in honor of the program's founder, June Holly.

2012: Pocket Prairie established with help from Coastal Prairie Partnership and Katy Prairie Conservancy

Leadership Houston Class XXVIII built the beautiful covered pavilion, known as the June Holly Educational Pavilion in honor of the program's founder, and hundreds of children and adults have attended classes under its roof. As an allotment garden affiliated with Urban Harvest, two Urban Harvest classes, "Planting the Fall Vegetable Garden" and "Constructing the Home Fruit Vegetable Garden" are commonly taught at the Westbury Community Garden under the pavilion.

The garden also features public art. Artistic garden signs were created by volunteers trained by MOCAH (Museum of Cultural Arts – Houston) in 2010. In November 2013, the Art Club students from Westbury High School painted large murals on the garden storage sheds.

In 2014, Plant It Forward Farms initiated a relationship with the garden that continues today. The organization established two 1-acre farms now stewarded by refugee farmers who take their produce to market and run a community-supported agriculture program. Recently, two graduates of the Plant it Forward Farms program have become new members of the garden.

The Westbury Community Garden is currently one of the largest, most successful community gardens in Houston. The garden has won both local and national awards. The garden's slogan is "Growing Community through Gardening" and that is what it does. It has successfully created a space where residents of area single-family homes garden together with residents from nearby multi-family housing. The gardeners are as diverse as the produce they grow and they come from all over southwest Houston. People from different backgrounds, cultures, and circumstances come together as gardeners.

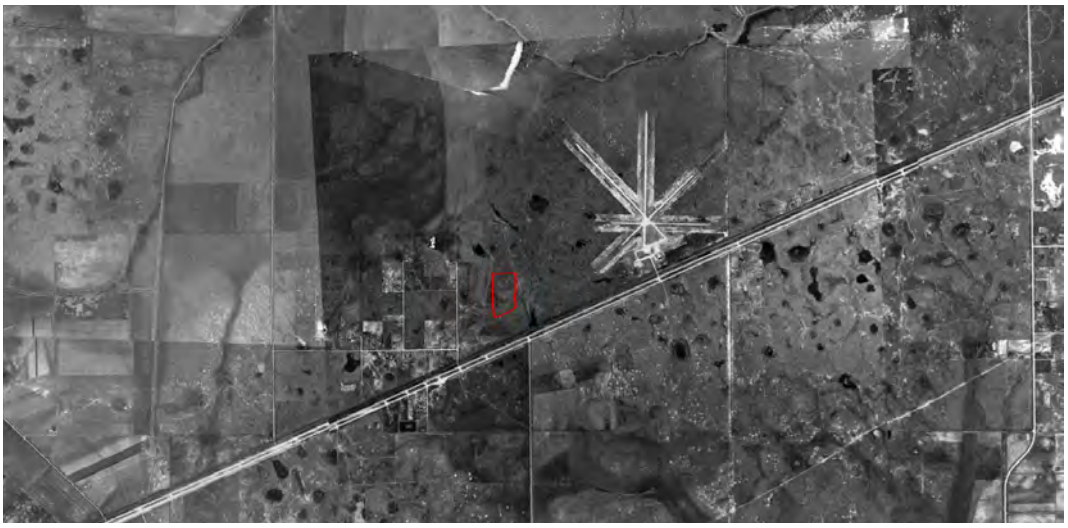
2013: Art Club students from Westbury High School paint large murals on the garden storage sheds

2014: Plant It Forward leases 2 acres and breaks ground on 2 new farms

2015: The garden wins 1st place award for 'Physical Revitalization' at the Neighborhoods USA conference

2016: The garden launches its first ever Master Plan and seeks to become Houston's first Sustainable SITES certified project

SITE HISTORY



1944

1979

2005

In the 1940's, much of the area's native coastal prairie was still the prevailing landscape and Westbury was not yet a recognized part of Houston. The former Sam Houston Airport, visible in the photograph, is one of the few landmarks in the area. However, the conditions for urban expansion were already in place with the existence of Highway 90 running through the area connecting Houston with Missouri City, Stafford, Sugar Land and Rosenberg.

By the late 1970's, the disjunctive urban fabric that has become the hallmark of Houston was very much in evidence around the site. Hillcroft Avenue's current role as both a north-south arterial roadway and a divider between the high density apartments to the West and the lower density single-family residences to the East is apparent, and one can infer that the site may already be serving as community open space to surrounding residents of the apartments.

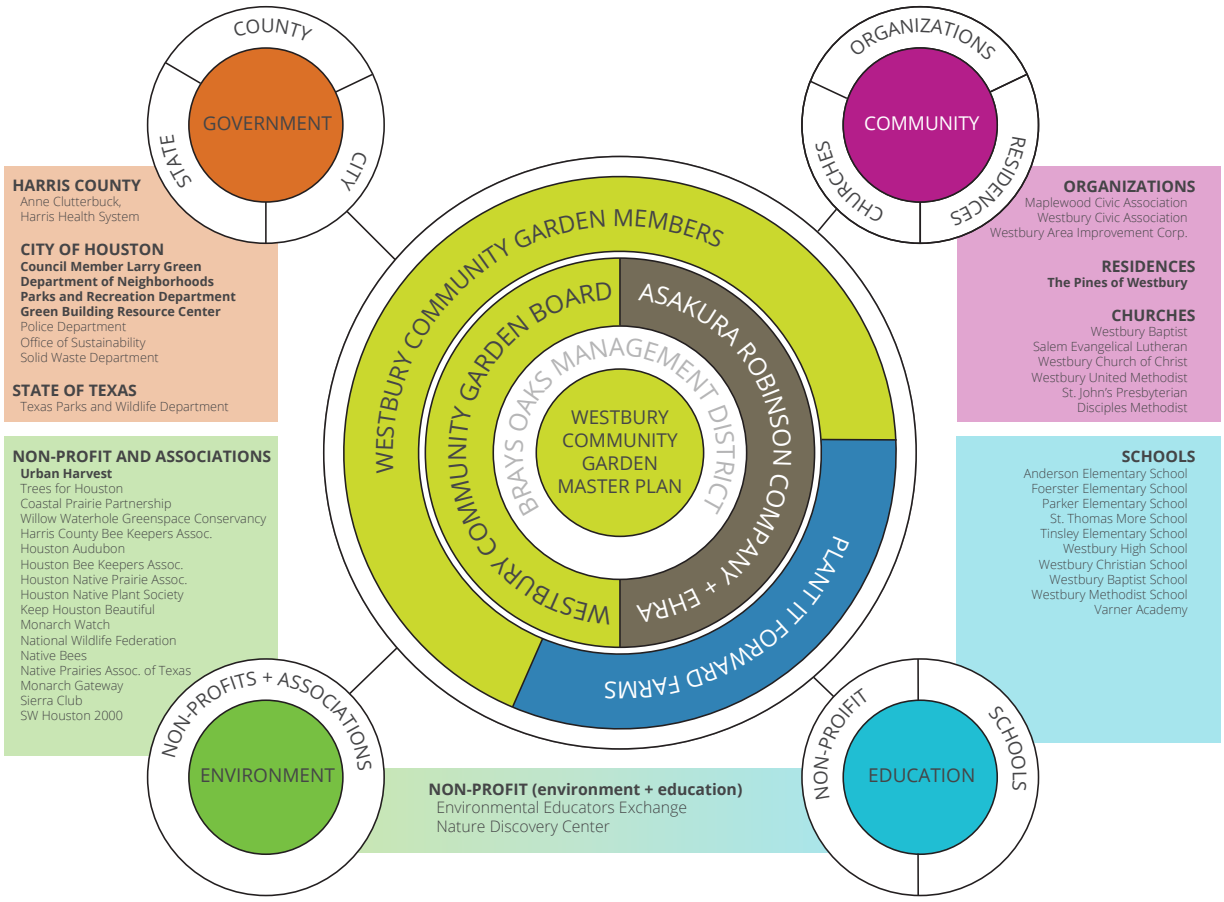
By the first years of the 21st century, urban development around the site has stabilized and little of the native landscape remains. The few natural sites which do remain have been mostly formalized as parks or incorporated into school property. The site that would become Westbury Community Garden exists as little more than an informal community open space but retains much of the topography that the future garden members would inherit.

CURRENT STAKEHOLDERS

It is no understatement to say that the Westbury Community Garden and its larger site are truly the embodiment of community. This is visible on many levels, from the active membership of the garden, to the many volunteer projects that have built the site over time, to the many schools and classes which have used the garden for educational programs, to the numerous community events scheduled throughout the year, and finally to the many elected officials who have supported the site since its founding.

Indeed , the site owes its success to this spirit of community and the many stakeholders deeply invested in this place. For the site to advance its mission, to evolve in sensible ways, enhance its current programs and spaces and add new opportunities, it will need to rely on this very formidable network of stakeholders.

Loosely organized along the lines of government, community, environment, and education, many of these stakeholders are looking to build on their past contributions and find new ways of contributing to the site. The master planning process not only included many of these stakeholders as participants but has also sought to identify key opportunities for these stakeholders to stay involved or become more involved at the site.



PLANT IT FORWARD FARMS

Plant It Forward Farms (PIFF) is a Houston-based nonprofit organization that operates four thriving and sustainable urban farms throughout the city. At each of these farms, PIFF offers economically disadvantaged refugees an opportunity to become self-sufficient through growing, harvesting and selling produce.

Since 2014, the organization has leased 2 acres of the site and currently operates two 1-acre farms on that land, a regular farmers market stand, and supplies a popular CSA program.

In a city overflowing with land, sun and water, PIFF has labored to build the infrastructure to be able to grow and purchase healthy, fresh and local food in places where this is needed most, including the area around this site.

The site in turn has benefited tremendously from PIFF's active presence and a primary intent of the *Master Plan* is to better understand PIFF's long range plans on the site, integrate PIFF's activities with other programs on site, make them more accessible to more people, and encourage PIFF to contribute to the overall identity of the site in a more lasting way.

SUSTAINABLE SITES OVERVIEW

The Sustainable Sites Initiative™ (SITES®) v2 Rating System is a set of comprehensive, voluntary guidelines together with a rating system that assesses the sustainable design, construction, and maintenance of landscapes. It is used by landscape architects, designers, engineers, architects, developers, policy-makers, and others to guide land design and development. The SITES v2 Rating System can apply to projects at various scales, with or without buildings. Project types include: open spaces, streetscapes, commercial and educational / institutional campuses, residential neighborhoods and yards, military, and more.

- Courtesy of the American Society of Landscape Architects

Within the master planning process, the Sustainable SITES site analysis requirements overlap the scope of what would be typically involved in a similar project. However, with SITES, we are coordinating the site analysis work in a way that will feed into and facilitate the other requirements for the SITES certification. The scorecard for managing the SITES certification process is provided in the *Appendices* to this document.

SUSTAINABLE SITES OVERVIEW

SITES GOALS

Create Regenerative Systems and Foster Resiliency

- Protect and restore natural resources such as soil, water, and vegetation.
- Encourage biodiversity.
- Enhance landscapes to provide multiple ecosystem services such as cleaning air and water, providing habitat, and storing carbon.
- Mitigate for evolving hazards and natural disasters.
- Plan for monitoring and adaptive management.

Ensure Future Resource Supply and Mitigate Climate Change

- Minimize energy consumption and encourage use of low carbon and renewable energy sources.
- Minimize or eliminate greenhouse gas emissions, heavy metals, chemicals, and other pollutants.
- Reduce, reuse, recycle, and upcycle materials and resources.
- Conserve water.
- Increase the capacity of carbon sinks through re-vegetation.

Transform the Market through Design, Development, and Maintenance Practices

- Foster leadership in industry and professional practice.
- Use a systems-thinking, integrative and collaborative design approach.
- Use lifecycle analyses to inform the design process.
- Support local economies and sustainability policies.

Enhance Human Well-Being and Strengthen Community

- Reconnect humans to nature.
- Improve human health (physical, mental, and spiritual).
- Foster stewardship by providing education that promotes the understanding of natural systems, and recognizes the value of landscapes.
- Encourage cultural integrity and promote regional identity.
- Provide opportunities for community involvement and advocacy.

Summary of SITES Certification Process

DESIGN PHASES	Site Assessment Process and Program Plan	Design Development Presentation and Review	Present the Design to the Public
	Engage site users and stakeholders in identifying specific, measurable, attainable, realistic, and timely project goals	Invite site users and stakeholders to the design development presentation and review	Present the design to the public in at least two forms (website, community meeting, newspaper article, civic display
	Identify the programmatic and functional needs of the various site user groups		
	Provide site users and stakeholders with multiple schematic design alternatives and associated outcomes using visual representations.		

ENGAGE SITE USERS AND STAKEHOLDERS

EXISTING PLANNING STUDIES

Brays Oaks Management District Parks Master Plan (2013)

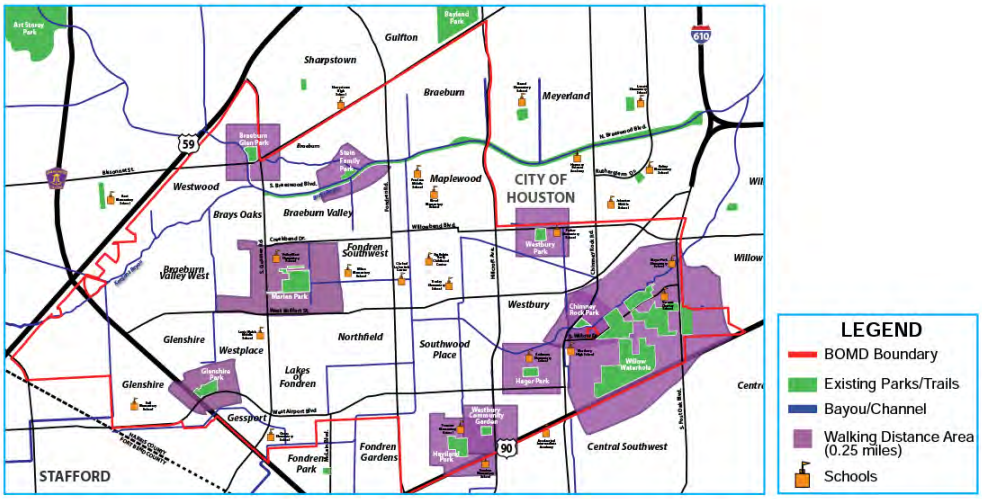
Needs Assessment

BRAYS OAKS Management District Est. 2005

neighborhood. Conflicts are generally across major roadways which lack proper accessible ramps and crosswalk striping.

There are still many neighborhoods; however, that currently do not have park space within 1/4 mile, a typical distance to walk, as shown on the map below.

Pedestrian Accessibility to Existing Parks in BOMD



	Conflicts (lack of ramps, crosswalks, etc.)	Sidewalks along Major Roadways	Internal sidewalks within neighborhoods
Glenshire Park			
Glenshire	X	X	X
Westplace		X	
Gessport	X		
Lakes of Fondren		X	X
Marian Park			
Braeburn Valley West	X		
Braeburn Valley		X	X
Fondren Southwest	X	X	X
Northfield		X	X
Lakes of Fondren		X	
Brays Oaks			X
Haviland Park			
Fondren Park	X		
Fondren Gardens			
Southwood Place		X	
Westbury	X	X	X
Central Southwest	X		X

	Conflicts (lack of ramps, crosswalks, etc.)	Sidewalks along Major Roadways	Internal sidewalks within neighborhoods
Westbury Community Gardens			
Westbury		X	X
Southwood Place		X	X
Chimney Rock Park			
Westbury		X	X
Central Southwest		X	
Stein Family Park			
Braeburn Valley		X	X
Sharpstown	X		
Meyerland/Maplewood		X	X
Brays Bayou Trail			
Braeburn		X	X
Brays Oaks		X	X
Meyerland		X	X
Westbury		X	X

	Conflicts (lack of ramps, crosswalks, etc.)	Sidewalks along Major Roadways	Internal sidewalks within neighborhoods
Hager Park			
Southwood Place		X	X
Westbury		X	X
Braeburn Glen Park			
Braeburn Valley		X	X
Sharpstown		X	
Westwood		X	X
Westbury Park			
Meyerland/Maplewood		X	X
Westbury		X	X
Willow Waterhole			
Westbury		X	X
Willow Meadows	X		
Central Southwest	X		

EXISTING PLANNING STUDIES

Brays Oaks Management District Parks Master Plan (2013)

Recommendations

Westbury Community Garden

"Growing community through gardening" is the Westbury Community Garden's moto. Established in 2010, this garden space has been expanding to meet the demand for bed space. Currently a lease from the Houston Housing Authority, acquisition of the property should be explored (see aquisition section). Providing additional expansion areas for garden plots would be beneficial to help with the current waiting list. The installation of sidewalks along Dunlap Street and Greencraig Drive, as well as constructing a parking lot would increase accesibility to the park. A crosswalk at Dunlap would provide a direct connection to the adjacent residences. Creating an internal trail would provide an opportunity for those who desire a more passive observation of the gardens.

Recommended Improvements

- Improve pedestrian connections from adjacent neighborhoods, installing crosswalks and sidewalks
- Install an internal trail
- Install parking lot
- Expand garden beds

Estimated Cost for Improvements = $120,000

40

EXISTING PLANNING STUDIES

City of Houston Parks & Recreation Master Plan (2015)

PARK SECTOR 8 SUMMARY

PARK SECTOR 8 PRIORITIES

These priorities were developed by using condition assessment information from site visits, standard-based needs analysis (NRPA standards and TPL ParkScore™), and public input via an online survey, park user interviews, community events and Capital Improvement Plan (CIP) meetings.

1. Develop Neighborhood connections to parks and trails
2. Revitalize existing parks
3. Acquire new parkland
4. Develop partnerships with the school system and other entities
5. Develop new park facilities
6. Preserve environmentally sensitive areas

RECOMMENDATIONS

The parks in Park Sector 8 that have the highest need for redevelopment are listed from greatest need to least need: Hager (Lee) Park, Cambridge Village Park, Minchen (Simon) Park, Maxie (Beulah) Park, and Brentwood Park.

In this Park Sector 155 acres of parkland are needed. This Park Sector is the most populous of any throughout the city and has many areas of high need in the southeast. Schools not participating in the SPARK School Park Program (Non-SPARK schools) should be explored as potential future partnerships for park space. Fifty-seven (57%) of the population in this Park Sector has incomes considered to be low to moderate. Pursuing Community Development Block Grants (CDBG) for park improvements should be a priority. In addition, since several non-SPARK schools are located in high and very high park need areas, Community Development Block Grant funding could be considered in partnership with the SPARK Park program to add park space to the system and provide improvements at non-SPARK school locations. As there is little redevelopment occurring in this Park Sector, it should be targeted for CIP and bond funds for future development and land acquisition. There are large undeveloped tracts of land close to US-288 that should be explored for land acquisition. Furthermore, properties in the Gulfton area in the northwest part of the Park Sector should be explored as this is an area of need and very high density with lots of multi-family developments. There is a utility corridor along Hiram Clarke that connects into Park Sectors 13 and 14. Creating a trail along this utility corridor could greatly enhance north-south connectivity within this Park Sector and within the near-west sectors of the City and the existing Brays Bayou trail as well as the future Keegans Bayou trail. The Management and Improvement Districts and residents in the area have expressed interest in off-street Neighborhood connections to the trail via utility easements and Harris Flood Control District channels and are potential projects for future planning, implementation and maintenance.

This Park Sector is deficient in playgrounds, picnic shelters, trails, volleyball courts, dog parks, skate parks, community centers, swimming pools, and softball and soccer fields. In the 2014 survey, the top three priorities of residents in Park Sector 8 when asked what recreational needs existed in their Neighborhood were: hike, bike and walk trails, open space and natural areas, and upgraded recreation centers. Other services and amenities that residents asked for in the write-in portion of the survey were: fitness and nutrition programs, arts and crafts programs, senior programming, swim lessons, fishing activities, dance and theater programs, youth nature programs, adult volleyball, yoga and tai chi classes, and golf programming. Because of the health profile (obesity, 31.9%, and diabetes,14.5%, levels higher than the city as a whole of 30.8% and 11.4% respectively) of this Park Sector, partnerships focused on increasing physical activity levels and programming for healthy living should be explored.

Sources: 2010 Census, 2010 Health of Houston Survey, American Community Survey 2013, Houston Parks Board, HPARD 2014 Online Survey, Trust for Public Land ParkScore™ Project, 2040 H-GAC population projections by Park Sector

EXISTING PLANNING STUDIES

Westbury Community Garden Dreams and Concerns (2015)

Dreams and Concerns List for Consideration by WCG Planning Committee 2015

Numbered but NOT ordered as to priority

1. **Material storage** bin for dirt and mulch (redo of compost bins completed april 2015)
2. **Tree farm** maintenance needed
3. **Drainage** to eliminate driveway puddling
4. **Solar Generator** for cistern pump and/or drip watering system
5. **greenhouse feature**, permanent or seasonal, for gardeners who have nowhere at home to start seedlings.
6. **kid garden days** once or twice a month and have like a dedicated kids bed or area for them
7. **basic site plan** (we have several drawings in our files), leaving open spaces for "future development," posted on website.
8. Plant a **windbreak** to soften the prevailing wind that comes from the southeast.
9. **Donation** procedures for accepting plants, equipment, etc
10. **Walking path**
11. **Honey Bee Hives**: previous Committee to resume recommending details of Location, Protective Enclosure/Signage, Professional Beekeeper(s) to maintain hives/gather honey. Enclosure recommended will likely be the same materials as the new compost bins.
12. **Bog/Rain Garden** areas (3-4" max.depth) for drainage & excess water collection (will not require special maintenance). Perhaps combined with "Water feature" with addl. info, as to location, cost, any maintenance, provided by person proposing same.
13. **Pollinator plants/wildflower bed** somewhere in the N40 or near the NE fence line. Pollinators attractants needed closer to our beds in an area where maintenance mowing or weed eating more than once a year is unnecessary.
14. Addition of a bed of 3-4 **Blueberry Bushes.** (Specialty Garden Committee can explore, make proposal).
15. **Chimney Swift House**: Construction and possible followup maintenance by a Scout Troop.
16. Quality **bird baths** located around the perimeter of the garden beds within reach of hoses. Requires commitment by individual gardeners to keep them clean/with fresh water. Provides water source for birds (don't need to peck tomatoes), bees and other beneficials. No problem with mosquito breeding.
17. Reconsider using at least 1 vacant bed for planting Okra, Bush Beans, Corn, Wildflowers, etc. which require lots of bed space: Requires commitment by a group of individual gardeners to maintain bed & aisles, water, weed and harvest.
18. How can we get more **gardener participation in Workdays**, Events, Committees? Don't want to "Burn Out" the folks who are consistently doing so much for the garden.
19. **Dog park** - Assume a fenced in area away from beds, such as in back 40. -(concerns expressed)
20. **Picnic tables**
21. **Fencing to define drivable areas & gate near bus stop**
22. 8 foot **ladder**
23. **e-mail etiquette**
24. **watering system, for common areas** (even just soaker hoses)
25. **solar collection** and storage possibilities
26. **Roadway/drivable surface,** preferably permeable
27. Find out **City of Houston** constraints and resources on the land they own and we lease
28. **Braes Oaks Management District**
29. Talk to **city parks department** for ideas and resources
30. Second, larger **cistern**
31. **Small pavilion** in back of property
32. **New permanent signage** that will last more than a few years
33. Ask **Asakura Robinson** to draw up long range plans, use our labor; Asakura currently working on Compartment 3 of WWH; also does community gardens
34. Seek **grants** for further development
35. **Budget**(s) for committees
36. **Walk of Fame** to honor founders, presidents, etc, using stepping stones in wildflower border, or such
37. Add deeper edging around wildflower garden

EXISTING PLANNING STUDIES

Houston Bike Plan (2015)

Who Bikes in Houston?

To get an understanding of the potential to increase bicycle usage in Houston, it is important to understand demographic trends as well as the various types of people who may be looking to ride. In 2012, Portland State University and the Portland Bureau of Transportation developed a breakdown of people into "Four Types of Bicyclists". This was used to better understand the potential for bike usage in the city and has since been repeated in other cities like Austin, Texas.

These studies, including the data from Portland and Austin shown in Figure 2.8, have found that two to four percent of the population is made up of "**Strong & Fearless**" riders who will ride regardless of the extent and quality of existing bicycle facilities. 9%-16% percent of people are "**Enthused & Confident**" riders who will ride with basic bicycle facilities, such as bicycle lanes, but prefer to avoid sharing the road with traffic if possible.

Another 31%-44% percent of people, in the "**No Way, No How**" category, will not or cannot consider riding a bicycle under any circumstance. The fourth category represents the largest potential for growth of people bicycling. Between 39%-56% percent were classified as "**Interested but Concerned**" meaning that they would be willing to ride a bicycle, or ride more often, if conditions were improved and they felt more comfortable.

It is likely that people in the Strong & Fearless and Enthused & Confident categories make up the majority of frequent riders in Houston today, particularly people riding on city streets. People bicycling who are in the Interested but Concerned category are increasingly drawn to attractive trails segments along the bayous and other corridors. The lack of a well-connected network, as described in the next section of this report, limits the level of biking in Houston or leads people to load their bikes on their car to ride in comfortable locations.

It is worth noting that people who bike because other transportation options are limited might fall into any one or several of these categories. For instance, some riders might appear 'Strong & Fearless' and bicycle on streets with heavy vehicular traffic out of necessity, but they may also be 'concerned' about their safety and have limited transportation choices.

By defining a broader network that connects many of these comfortable bikeways with neighborhoods, activity centers, and each other, the Bike Plan can lay the groundwork for continued growth of bicycling in Houston and provide more transportation options for the broad and diverse set of people who are concerned about riding in Houston today.

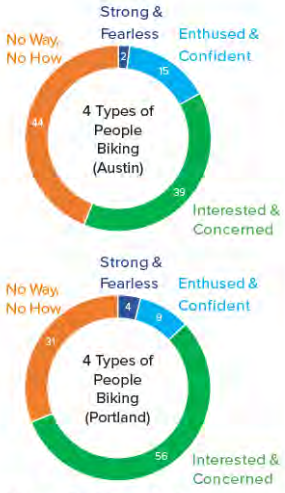


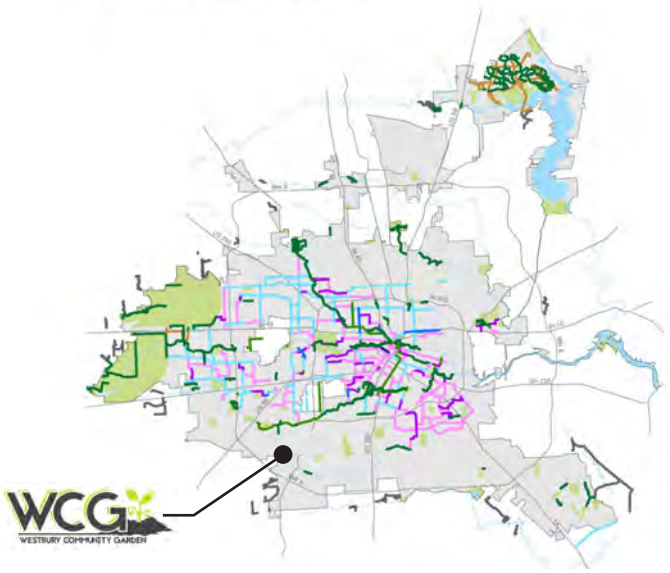
Figure 2.8: Population Breakdown of the Four Types of Bicyclist for Austin and Portland; Percent (%)

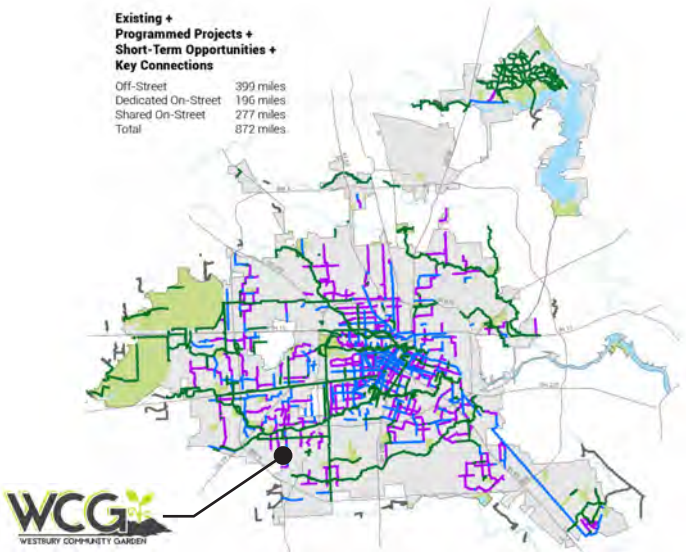
Women's Group Ride

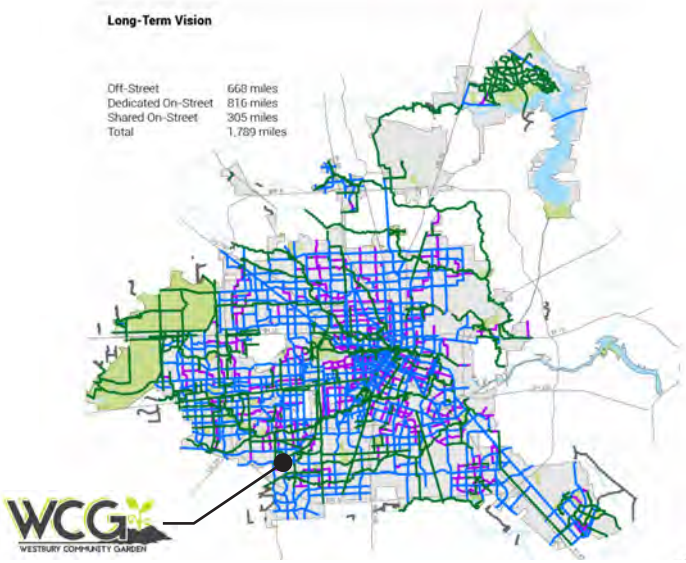
EXISTING PLANNING STUDIES

Houston Bike Plan (2015)

Figure 2.10: Existing Houston Bikeway Network








12/1978
1944
2016

AREA CONTEXT

AREA CONTEXT OVERVIEW

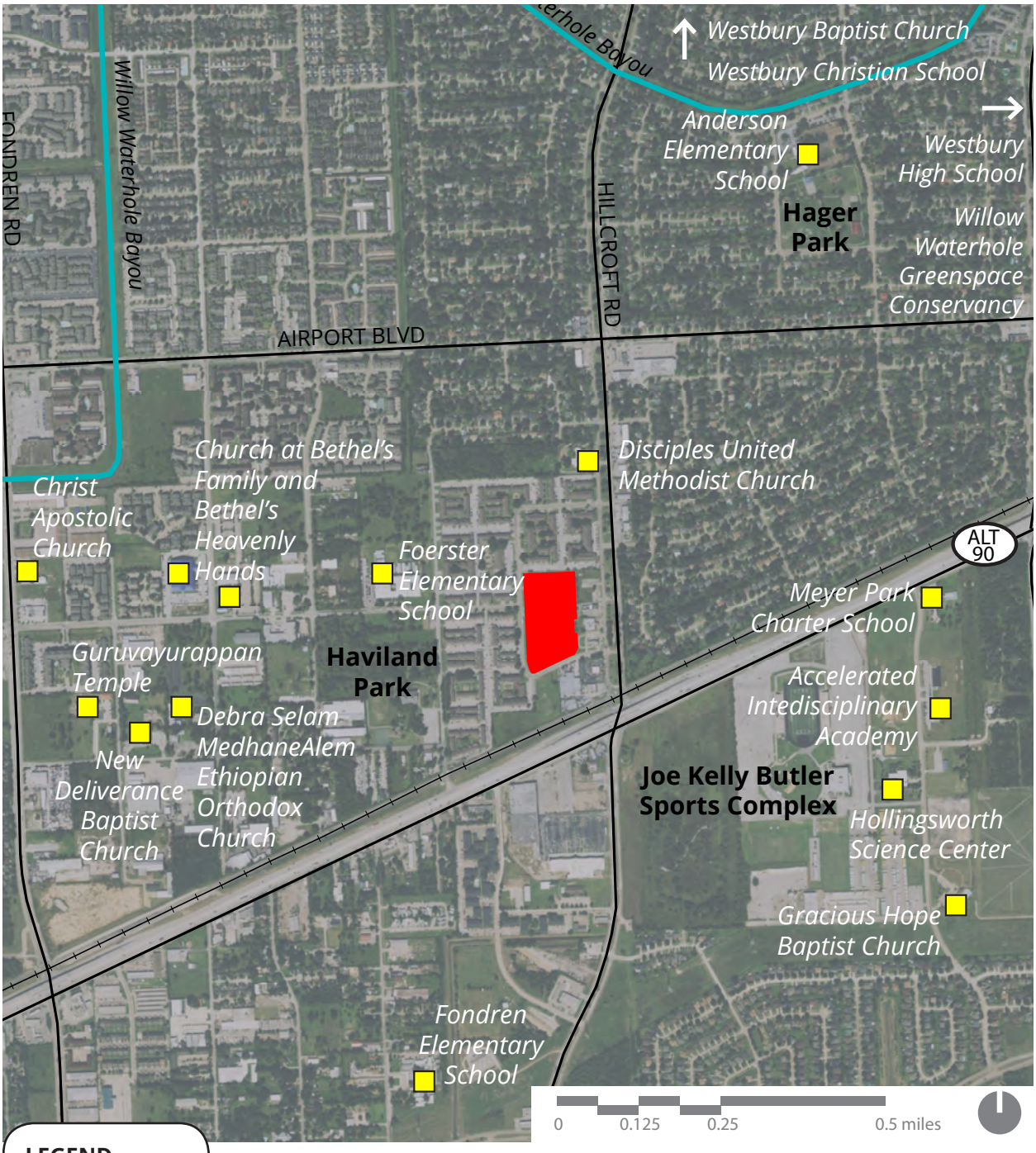
Visitors to the Westbury Community Garden (WCG) and surrounding site are often surprised to find such an oasis within its immediate environs. Surrounded by an expansive but generic multi-family housing development, vacant lots, abandoned businesses, and light-industrial operations, the site has succeeded in spite of a surrounding environment of which it shares very little. Indeed, it has managed to make place and become a community anchor amid the sprawling landscape of southwest Houston which is no easy feat.

While the master planning process is singularly focused on recommendations for the site itself, many of these recommendations look to improve or enhance how WCG and other site stakeholders connect with the surrounding area and its communities as a means of strengthening support for the site, expanding the community of site users, and generally making the site more of a destination and community resource. These types of recommendations are only possible with an assessment of the area context and how the site fits into it. This assessment includes the following criteria:

- Community Anchors
- Land Use
- Poverty Level
- Occupied Housing Units
- Food Access
- Transit
- Pollution
- Watershed

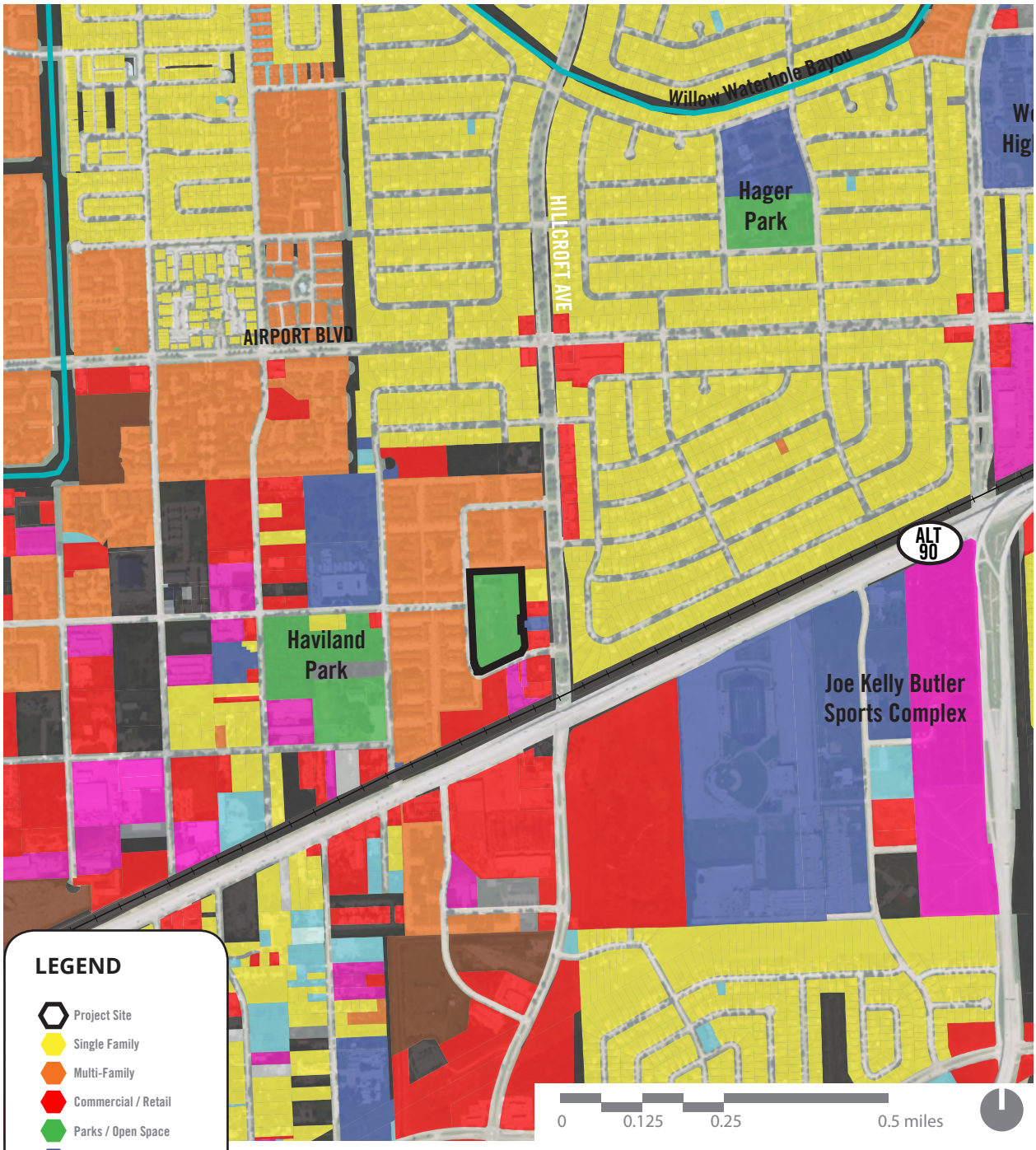
By and large, these criteria illustrate an area context that suggests a profound need for the site as a strategy of community development, economic development, ecological and public health, and resiliency. This assessment of *Area Context* has a dual value of not only guiding the master planning process and insuring that the recommendations address actual needs of the site, but also fulfills the requirements of the Sustainable SITES certification which is outlined in the *Introduction* chapter of this document as well as the *Appendices*.

COMMUNITY ANCHORS



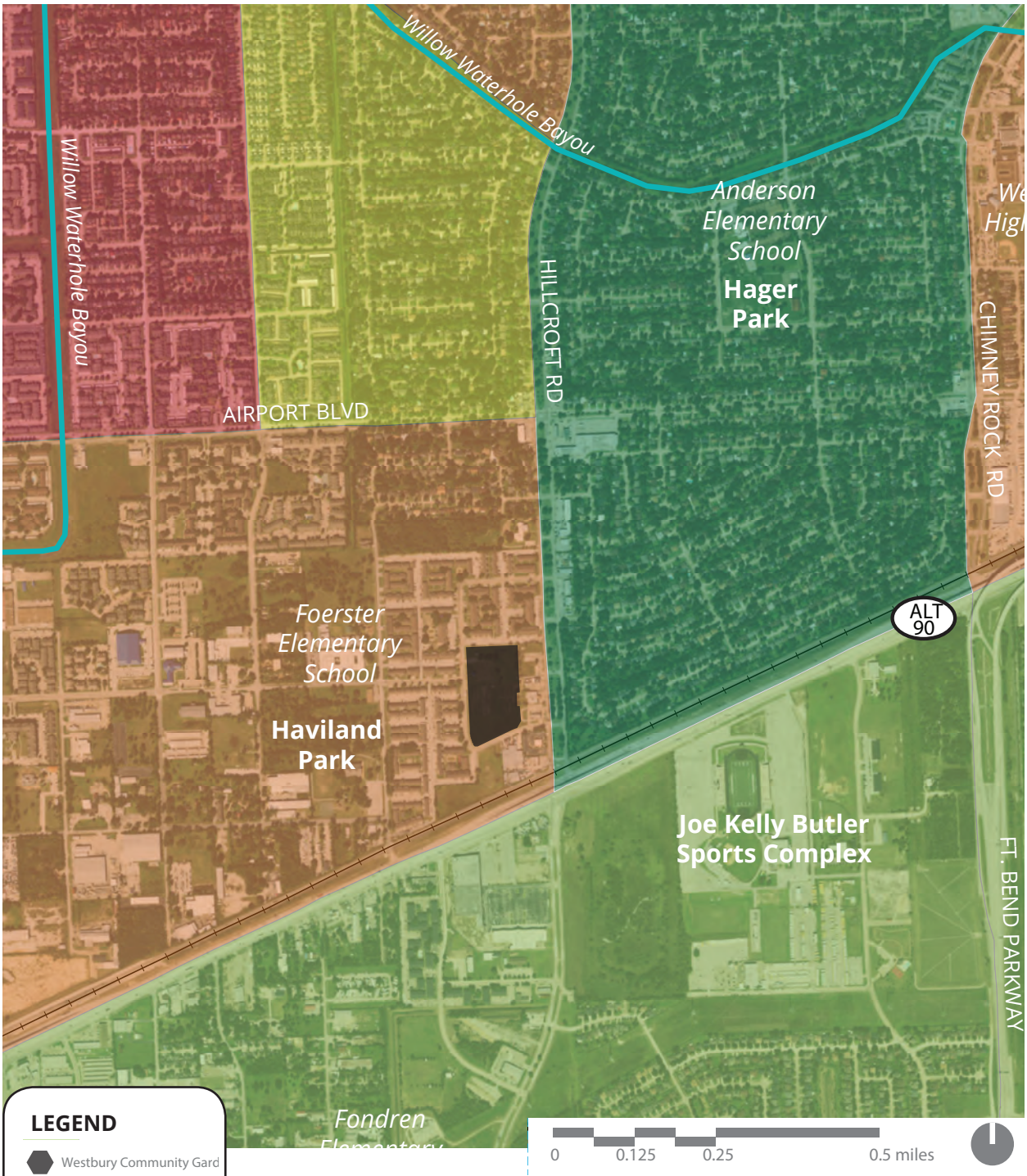
The 'community' in Westbury Community Garden is defined by both the diverse group of garden members united by their commitment to stewarding a shared garden space, but it is also a reference to the positive relationships the site has worked to build with surrounding communities and community institutions. Many of these relationships will be critical to the future success of the site and there are no doubt other relationships that will enable the site to better fulfill its role as a valued community resource.

LAND USE



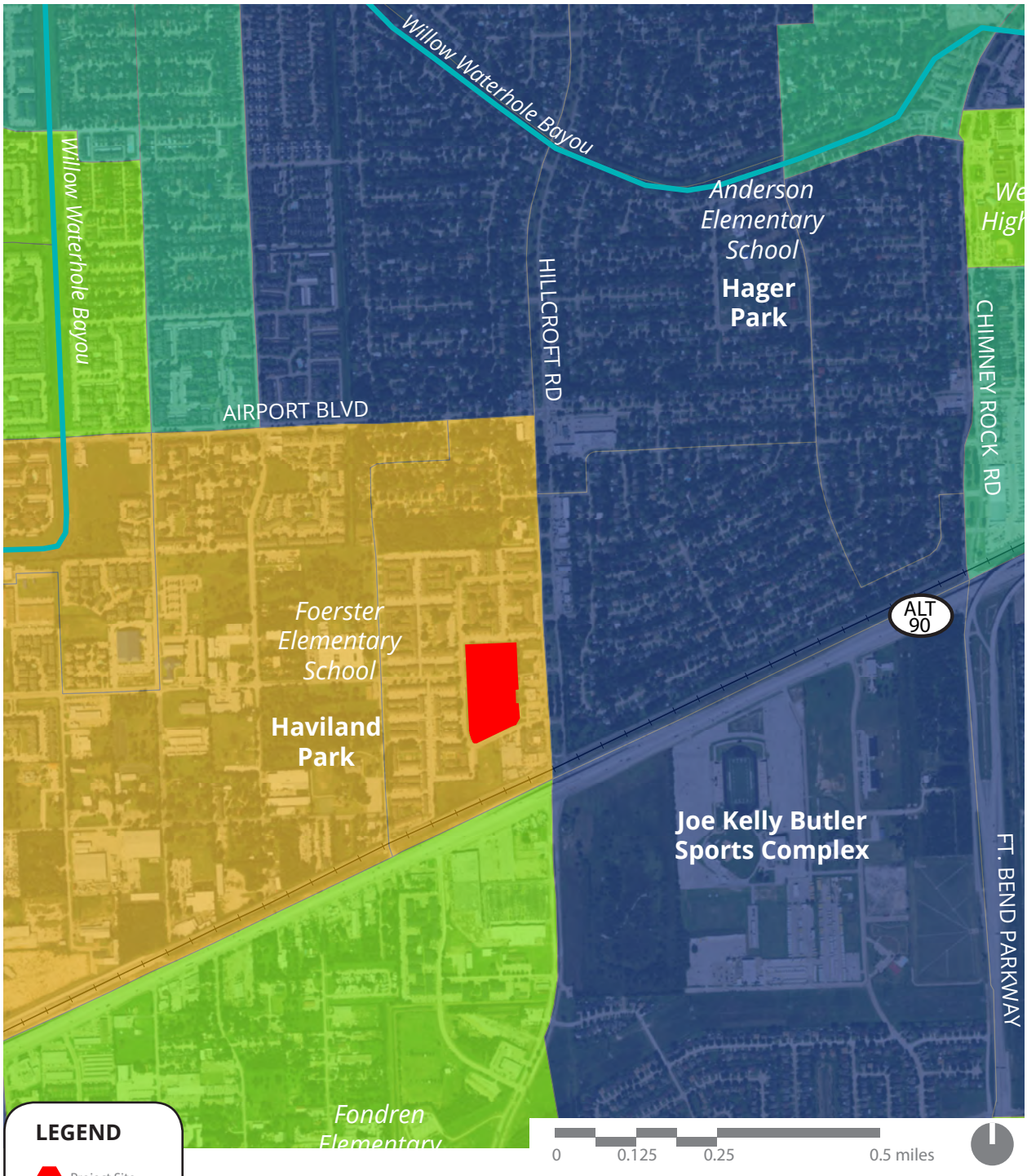
Land use surrounding the site is varied but representative of typical development patterns across Houston. The site itself resides along an edge between the two most common types of development in Houston: to the East, large subdivisions of single-family homes are segmented from other land uses by major arterial roadways; and to the West, numerous incongruous land uses are combined to form an unlikely urban fabric. The site serves as a key junction between these two types of urban development.

POVERTY LEVEL



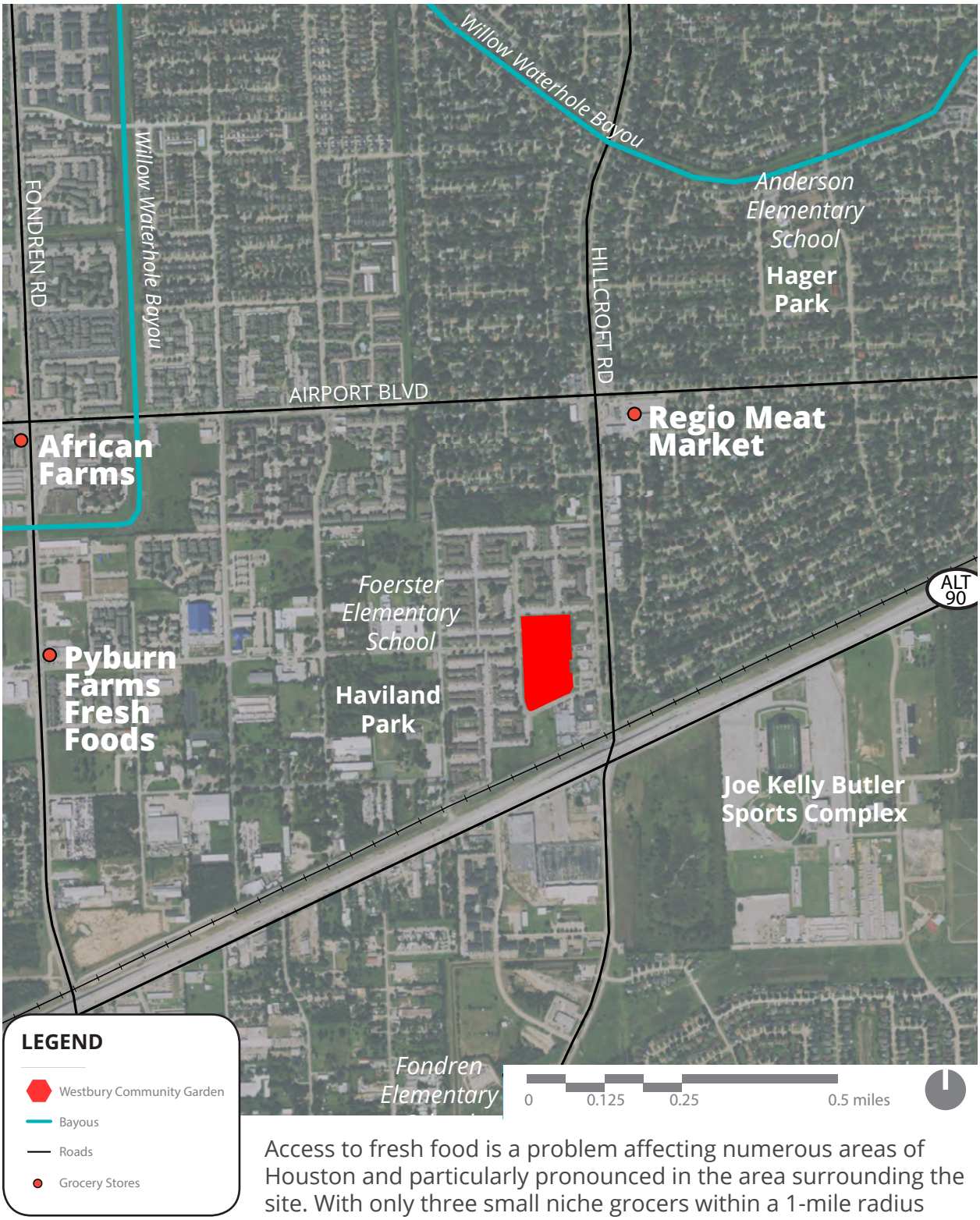
While the most immediate neighbors of the site are predominantly low income households, the surrounding neighborhoods represent a variety of income levels. However, Hillcroft Avenue and Highway 90 act as boundaries between these different communities preventing significant spillover of economic impact. Situated between these areas, the site presents an opportunity for residents of varying economic means to interact.

OCCUPIED HOUSING UNITS



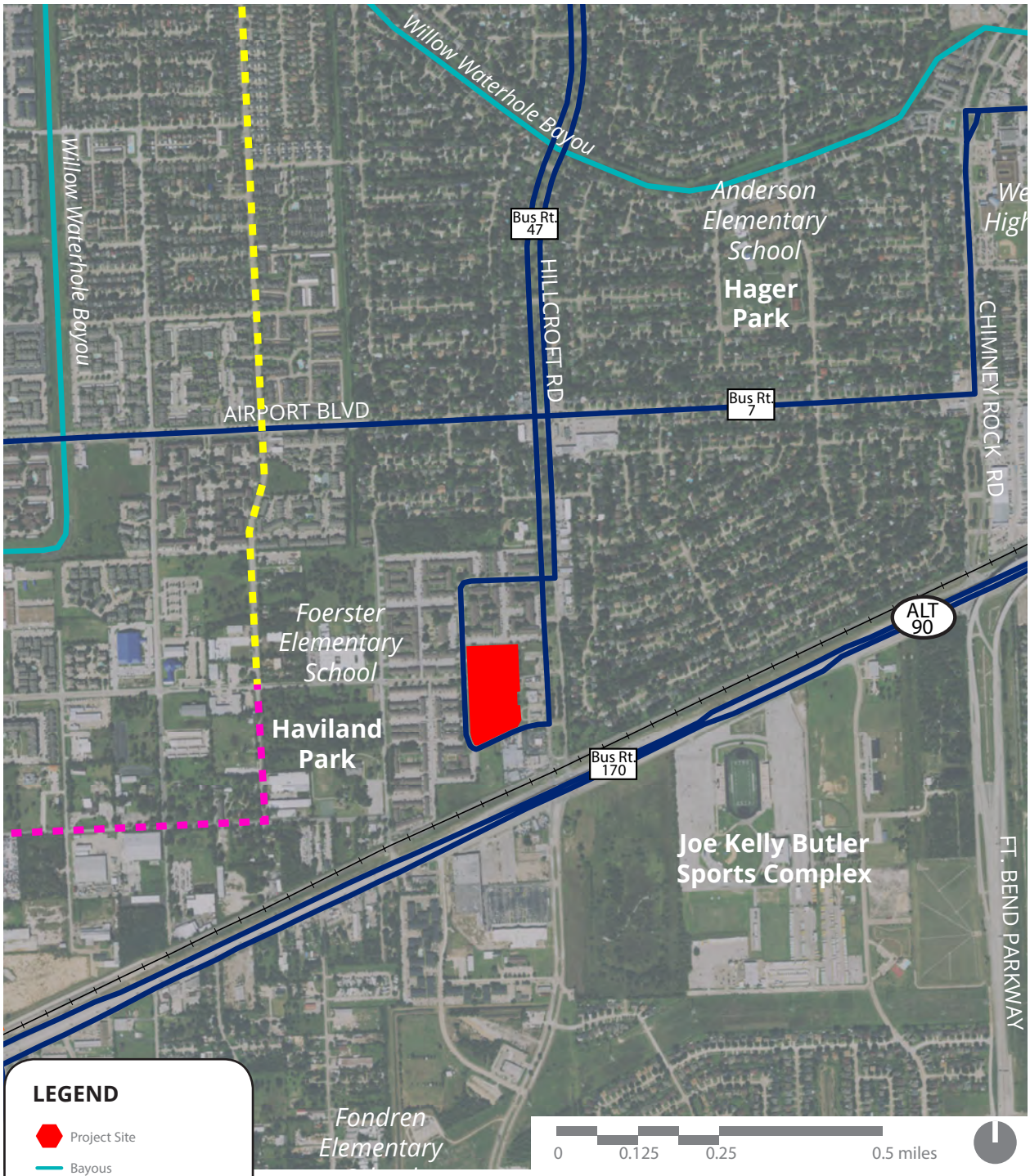
This map represents a metric which speaks to community involvement as neighborhoods with higher occupancy rates will generally have a greater percentage of residents willing to contribute to the neighborhood. The fact that the most immediate area around the site has a lower occupancy rate points to an ongoing challenge of drawing new site users from this area and the need for more targeted programming and outreach to appeal to these neighbors.

FOOD ACCESS



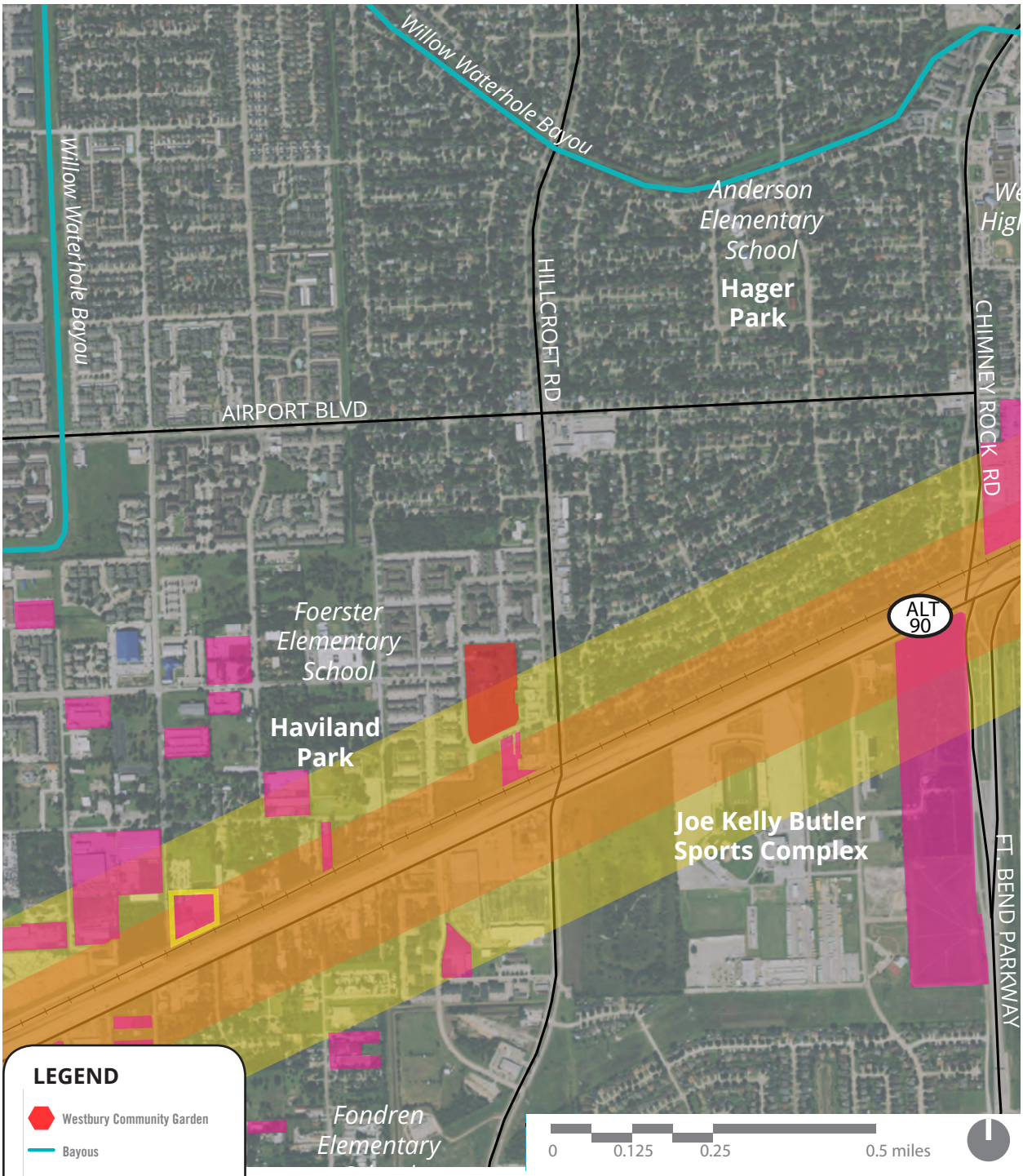
Access to fresh food is a problem affecting numerous areas of Houston and particularly pronounced in the area surrounding the site. With only three small niche grocers within a 1-mile radius of the site, there is a tremendous opportunity to provide fresh produce to the community.

TRANSIT



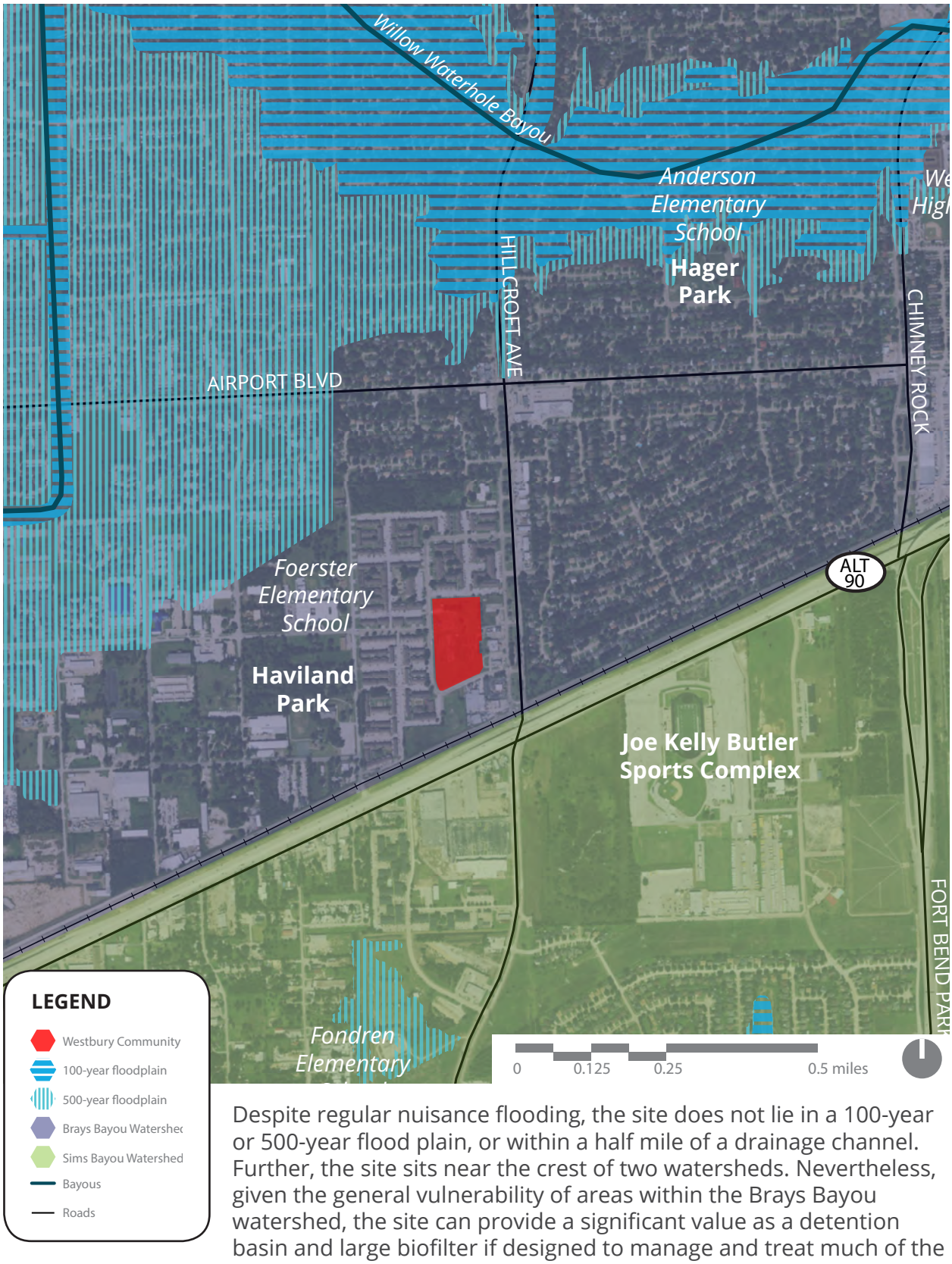
Like much of Houston, this is an area where transportation without a personal vehicle can be very challenging. The site however is fortunate to be served by multiple bus routes, most notably the Hillcroft 47 line which terminates at the site. Although nearby bike ways are currently very limited, a dedicated on-street bike lane along Fairmont Street is slated for early implementation in the recently released Houston Bike Plan.

POLLUTION



Scattered industrial sites and Highway 90 looming within 1000 feet of the site point to a higher than average exposure to air pollution in the area. Trees are a proven strategy for mitigating the pollution as they are able to absorb the odors and gases, and filter the particulates out of the air by trapping them in their leaves and bark. The site is therefore well situated to be part of a community effort to combat air pollution.

WATERSHED



Despite regular nuisance flooding, the site does not lie in a 100-year or 500-year flood plain, or within a half mile of a drainage channel. Further, the site sits near the crest of two watersheds. Nevertheless, given the general vulnerability of areas within the Brays Bayou watershed, the site can provide a significant value as a detention basin and large biofilter if designed to manage and treat much of the stormwater it receives.

SITE CONTEXT


YOU*RE WELCOME TO STROLL AROUND
AND ENJOY THE GARDEN
PLEASE
·DO NOT TOUCH!
·NO ALCOHOL, SMOKING, OR LITTERING
·CHILDREN MUST HAVE ADULT SUPERVISION
GARDEN OPEN DAWN TO DUSK

SITE CONTEXT OVERVIEW

In developing any site master plan, the most critical starting point is a baseline understanding of the site's existing conditions, and there are many ways of piecing this assessment together. For this master plan, the site analysis was comprised of information gathered from existing sources such as GIS data and past plans of the site, information collected by the planning team and volunteers in the field, and information gathered through surveys of site users. These varying methods of data collection are intended to be complementary so that both objective and subjective information is gathered, qualitative and quantitative, historical and current, general and specific. Throughout, the intent remains the same: to develop a portrait of the site that is as clear, comprehensive and concise as possible, that reveals the assets and opportunities of the site as well as its problems and challenges, and one that ultimately facilitates the master planning process.

The portrait of the site can take many forms but in the context of this plan it is communicated either through map, photography or narrative format. On the following pages, the site analysis is broken down into the following topics:

- Existing Topography
- Existing Program Use and Circulation
- Existing Neighbors
- Existing Soils
- Existing Vegetation
- Existing Infrastructure

Similar to the previous chapter *Area Context*, this assessment of *Site Context* has a dual value of not only guiding the master planning process and ensuring that the recommendations address actual needs of the site, but also fulfilling the requirements of the Sustainable SITES certification which is outlined in the *Introduction* chapter of this document as well as the *Appendices*.

EXISTING TOPOGRAPHY

The existing topography of the site is a primary point of departure for this master plan given that it dictates much of the site's current drainage problems. Following typical rain events, various areas of the site become flooded which makes use of the site both a challenge and a nuisance. While many of the worst low points of the site are easily observable, a more comprehensive perspective was needed. The planning team worked with EHRA engineers to produce a current topographical survey that not only located the elevations of all existing structures and facilities on site but also mapped a grid of elevation points across the whole site based on a 50' grid. The resulting survey allowed the planning team to then produce the map on the facing page which emphasizes both the high and low areas of the site as well as the direction of water flow across the site as dictated by the topography. While the map does provide a broad understanding of site topography, it does not clarify all of the smaller and more localized cases of regular ponding such as in the parking area or along all of the garden paths. To complete the picture, qualitative surveys of site users were gathered at the first community meeting to help understand the many nuances of the site topography. Examples of these surveys can be found in the *Community Engagement* chapter of this document. The resulting understanding is that the site suffers from regular ponding throughout the garden area, parking area, and a large middle portion of Plant It Forward Farms' agricultural area. Additionally, high land on the eastern edge of the site works to shed water onto the areas immediately west insuring that these areas are typically saturated with water.

Scenes of regular ponding across the site following typical rain events

Topographical and Water Flow Plan

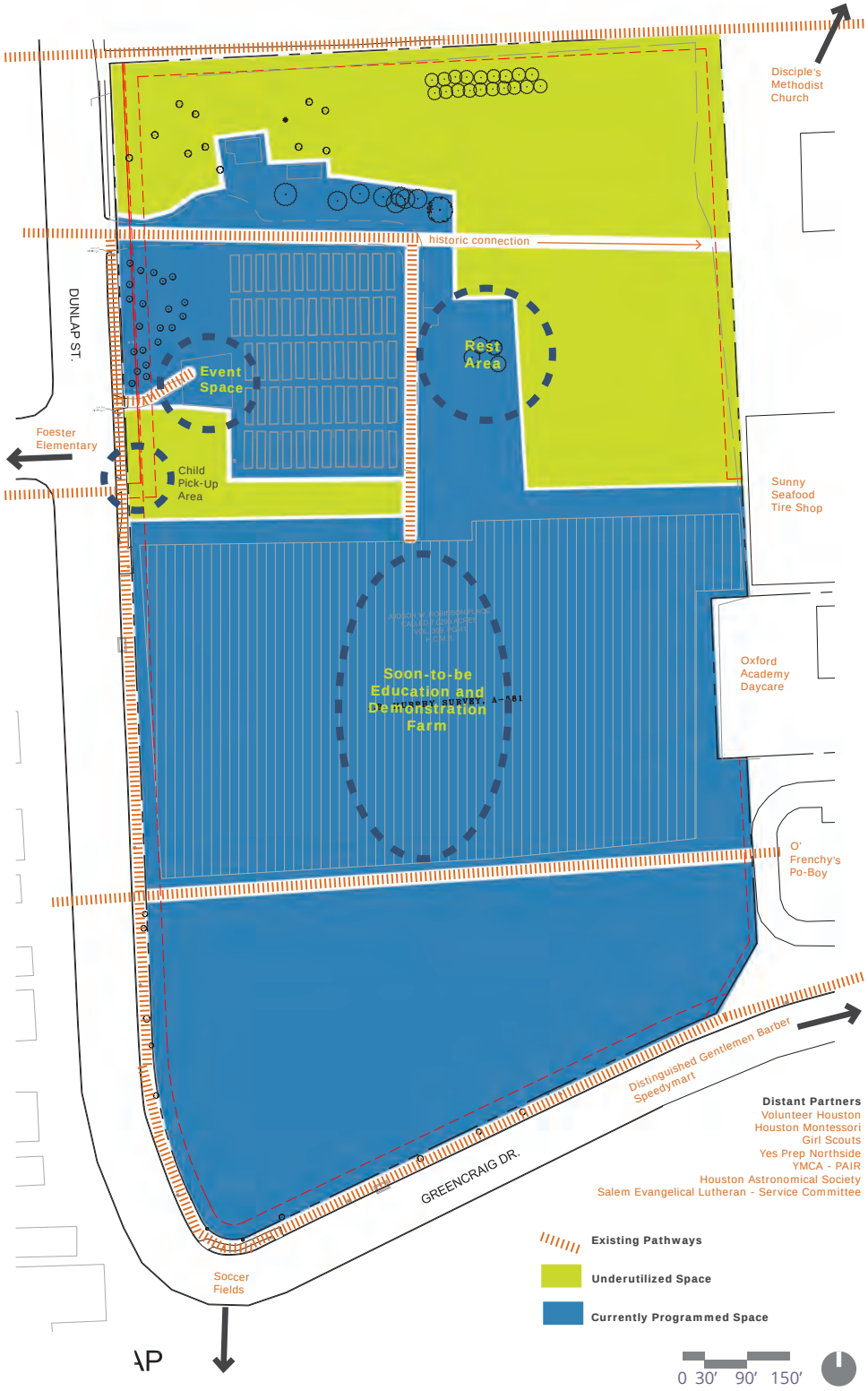
EXISTING PROGRAM AND CIRCULATION

From a program and circulation perspective, the site is currently divided into three primary zones with limited circulation connecting them. While the site's most defining identity is guided by the Westbury Community Garden (WCG) at the north end of the site, the first impression of most visitors to site is of the prairie restoration site at the south end of the site and the Plant It Forward Farm agricultural area in the middle portion of the site. Each of these areas is technically programmed space, but each is defined by a very specific level of use defined by both the number of users and amount of activity. The prairie restoration area represents by far the lowest intensity of use, while the PIFF and the WCG areas represent higher intensity of use levels but defined by extreme differences in numbers of users and types of activity. Additionally, each area has a varying degree of underutilized space with the WCG having the most clearly defined underutilized space by sheer contrast with the programmed space of the garden, the PIFF area being nearly 100% utilized and the prairie site being more difficult to assess from a use perspective given that it is an evolving project.

While formal circulation is quite limited throughout the site, there is a clear hierarchy of circulation modes. Pedestrian paths predominate the site, with the formal paths concentrated within the garden area. Informal paths cross the site from east to west at two locations. The vehicular circulation exists primarily to allow for servicing the garden area and the PIFF area with supply drop-offs and harvest pickups. Because the vehicular routes are not formalized and simply cleared grass and dirt areas wide enough for vehicles, there are significant ruts in the landscape from ongoing use.




Scenes of existing program and circulation space



Existing Program and Circulation Plan

EXISTING NEIGHBORS

In its short history the Westbury Community Garden (WCG) site has become a neighborhood asset despite having little to no connection with its immediate neighbors. Bordered on two sides by the multi-family housing community The Pines of Westbury and on its other sides by properties which are either vacant or have little interest in relating to the site, it is clear that new relationships with adjacent properties can only improve. Despite this condition, the site has thrived without a fence along Dunlap Street, its primary frontage, which is a significant distinction. Fences along the site's northern and eastern edges appear to exist by default rather than by any deliberate policy. Site users complain of occasional theft or vandalism, but not to a degree that has warranted new fencing or other security devices. Other neighbors just beyond the immediate properties include places that have been or could become significant partners in the site's future. Foerster Elementary, just a short walk from the site, has a history of positive involvement at the WCG through onsite classes and the maintaining of a garden bed. Several properties along the eastern edge of the site provide opportunities for future expansion or programming and there is much that could be done to generate interest for the site among residents of the adjacent housing development. Finally, Haviland Park, across the street from Foerster Elementary, is a City of Houston park that could have a much stronger relationship to the site by providing amenities, programs and spaces which specifically complement WCG, PIFF and the other active uses onsite.

Scenes of existing adjacent properties

Adjacent Property Map

EXISTING SOILS

According to the U.S. Natural Resource Conservation Service (NRCS), the entire 7 acre site is designated as prime farmland, and as such we seek to conserve healthy soils free of compaction, contaminants, or other disturbances across 95% of the site. Through soil testing and identification of various existing plant species we can begin to build a map of healthy and disturbed soils.

The site was historically composed of Bernard-Edna complex soils. According to Harris County Flood Control District:

> *"Bernard clay loam and Edna fine sandy loam are the major soils in the general Bernard-Edna soil complex and are highly associated with prairie ecosystems. The Bernard soil makes up 55% of the soil complex and is located generally in slight concave depressions and on the flats between the knolls and mima mounds of Edna soil...The soils in this complex are somewhat poorly drained and are generally saturated in winter and in early spring. Internal drainage and permeability are very slow. The available water capacity is medium to high. The moundy surface and poor drainage are the major concerns of management in these soil types." (NRCS 1976, HCFD 2015).*

This historic soil context provides some additional explanation of the ongoing drainage problems faced by the site. To confirm the analysis, five soil samples were taken in late July at the site and tested for nutrients and organic content by Texas A&M University AgriLife Extension. The full test results are provided in *Appendices* but all samples were consistent with historic assessments of the soil structure, and showed desirable levels of organic matter and generally high levels of macronutrients.

Given the uncertain development history of the site, and potential plans for expanding the extent of urban agriculture, a second round of soil tests was conducted in late September to investigate levels of common metals and total petroleum hydrocarbons (TPH). The tests were conducted by the Houston Health Department Bureau of Pollution Control and Prevention and yielded the following result summary: *"Based on results of metals and TPH analyses, exposure risks could not be confirmed. TPH concentrations for representative samples were below detectable limits. Heavy metals that were measured as part of the analyses were below U.S. EPA regulatory limits for application to soils."*

A complete tabulation of all soil tests can be found in the *Appendices* of this document.

Soil Sample Map

EXISTING VEGETATION

The site lies within the Western Gulf Coastal Plain (EPA Level III Ecoregion) and the Gulf Coast Prairies and Marshes (TPWD). The planning team worked with volunteers from the Westbury Community Garden to identify both plant species that have been historically associated with these ecoregions, as well as invasive plants and other newer species that mark the presence of change in the landscape. These plants give us important information about other elements of the site's ecology including soils, wildlife, climate, and change over time. The planning team also invited local prairie ecologist Jaime Gonzalez from the Katy Prairie Conservancy to assess the condition of the prairie restoration. While his assessment illustrated an uphill battle to transform the existing prairie restoration area from a monoculture of Bahia grass into a thriving prairie ecosystem, members of the garden community remain committed to the challenge.

GARDEN BEDS


ORCHARD



POLLINATOR PLANTINGS



AGRICULTURE



PRAIRIE

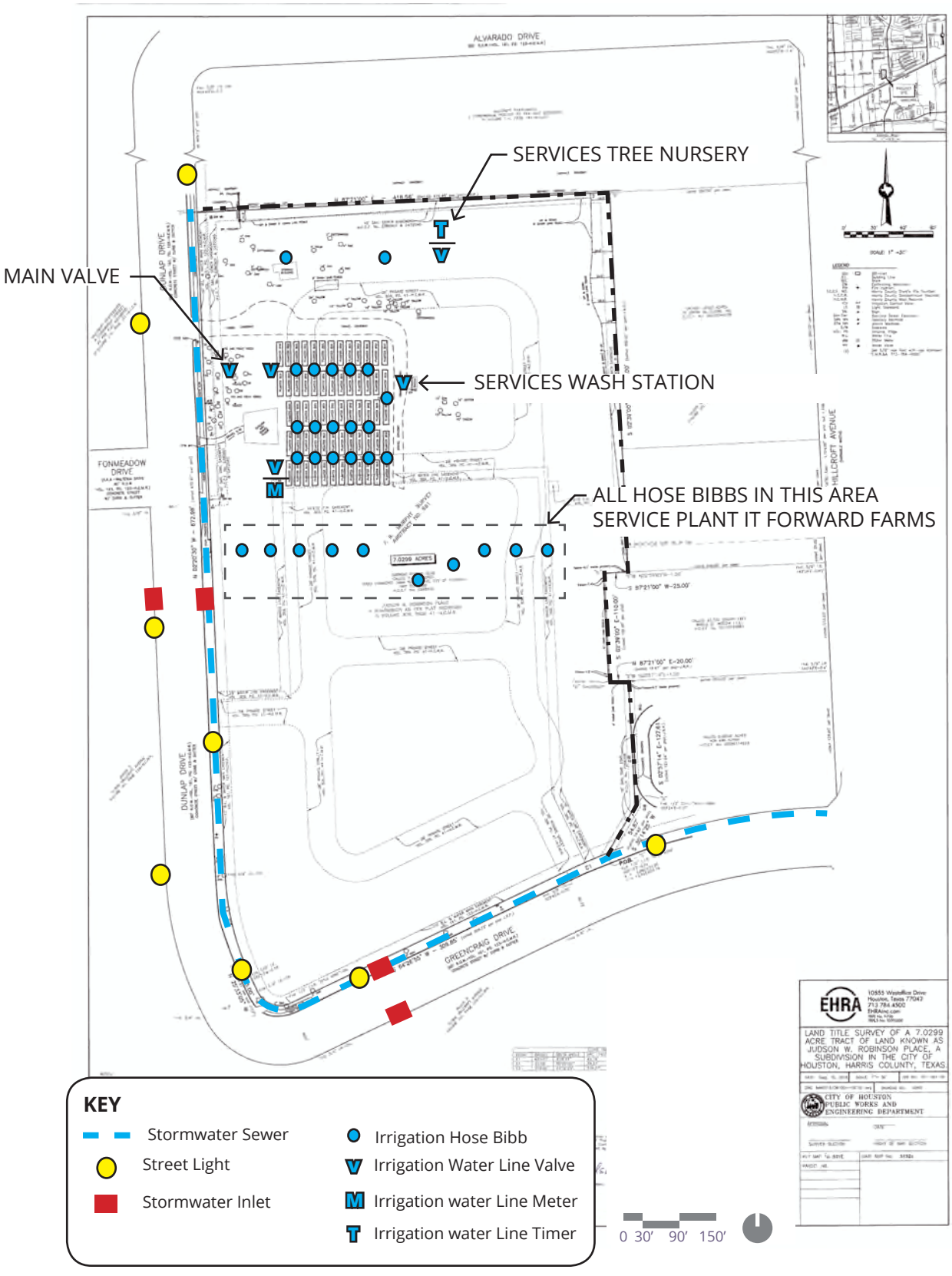


Existing Vegetation Map

EXISTING INFRASTRUCTURE

Despite past plans for new housing construction, the site is defined by little to no existing infrastructure. Underground utilities consist of a single stormwater sewer line running along the edge of the site and serving Greencraig and Dunlap Streets, while above ground utilities consist of City standard street lamps, also running along the property edge, at irregular spacing with some large gaps in between. On site, the Westbury Community Garden members and Plant it Forward Farms installed irrigation water lines and an associated network of hose bibbs and valves at key areas. While as-built drawings of the irrigation main line and branch lines are not available, it can be assumed that these are standard 2" pvc pipes. Although the site does feature an existing cistern for rainwater harvesting, the irrigation system has yet to fully take advantage of this resource at least partly because of pressure deficiences.

This condition of having minimal existing heavy utilities on site poses both opportunities and challenges. A positive consequence is that regrading of the site for drainage improvements and the excavating of foundations for new structures may have limited conflicts. Bringing power to the site will be more involved and will require long runs of wire or numerous solar powered lighting fixtures. The site is ideal for a solar panel array mounted to the roof of the existing pavilion to power site lighting and other resources but would require a new elecrical panel and conduit connections to all new fixtures across the site.


SERVICES TREE NURSERY
MAIN VALVE
SERVICES WASH STATION
ALL HOSE BIBBS IN THIS AREA
SERVICE PLANT IT FORWARD FARMS
ALVARADO DRIVE
DUNLAP DRIVE
FONMEADOW DRIVE
HILLCROFT AVENUE
GREENCRAG DRIVE
7.0299 ACRES
KEY
Stormwater Sewer
Street Light
Stormwater Inlet
Irrigation Hose Bibb
Irrigation Water Line Valve
Irrigation water Line Meter
Irrigation water Line Timer
0 30' 90' 150'
EHRA
LAND TITLE SURVEY OF A 7.0299 ACRE TRACT OF LAND KNOWN AS JUDSON W. ROBINSON PLACE, A SUBDIVISION IN THE CITY OF HOUSTON, HARRIS COUNTY, TEXAS.
CITY OF HOUSTON
PUBLIC WORKS AND ENGINEERING DEPARTMENT


KIRKLAND
purified water
FARM

COMMUNITY ENGAGEMENT

STEERING COMMITTEE

A steering committee, representative of the Westbury Community Garden (WCG) and other stakeholders, was formed at the start of the master planning process to help provide feedback to ongoing planning work, to assist with project outreach and to help gather site documentation as needed. Formed by the officers of the Westbury Community Garden, the committee met approximately once per month at the Brays Oaks Management District office over the course of the master planning process, and served as an invaluable liaison between the planning team and the broader community of site users and stakeholders.

Steering Committee members:

- Richard Rodriguez, Executive Director, Brays Oaks Management District (BOMD)
- Cindy Chapman, President, Westbury Area Improvement Corporation (WAIC); WCG member*
- Becky Edmondson, President, Westbury Civic Club (WCC); WCG Co-Founder*
- Elaine Gaskamp, BOMD Environmental and Urban Design Committee Chair**
- Ray Sher, WCG Co-Founder; Urban Harvest Advisor*
- Virginia Livingston, WCG President; WCC Board*
- Wayne Slaikeu, WCG Vice President & Committee Chair*
- Jennifer Ettleson Besmehn, WCG Secretary
- Marcia Hartman, WCG Treasurer & WAIC Treasurer*
- Betsy Longoria, WCG Committee Chair
- Candice Salmon, WCG Committee Chair*
- Debbie Gordon, WCG Committee Chair
- Hazel Potvin, WCG Committee Chair*
- Kat Elder, WCG Committee Chair*
- Kay Dotsey, WCG Committee Chair*
- Jasmin Regalado, WCG member and Team Advisor
- Teresa O'Donnell, Executive Director, Plant It Forward Farms (PIFF)
- Daniella Lewis, Farm Stand Manager, Plant It Forward Farms
- Joe Novak, Agricultural Consultant, Plant It Forward Farms

* Original, 2009 organizing members of Westbury Community Garden

** Elaine's keen interest in WCG's future is most valued. She will be missed after her untimely passing in Sept 2016.

COMMUNITY MEETINGS

The master planning process was structured around two major community meeting events designed to include as many Westbury Community Garden members, other site users, and site stakeholders as possible. While both events sought to have high levels of participation from the community, they were designed with different goals in mind. The first meeting event, held in mid-June during the site analysis phase of the master planning process, focused on fact-finding, site assessment and a discussion of master plan objectives, both broad and specific. The second forum event, held during mid-September during the concept design phase of the process, provided an opportunity for the community to review, discuss, and provide input on a draft site plan prepared by the planning team. Both of these events served as invaluable opportunities for the planning team to seek consultation from the community and enable the community to help shape the direction of the master plan.

COMMUNITY MEETING #1

June 21, 2016

7:00 PM - 8:30 PM

The Gathering Place, 5310 South Willow Drive

The first Community Meeting constituted a significant aspect of the site analysis work, by allowing the planning team to hear directly and candidly from over 40 of the garden members and other stakeholders. After a brief presentation that clarified the master planning process, the planning team provided the participants with maps (shown on the facing page) designed to facilitate brainstorming, drawing and documenting existing conditions, ideas and visions for the garden. Ideas ranged from drainage solutions and walkways to solar power, security and signage.

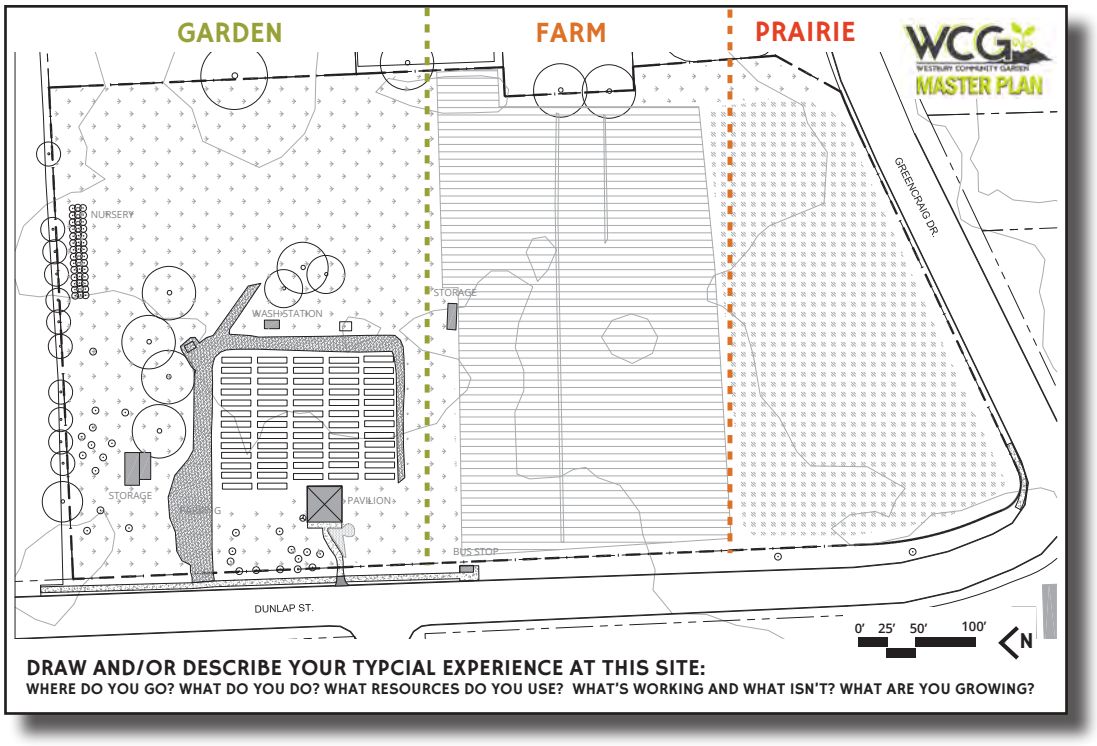
MAJOR CONCERNS:

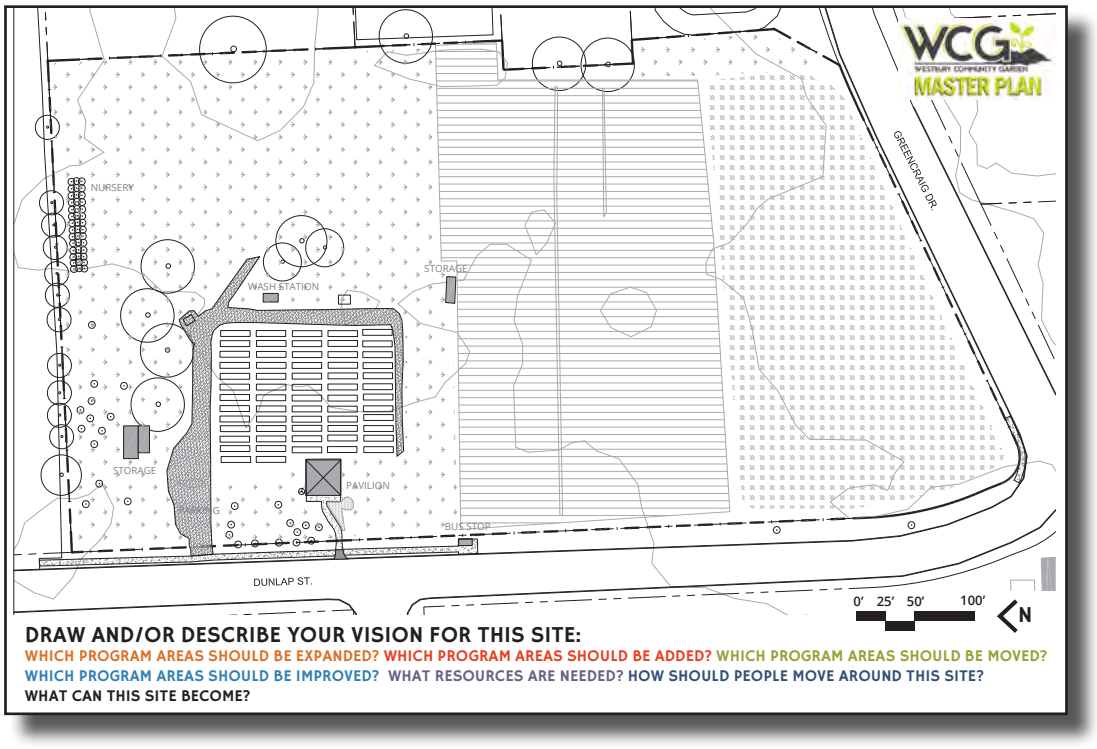
Sustainability, Community Building, Security, Access,Drainage ,Expansion , Shade,Electricity, Maintenance, Education, Site Programs

POPULAR VISIONS

Solar Power (19)
Apiary (15)
Rain Garden or Pond (12)
Drainage Plan (10)
Walking Trails (10)
Educational Signage (10)
Tables and Seating (8)
Play Space (7)
Partial Site Fencing (6)
More Beds/Rows (6)
Outdoor Kitchen (6)
Green House (6)
Bird Houses (5)
More Parking (5)
Drip Irrigation (4)
Shade Trees (4)
Exercise Equipment (4)
Wind break (3)
Flowers (3)
Prairie Restoration (3)
Swales (3)
Cobb Oven (2)
Driveway Turn Around (2)
Planted Bus Stop (2)

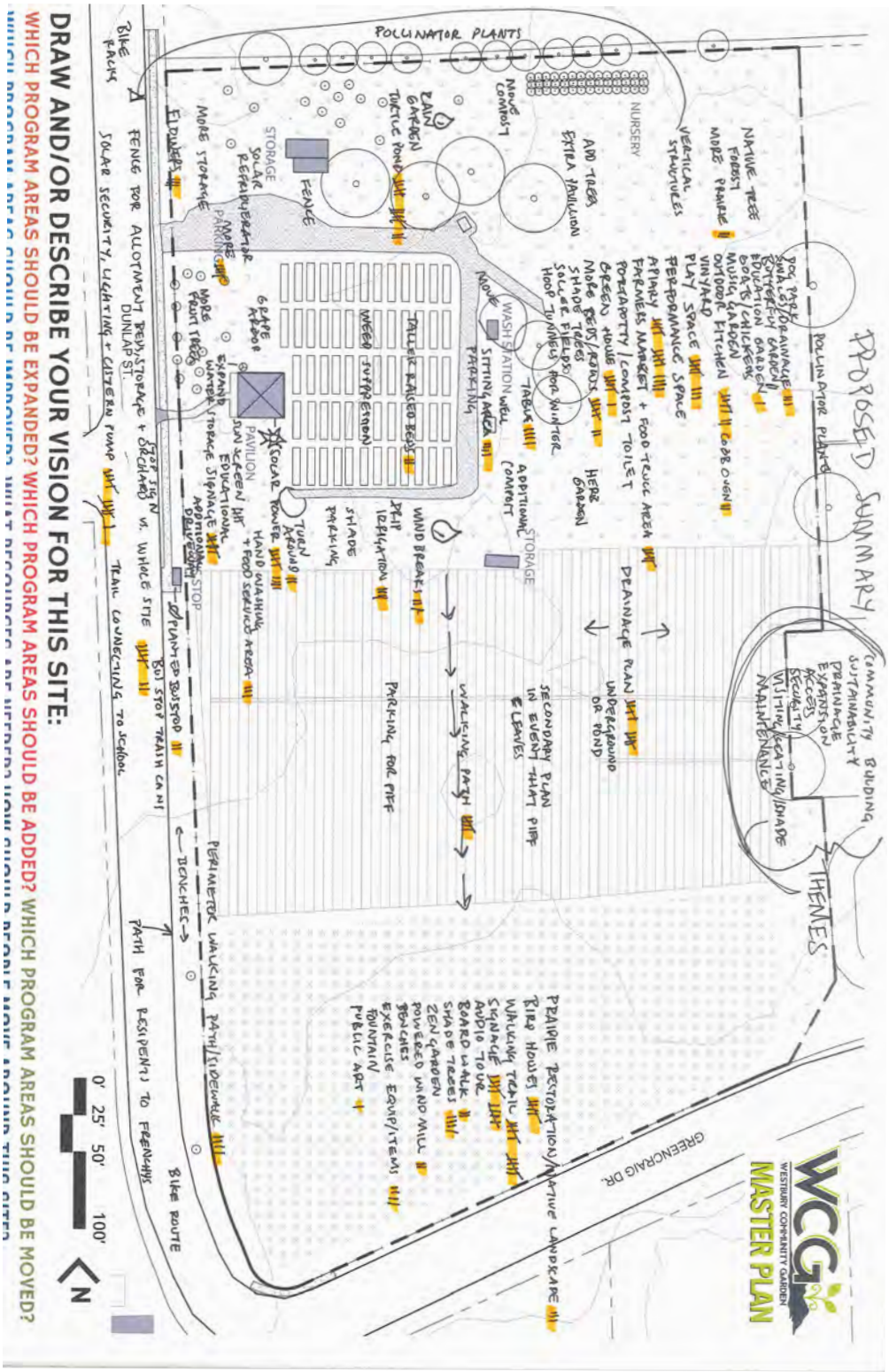
COMMUNITY MEETING #1





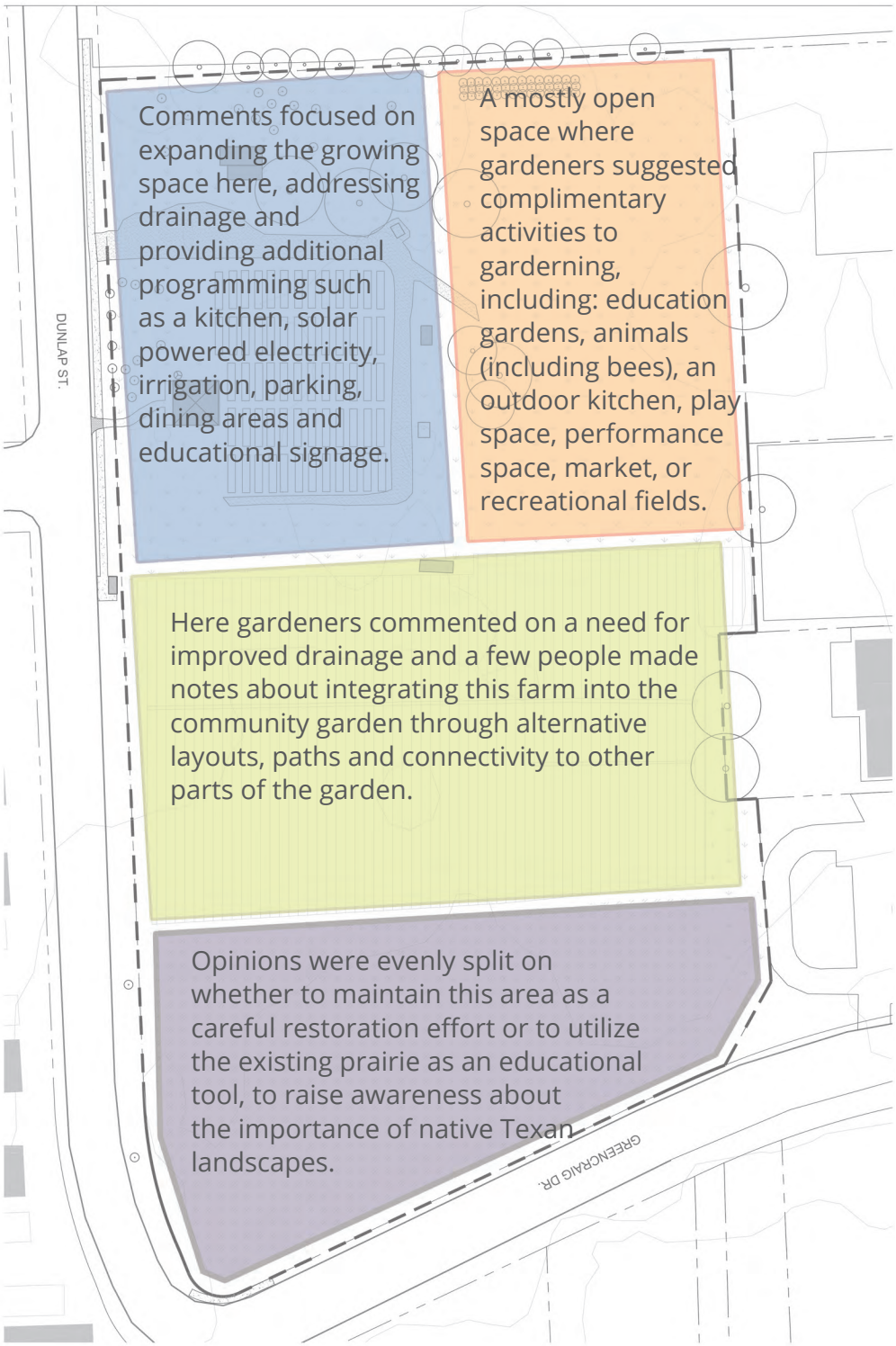
Maps provided to participants of Community Meeting #1 to facilitate brainstorming, drawing and documenting of existing conditions, ideas and visions for the garden.

COMMUNITY MEETING #1



Tally of shared ideas from meeting participants

COMMUNITY MEETING #1



Summary of shared ideas from meeting participants

COMMUNITY MEETING #2

September 20, 2016

7:00 PM - 8:30 PM

The Gathering Place, 5310 South Willow Drive

Our second Community Meeting provided an opportunity to share a draft concept site plan with garden members and stakeholders and receive input to help refine the vision. Heavily informed by the ideas from the first Community Meeting, the site plan aimed to consolidate as many of the ideas as possible and find practical and innovative ways of realizing them on site. Turnout at this meeting was less than the first meeting but there was a critical mass of approximately 25 participants. Following a brief presentation by the planning team, attendees were invited to participate in an open house-style input session where copies of the draft concept site plan were presented on boards and participants were asked to provide comments on 'What's Working?', 'What's Not Working?' and 'What's Missing?' with color-coded post-it notes.

The site plan was generally very well received with comments focusing primarily on specific details. The following is a transcript of the comments provided by participants:

What's Working?

"Open areas in 4 & 8 for wetlands and wildflowers for pollinators"

"PIFF driveway separate along the south PIFF farm. BUT to stop with a circular turnaround, below the Farming Center. (No drive through the Prairie Farm stand on PIFF acreage or South side)."

"Love the Main Drive running east of the current circular stand of trees- "Picnic table area"!"

"Solar panels on pavilion (add to storage sheds and ask PIFF Training Farm??)"

"Love the outdoor kitchen at the pavilion."

"Like location of: restroom, compost, kitchen."

"I like this plan a lot !."

"Like accessible beds near #12."

"Nice job pulling our ideas together. Very close to our vision. Thanks."

"Love the swale- flowing water and plantable with ginger, or not."

"Awesome job putting this all together. I admire your work."

"Puts it upwind of prevailing winds blowing toward existing garden beds."

COMMUNITY MEETING #2

What's Not Working?

"Apiary needs to be in the northeast corner area for security. Too accessible to the public, the street, and the busy car repair shop."

"Port-a-potty truck will have to drive across the garden versus where it is now."

"Do not see any need to move Row D + C beds; water does not pool and stand in this area except where aisles have not been elevated."

"The Apiary would not be good in that location due to the Auto/Body shop's toxicity, paint fumes of vehicles being painted is very strong. Plus automobiles lined up on the side of the street."

"Don't think the swale drawing to the SW corner of Prairie is good. That is actually a very high area."

"Trees and Prairies do not mix! Especially large oaks- the Prairie will become non existent with Oak Seedings!"

"Need smaller play area near farm at #28."

"Looks like the prairie was make smaller by the driveway. Not Happy!"

"Storage shed #3 should be more centrally located."

"A bit worried about not screwing up drainage through PIFF area."

"Apiary too far from garden to be beneficial and its too close to street."

"We still need more on-site parking."

"Need parking on south side of south row of beds."

What's Missing?

"PIFF parking area."

"WCG more parking."

"Garbage Dumpster."

"Please bring in the irrigation with timers (aka automatic); thank you!"

"Second nature play area south section 8 for PIFF kids."

"Drip watering system for bed and orchards."

"Where are threes along the sidewalk perimeter?"

"Expand orchard picnic tables in prairie, if not a prairie."

"South most beds need vehicle access."

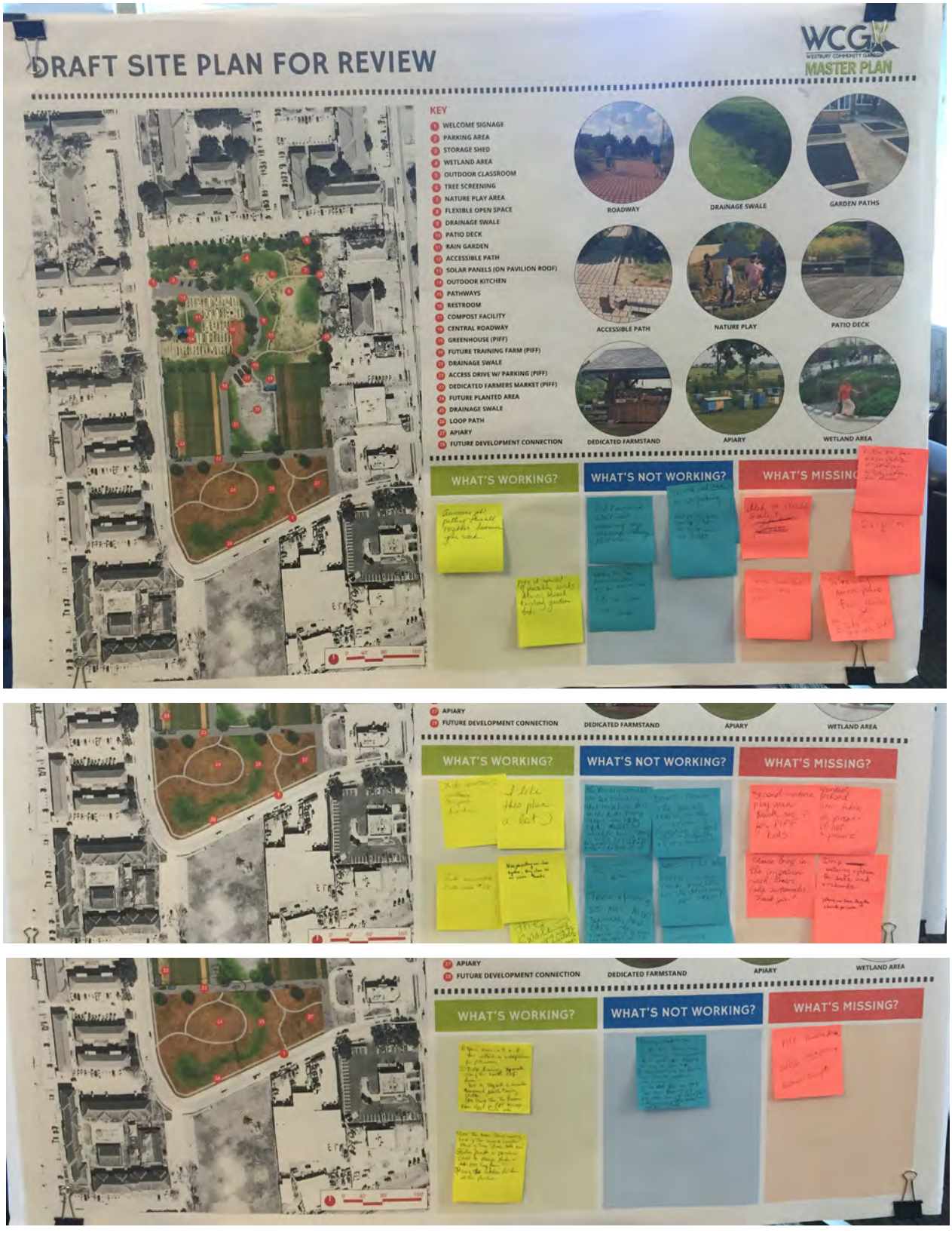
"Deck to straddle swale."

"Like to see observation platform with education for Prairie."

"Dripworks."

"Driveway access please to east beds, south beds."

COMMUNITY MEETING #2



Photographs of the site plan boards with post-it notes from Community Meeting #2

SUSTAINABLE SITES WORKSHOP

To bolster the site inventory process , the planning team developed a workshop designed to involve garden volunteers in collecting landscape data from the site. Site inventories are an important first step in the design of regenerative systems and are built from both existing data and data that is collected in the field. The volunteers in attendance were tremendously helpful!

Participants in the workshop helped collect the following information:

- Soil Samples
- Existing and Potential Habitats for Threatened & Endangered Species
- Invasive Plants
- Native Plants & Plant Communities
- Appropriate & Special Status Plants
- Local Assets and Partnerships

The data collected is documented on several of the maps included in the *Site Context* chapter of this document.

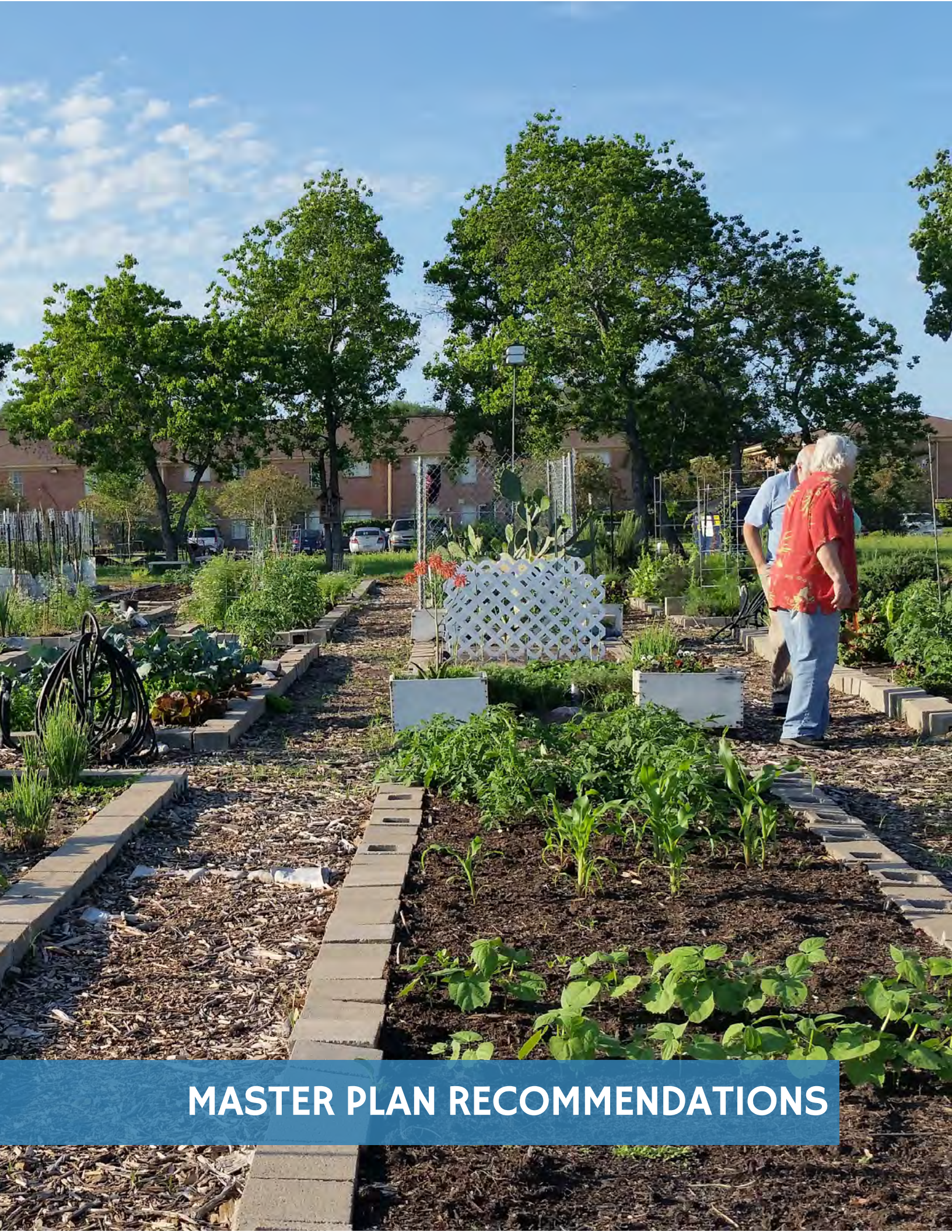
Scenes from the Sustainable SITES workshop

STAKEHOLDER OUTREACH

Charitable organizations figure prominently in the history of Westbury Community Garden and their contributions have left a distinct mark on the site as we know it today. As so many of these organizations continue to play a critical role in the life of the garden and larger site, it was important to the master planning process that these stakeholders contribute their insight, ideas, and objectives for the future of the site. To this end, the planning team not only extended invitations to all organizations to attend the community forum events, but also interviewed each group separately to best understand their unique relationship to the site and how they could help the site moving forward. The interviews provided substantial content to the process and many of the ideas shared are reflected in both the approved site plan and the *Master Plan Recommendations*.

Stakeholder Organizations Interviewed:

Office of Council member Larry Green
City of Houston Department of Neighborhoods
City of Houston Parks & Recreation
Brays Oaks Management District
Plant It Forward Farms
Keep Houston Beautiful
Katy Prairie Conservancy
Urban Harvest
Trees for Houston



MASTER PLAN RECOMMENDATIONS

SITE PLAN OVERVIEW

The *site plan* represents the culmination of the master planning process, a graphic distillation of the many ideas advanced during that process, and most importantly a consensus on how to best preserve and enhance what makes Westbury Community Garden such a unique asset to both its immediate environment and the larger city. To best explain the intent and recommendations of the *site plan*, the following pages of this chapter offer a breakdown of the plan's constituent parts:

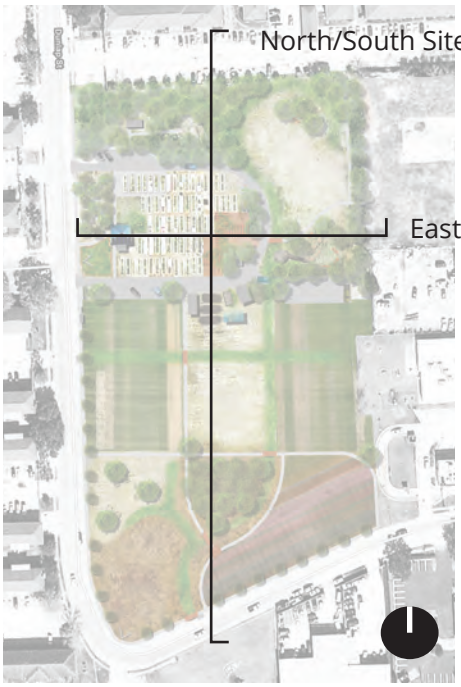
- Circulation
- Grading and Drainage
- Program Spaces
- Planting
- Site Resources
- Lighting
- Signage
- Site Furnishings

The site plan has evolved over approximately six months through a rigorous schedule of community workshops, steering committee meetings, stakeholder interviews and conversations, numerous site visits with garden members, and time spent by the planning team to process all of this input and identify common interests. The planning took very seriously the principal goal of developing a vision for the site that would be wholly specific to this place and highly implementable. Ultimately, the plan marries the community input received with professional best practices and design concepts intended to give form to ideas presented by the community.

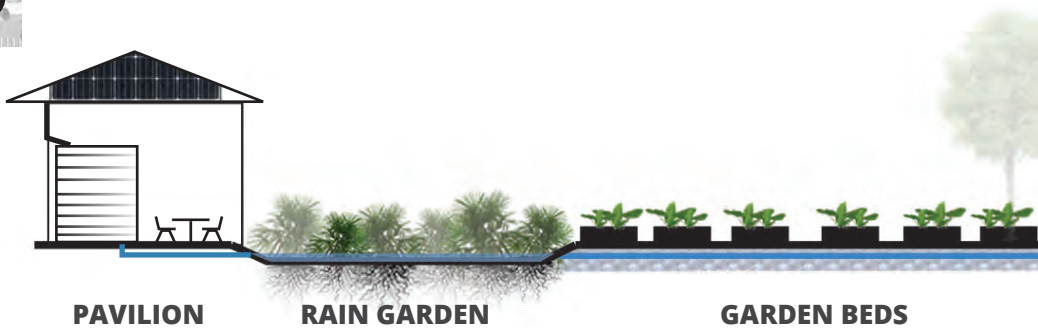
There are several themes that weave through all aspects of the site plan. The principal theme of resource efficiency is tied to the plan's ultimate goal of receiving Sustainable SITES certification. The intent to manage 90% of the site's stormwater within the property boundary, the intent to harvest rainwater for irrigation, the intent to generate electricity through solar power, and the intent to expand and organize composting operations, are all examples of resource efficiency. Connectivity is another theme that distinguishes the plan and manifests itself in the network of circulation corridors designed to better connect the diverse activities of the site and mitigate conflicts between them. A third theme is the surgical character of the site enhancements which have been conceived with great sensitivity to the existing context of the site and the practical imperative to not dramatically uproot the site to make it better. Finally, a guiding theme throughout the master planning process has been a desire to improve accessibility to the site, both on a physical level and at the community level. In the site plan, this theme presents itself in the recommendation of new program spaces that can attract new visitors, improved signage to better identify the site and its many features to the public, improved lighting, and new entry points for pedestrians.

1. Existing garden with improved drainage
2. Parking area with pervious paving
3. Reforestation Area
4. Enhanced Storage Shed
5. Apiary
6. Loop roadway with pervious paving
7. Drainage Swale
8. Flexible open space for events
9. Pedestrian connections to future expansion
10. Nature Play Area
11. Deck and shade trellis
12. Rain garden connected to existing cistern
13. Existing pavilion with solar panels on roof and attached Demonstration Platform
14. Primary vehicular entry with identity signage
15. Parking Area with pervious paving
16. Dedicated Farm Stand
17. Compost windrows
18. Composting restroom
19. Enclosed dumpster
20. Greenhouse
21. Parking Area with pervious paving
22. Drainage Swale
23. Future Training Farm
24. Pedestrian Path
25. Existing Plant It Forward Farms
26. Pedestrian Entry
27. Future Area - Passive Park
28. Future Area - Food Forest / Orchard
29. Future Area - Agri-Ecology / Native Grains
30. Observation platform
31. Pocket prairie
32. Sidewalk
33. Drainage swale connection to storm sewer
34. Identity signage

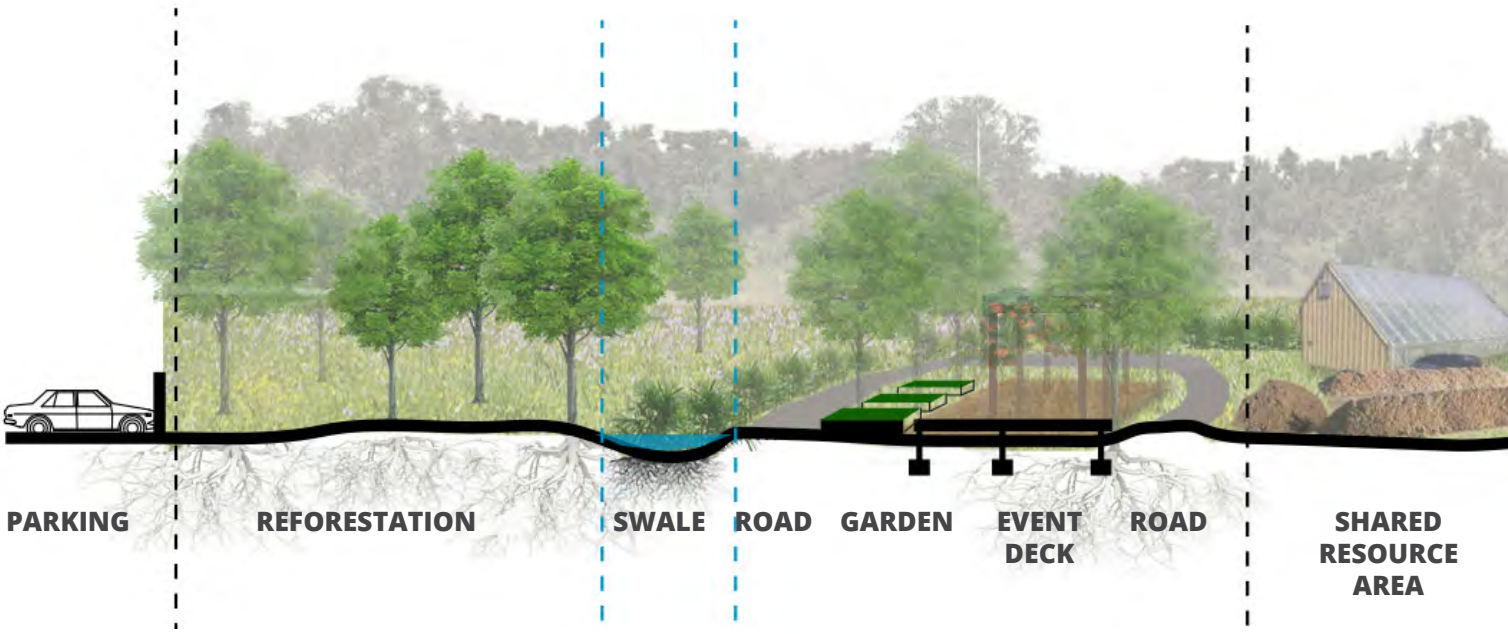
SITE SECTIONS



Section Key

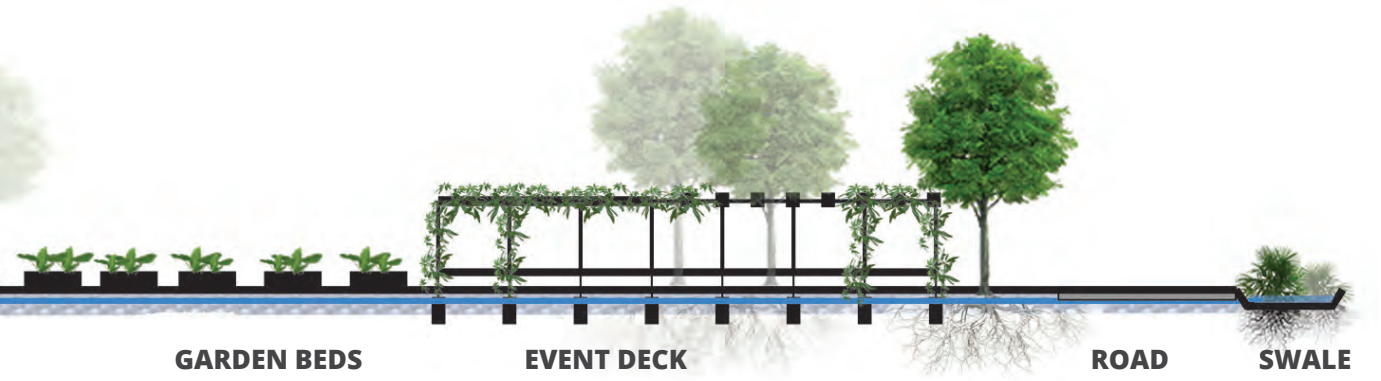


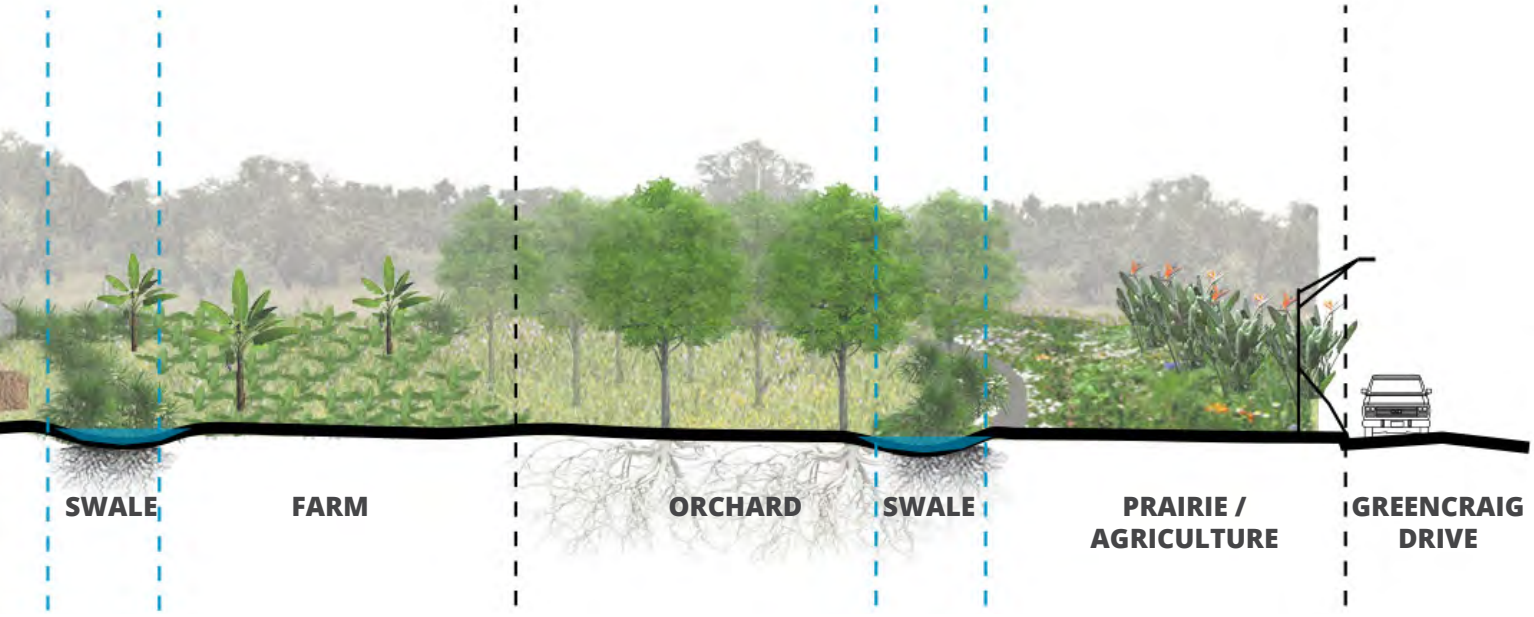
East/West Site Section



North/South Site Section

The site sections below provide views of the overall site with an emphasis on the variety of interconnected program spaces in the approved *Site Plan*. Whereas circulation and drainage at the current site are regular nuisances and obstacles to movement across the landscape, the future site features a loop roadway and swale features which will serve to reconnect the site's many diverse activities and perform as site features in their own right.





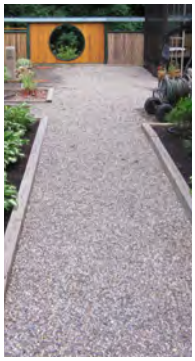
CIRCULATION

The site circulation network provides a hierarchy of three primary forms of circulation as well as footbridges to connect some of these features over drainage features. The network is conceived as a means of clarifying and facilitating access, protecting existing site features, connecting existing program spaces and resources, and guiding the development of future program areas. In addition, all circulation features are conceived to integrate Low Impact Development best management practices to manage 90% of the stormwater on site.

A one-way 'loop' drive paved with pervious concrete connects three (3) parking lots and provides vehicular access to each component of the site that requires service. By minimizing the addition of hard surfaces and specifying porous pavement, the plan reduces potential environmental impact. Paths extend out from the community garden into each portion of the site, providing efficient routes between programmed areas and taking into account accessibility for people with varying degrees of ability and with varying needs on site. The majority of paths are composed of ADA accessible, compacted decomposed granite. Within the space of the garden, paths covered with pea gravel provide pedestrian access as well as stormwater infiltration to french drains below. Effort was also made to anticipate connections to future site expansions and provide shaded paths for pedestrians walking along the perimeter of the site.

While the *Master Plan* proposes a site path running East-West along the southern edge of the PIFF area, this circulation feature could be slightly widened and redesigned to accommodate vehicular access for PIFF should that be necessary in the future as the farms evolve. This right-of-way would be similar to the loop roadway in dimension and material.

Roadway



Garden Path

Site Path

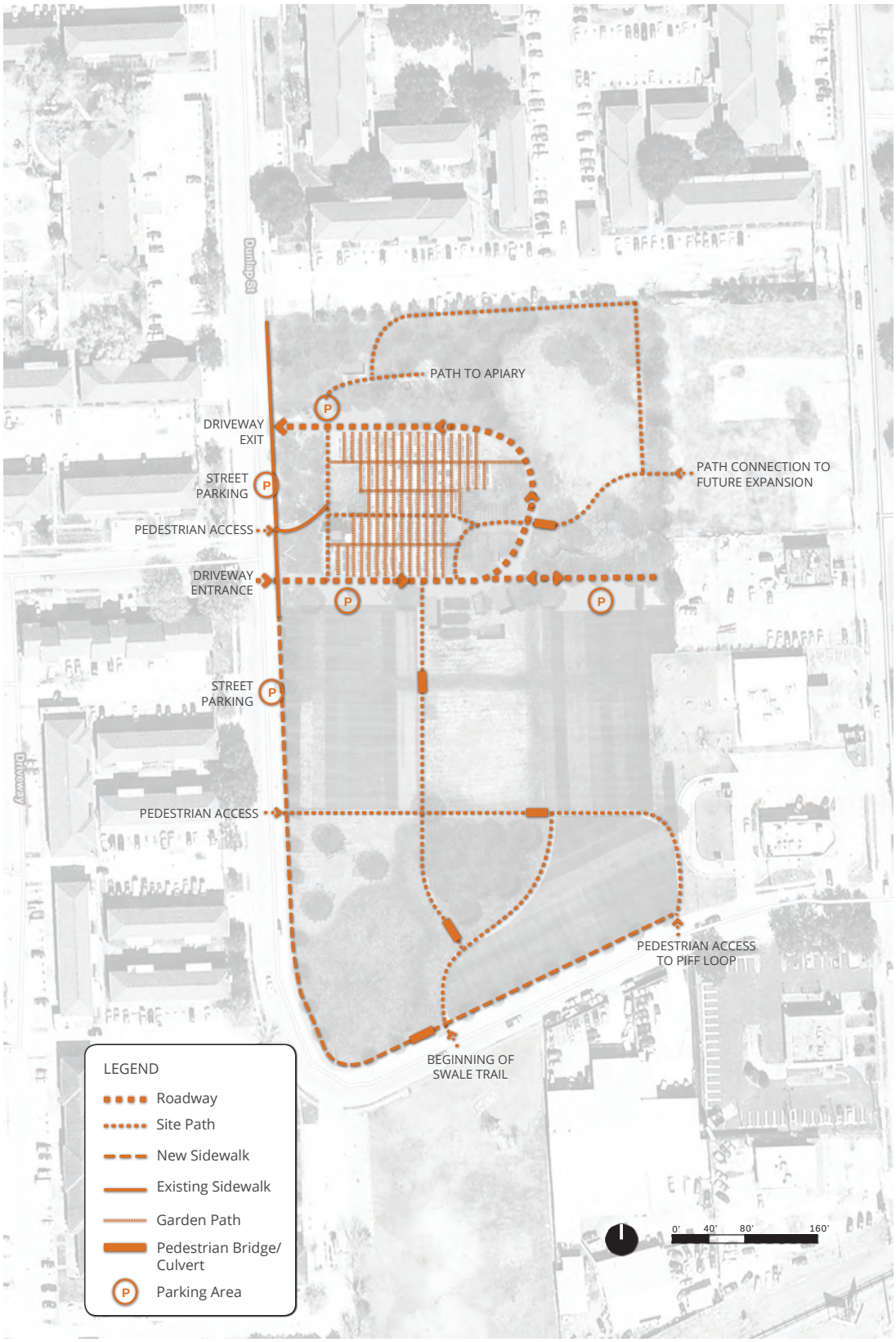
Bridges and Deck

Permeable Concrete

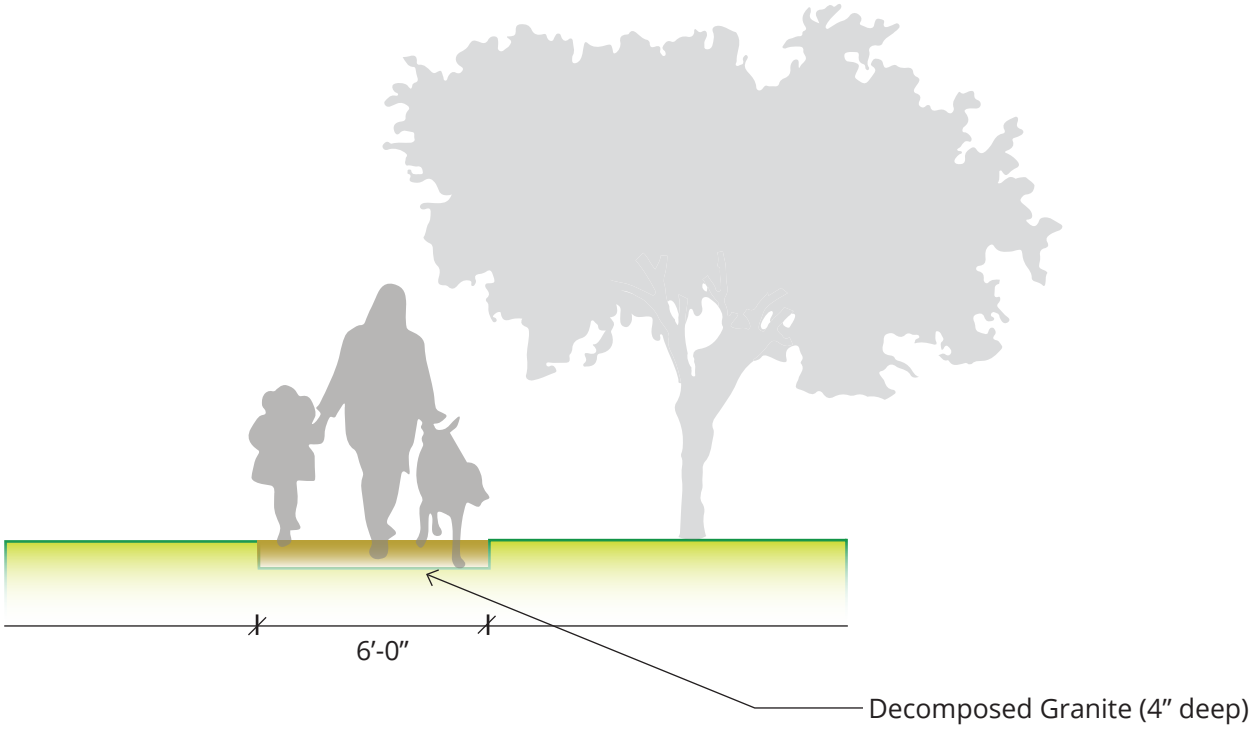
Pea Gravel

Decomposed Granite

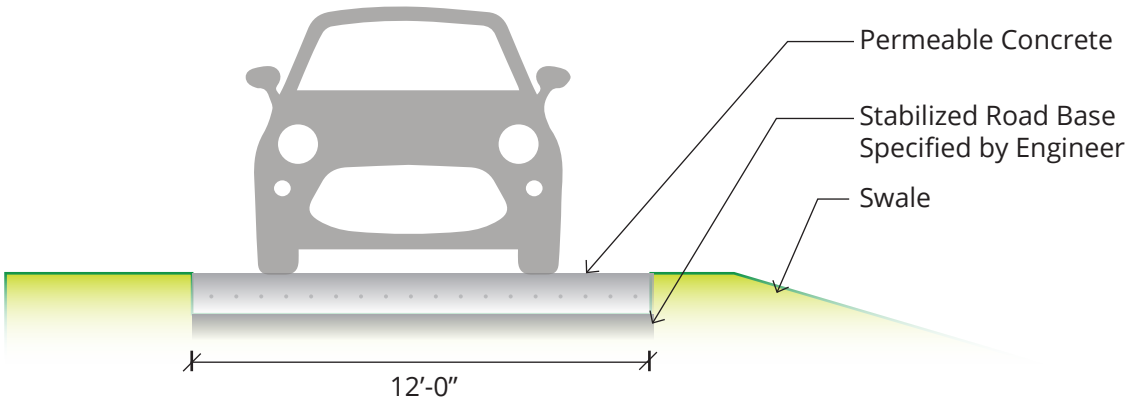
Reclaimed Hardwood


Dunlap St
Driveway
PATH TO APIARY
DRIVEWAY EXIT
STREET PARKING
PEDESTRIAN ACCESS
DRIVEWAY ENTRANCE
PATH CONNECTION TO FUTURE EXPANSION
STREET PARKING
PEDESTRIAN ACCESS
PEDESTRIAN ACCESS TO PIFF LOOP
BEGINNING OF SWALE TRAIL
LEGEND
Roadway
Site Path
New Sidewalk
Existing Sidewalk
Garden Path
Pedestrian Bridge/ Culvert
Parking Area
0'
40'
80'
160'

SITE CIRCULATION



Typical Pedestrian Path Section



Typical Roadway Section

SITE CIRCULATION

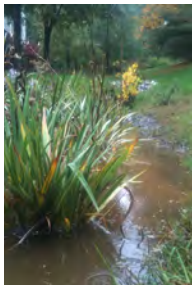
Recommendations:

1. Integrate the approved circulation network from the *Master Plan* into all future site planning and development. The approved network includes a roadway 'loop' for vehicles and pedestrians, dedicated parking areas, pedestrian paths within and between existing program areas, footbridge crossings for future swales and rain gardens, and pedestrian paths designed to guide future program areas
2. Maintain design standards for material choices and dimensions based on the approved master plan for all circulation features to ensure a cohesive character to the site and proper functioning for access, safety and drainage.
3. Ensure that all new circulation features are designed with integral drainage infrastructure based on Low Impact Development best management practices such as pervious paving, rain gardens and bioswales. *See Grading and Drainage guidelines for related recommendations.*
4. Locate wayfinding signage at strategic locations along the circulation network to guide visitors to program areas. *See Signage guidelines for related recommendations.*
5. Design or source a hardwood footbridge to be used as a standard for pedestrian crossings over swales and rain gardens. As an interim measure, crossings can occur at the grade of the swale/rain garden but should be well-identified for pedestrians.
6. Coordinate with Bray Oaks Management District to design and build new and improved sidewalks along Greencraig and Dunlap Streets.
7. Locate lighting fixtures along primary circulation routes based on the approved *Master Plan* and install concurrently with roadway and path construction. *See Lighting guidelines for related recommendations.*
8. Locate site furnishings such as benches and bike racks at strategic locations along primary circulation routes based on the approved *Master Plan* and install concurrently with roadway and path construction. *See Site Furnishing guidelines for related recommendations.*
9. Coordinate all construction work related to circulation with Plant It Forward Farms and other future organizations using portions of the site to maximize efficiencies and minimize potential conflicts.
10. Implement the construction of the approved circulation network incrementally based on the phasing timetable in the *Master Plan*.

SITE GRADING AND DRAINAGE

The site grading and drainage plan is based on an analysis of existing topography, drainage concerns, and desired future site use. Puddled water has been an ongoing nuisance, has threatened crops across the site, and has rendered portions of the site unusable. The proposed network includes multiple components. A shallow, vegetated swale running North to South curves along the route of existing low points, where ponding currently happens. Functioning as a 'trunk line', this primary drainage feature allows stormwater to infiltrate the site and guides excess stormwater from heavy rain events away from high activity areas. Within the garden area, french drains are proposed for the garden paths running West to East to channel stormwater to the swale. These garden paths will be regraded and surfaced with pea gravel to allow for water to percolate into the french drains. ADA-accessible pedestrian bridges are proposed at 5 swale crossings to maintain site connectivity during wet seasons. The existing rainwater harvesting cistern will continue to catch water from the roof of the existing pavilion and provide reclaimed water for irrigation, but will now also overflow into an adjacent rain garden that serves as a catchment area as well as a new planting area. Fill dirt excavated to create the rain garden and swales will be used to create play features within the Nature Play Area, build up low lying areas as needed, or otherwise deposited to form a berm along the northeastern edge of the site to create a natural site barrier.

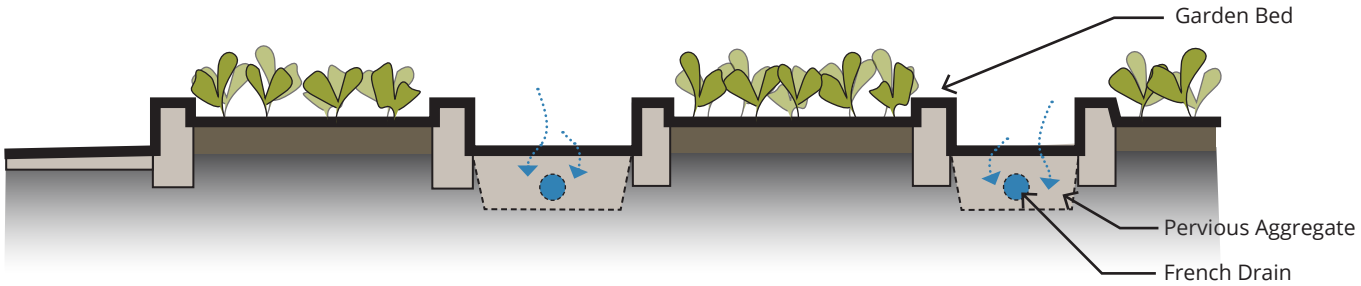
Swales



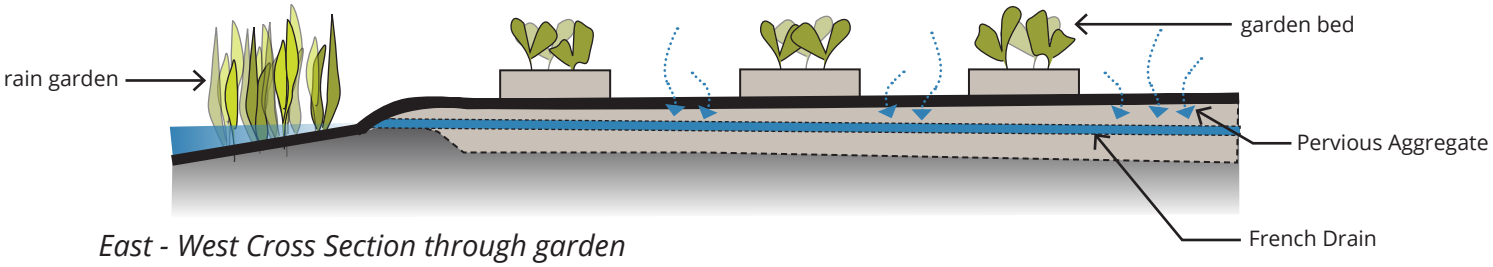
Rain garden

French Drains

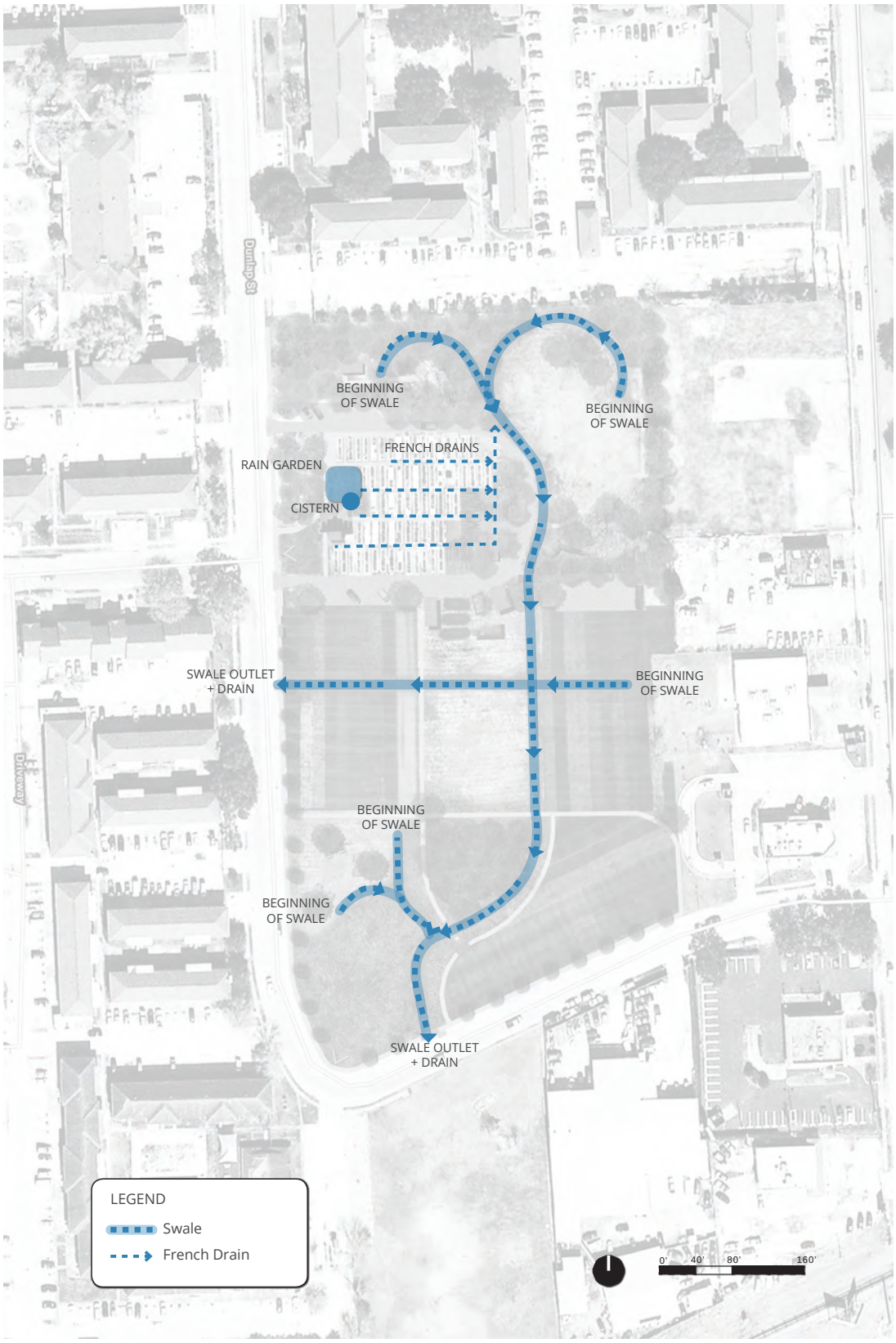
Cistern



North-South Cross Section through garden



East - West Cross Section through garden


Dunlap St
Driveway
BEGINNING OF SWALE
BEGINNING OF SWALE
FRENCH DRAINS
RAIN GARDEN
CISTERN
SWALE OUTLET + DRAIN
BEGINNING OF SWALE
BEGINNING OF SWALE
BEGINNING OF SWALE
SWALE OUTLET + DRAIN
LEGEND
Swale
French Drain
0'
40'
80'
160'

SITE GRADING AND DRAINAGE

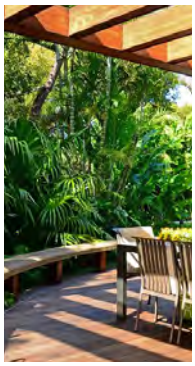
Recommendations:

1. Integrate the approved drainage network from the *Master Plan* into all future site planning and development. The approved network includes a system of french drains below the East-West paths of the community garden, a primary North-South swale running the length of the site, secondary swales/rain gardens connected to the primary swale, an existing rainwater cistern, and a vegetated depression that serves as an overflow for the cistern.
2. Maintain planting and design standards based on the approved *Master Plan* for all drainage features to ensure a cohesive character to the site and proper functioning.
3. Implement the construction of the approved drainage network incrementally based on the phasing recommendation in the *Master Plan* and in tandem with adjacent circulation features.
4. Work with a landscape architect and/or civil engineer to develop maintenance specifications for the drainage features as part of the construction document process. As part of this, identify maintenance tasks that can be executed by garden volunteers in addition to those requiring a specialized service provider.
5. Schedule quarterly, bi-annual or annual drainage network cleanup days for garden membership, friends, or other volunteers. Cleanup would minimally include mowing, weeding, new planting, and trash removal.
6. Retrofit the existing rainwater cistern to overflow into adjacent vegetated basin.
7. Locate interpretive and education signage at strategic locations throughout the drainage network based on the approved *Master Plan*. The signage is critical to ensuring that both regular and infrequent site visitors understand how the drainage system works and become stewards of it.
8. Coordinate all construction work related to drainage with Plant It Forward Farms and other future organizations using portions of the site to maximize efficiencies and minimize potential conflicts.

PROGRAM SPACES

Program Spaces refers to the places throughout the site where activities happen. The *Master Plan* provides a framework for a wide variety of programs on site, all aiming to integrate social and ecological function, and best articulated along an activity spectrum ranging from highly active areas to less active areas. In the following *Program Spaces* plan, while each bubble defines a particular use for the site, all are located to promote overall convenience and ecological function across the site. The majority of high use areas are located at the center of the site, including the Gathering Space, the Event Deck, the Community Garden, the Nature Play Area and the Shared Resources Area. The sizable areas currently managed by Plant It Forward Farms will continue to be an integral component of the site and while PIFF's ultimate vision to create a training farm within their middle parcel is still being planned, the *Master Plan* acknowledges this vision by clustering the shared resources in close proximity to the future training farm and a key nexus between WCG and PIFF.

Biohabitat areas are designated at the North and South ends of the site to serve as ecological buffers for the site. The southern portion of the site, currently undergoing a challenging prairie restoration process, is broken into four *Future Areas* to be developed over time, with an observation platform at the intersection of the four areas. In these areas, current stakeholders and other community groups are invited to partner with WCG to manage agro-ecological projects that will complement the overall site such as prairie restoration, food forest, native grain production, flower production or passive park areas that could be used for additional gathering and outdoor classes.

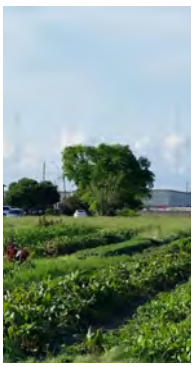


Event Deck

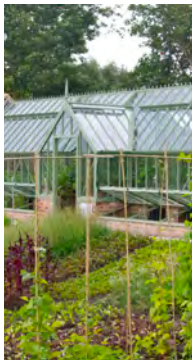
Nature Playground

Apiary

Garden Beds



Row Crops



Community Resource Area - Greenhouse

Community Resource Area - Farm Stand

Gathering Space with Demonstration Platfrom

Prairie Restoration

Training Farm

Notes:

1. Shared Community Resource area includes farm stand, restroom, compost facility, trash dumpster with enclousure, and storage facility.
2. Gathering Space includes existing pavilion and proposed Demonstration Platform
3. Future Areas 1,2, and 3 are proposed as flexible spaces for additional programs and resources managed by garden members, existing stakeholders or new stakeholders. All programs and uses of these areas should complement the other site activities and share the broader community ethic of the Westbury Community Garden.

PROGRAM SPACES

Recommendations:

1. Integrate the approved program space framework from the *Master Plan* into all future site planning and development. The approved framework focuses on preserving existing assets, enhancing existing assets, and creating new program areas to complement the existing program spaces
2. Coordinate with Plant It Forward Farms to finalize plans for the Shared Resource area which is envisioned as a shared space including farm stand, restroom, compost facility, trash dumpster with enclosure, and storage facility.
3. Maintain regular communication with Plant It Forward Farms as its plans evolve for the proposed training farm to maximize efficiencies and minimize potential conflicts with other areas of the site.
4. Construct the new and enhanced program spaces incrementally based on the phasing timetable in the *Master Plan*.
5. Work with a landscape architect to design the *Nature Play Area* in a way that allows for construction as much as possible by garden members and other volunteers.
6. Work with a landscape architect and structural engineer to design and build the *Event Deck* as an integral feature of the site. Coordinate this project with garden members whose beds will be impacted to insure a satisfactory bed relocation.
7. Work with a landscape architect to design and build the Demonstration Platform and rain garden as integral components of the *Gathering Space.* Coordinate this project with garden members whose beds will be impacted to insure a satisfactory bed relocation.
8. Work with Trees for Houston to plant the *Reforestation Area*, other edges of the site, and/or the *Future Areas 1 and 2*.
9. Identify a trained beekeeper or beekeeping organization in the Houston area to help design and build the apiary space, to ensure that it meets all existing City of Houston codes, as well as to train garden members or others from the community interested in stewarding the apiary. Liability Issues should be considered as part of planning.
10. Treat *Future Areas 1,2, and 3* as spaces that should complement existing and proposed program spaces. The master plan foresees *Future Area 1* as an ideal passive park with shade trees, mowed grass area, benches and picnic tables. *Future Area 2* is foreseen as an orchard of food-producing trees, and Future Area 3 is foreseen as a hybrid agro-ecology project that could combine grain plantings for human consumption and other species. Additionally, the spaces can be activated for events and other short duration projects should there be an interest or need.
11. To program the *Future Areas 1, 2, and 3*, reach out to existing stakeholders as well as other environmental and community organizations for potential uses. Vet all proposals thoroughly for viability with the site to insure that they complement existing site activities and share the broader community ethic of the Westbury Community Garden.
12. Pursue adjacent property acquisition in coordination with BOMD and form a committee to develop programming concepts.

PLANTING

There are 6 planting categories proposed in the *Master Plan* with all intended to both complement the plant palette already existing at the site and help to define the proposed new spaces and features of the site. Shade trees are proposed within the *Reforestation Area*, at the edges of the site and along pedestrian paths, flowering trees are proposed to accent event spaces, water-loving trees and wetland plantings are proposed along the drainage swale and within the rain garden where stormwater will collect. At the southern end of the site, food-producing trees and agricultural/seasonal plantings are proposed for the future areas to enrich the site habitat for both humans and other species, and designated native forbs and grasses for the prairie area. Each planting category serves a specific purpose on site and is located with ecological conditions and site users in mind.

Suggested plants by category:

(Selections are suggestion only and not inclusive of all worthwhile species; see *Planting Recommendations* for guidance on developing master list)

- **Shade Trees *** (Reforestation Area, Site Edges, and Pedestrian Paths): Live Oak *Quercus Virginiana*, Mexican Sycamore *Platanus mexicana*, Pecan *Carya illinoinensis*
- **Flowering Trees*** (Event Spaces): Redbud *Cercis canadensis*, Fringe Tree *Chionanthus virginicus,* Mexican Plum *Prunus mexicana*
- **Food-Producing Trees*** (Future Areas): TBD by future stewards
- **Agricultural/Seasonal Plantings** (Future Areas): TBD by future stewards
- **Wetland Plantings** (Swales and Rain Gardens): Inland Seaoats *Chasmanthium latifolium* (seeded), Annual Ryegrass *Lolium multiflorum* (seeded), Eastern Gamagrass *Tripsacum dactyloides* (seeded), Bushy Bluestem *Andropogon glomeratus* (potted), Big Bluestem *Andropogon gerardi* (potted), Louisiana Iris *Iris ser. Hexagonae* (potted), Spiderlily *Hymenocallis liriosme* (potted), Swamp Lily *Crinum americanum* (potted)
- **Native Forbs and Grasses** (Prairie Restoration Area): TBD by future stewards

*For additional suggested species, see the tree lists provided in the *Appendices*

Shade Trees

Flowering Trees

Food-Producing Trees

Agricultural/ Seasonal Plantings

Wetland Plantings

Native Forbs and Grasses


Dunlap St
Driveway
SHADE TREES
FLOWERING TREES
FOOD PRODUCING TREES
COMMUNITY GARDEN
NATIVE PLANTS OR POLLINATOR GARDEN
WATER LOVING TREES
SWALE PLANTING MIX
AGRICULTURE
AGRICULTURE
SHADE TREES
FOOD PRODUCING TREES
PRAIRIE / AGRICULTURE
PRAIRIE RESTORATION
LEGEND
Canopy Tree
Water-Loving Tree
Food-Producing Tree
Flowering Tree
0'
40'
80'
160'

PLANTING

Recommendations:

1. Integrate the approved planting framework from the *Master Plan* into all future site planning and development. The approved framework focuses on defining specific planting areas by social and ecological function, with attention to complementing program spaces, native plant selection, habitat protection and creation, and biodiversity.
2. Form a planting committee of garden members, other site users and relevant stakeholders to expand the approved plant list if desired, create approved protocols for determining new site planting projects, and guidelines for suitable planting methods.
3. Implement planting projects incrementally based on the phasing timetable in the *Master Plan*.
4. Coordinate with the Brays Oaks Management District and the City of Houston on the selection, funding, and planting of new street trees along Greencraig and Dunlap Streets. In addition, coordinate with PIFF and other stewards of adjacent site areas to insure that the street tree selection and spacing is conducive to these adjacent uses.
5. Coordinate with Plant It Forward Farms on all site planting projects that might impact PIFF's activities.
6. Coordinate with other future organizations that steward portions of the site where new planting projects will impact their activities.
7. Communicate new planting goals with current and new stakeholders that might aid in plant donations, planting installation, and longterm stewardship. These organizations include City of Houston Department of Neighborhoods, Office of Council member Larry Green, Green Building Resource Center, Brays Oaks Management District, Trees for Houston, Urban Harvest, Keep Houston Beautiful, and the Native Plant Society, among other groups.
8. Approach specific stakeholders with targeted partnership opportunities for current program spaces and future areas.

SITE RESOURCES

Site Resources refer to the various site features that are available to all garden members and all those who work on site. In some cases, these site resources overlap with the program spaces of the site but what distinguishes the *Site Resources* is that they are designed to fundamentally enhance the overall functioning of the site and its diverse activities. Whereas the current site offers a redundancy of various site resources managed by both garden members and Plant It Forward farmers, the *Master Plan* proposes to unite the interests of all site users into a combined set of site resources that is centrally-located and would include a restroom, composting facility, farm stand, trash dumpster with enclosure, and greenhouse. Other site resources such as storage and rainwater collection would remain separate for practical usage reasons.

Expanded Compost Facility

Composting Restroom

Greenhouse

Dedicated Farm Stand

Storage Shed Option 1 (traditional design)

Storage Shed Option 2 (adapted shipping container)

Existing Cistern and Irrigation

Dumpster with Wood Enclosure


Dunlap St
STORAGE
APIARY
IRRIGATION ZONE
RAINWATER COLLECTION
SOLAR POWER
SHARED RESOURCES:
FARM STAND, RESTROOM, COMPOST FACILITY, TRASH DUMPSTER, GREENHOUSE
BUS STOP
IRRIGATION
Driveway
IRRIGATION ZONE
BUS STOP
0'
40'
80'
160'

SITE RESOURCES

Recommendations:

1. Integrate the approved site resources from the *Master Plan* into all future site planning and development. The approved site resources focus on preserving existing resources, merging resources where appropriate and providing new resources for the benefit of all who use the site.
2. Form asite resources committee of garden members, other site users and relevant stakeholders to help prioritize site resource projects and goals, plan for site work, and assist with outreach for in-kind donations.
3. Work with Plant It Forward Farms to coordinate the design, fundraising and construction of the site resources identified for the Shared Community Resources area, including the restroom, farm stand, trash dumpster with enclosure, compost facility and greenhouse.
4. Identify a trained beekeeper or beekeeping organization in the Houston area to help design and build the apiary space, to ensure that it meets all existing City of Houston codes, as well as to train garden members or others from the community interested in stewarding the apiary. Liability Issues should be considered as part of planning.
5. Reach out to design/build programs at University of Houston College of Architecture and Rice School of Architecture to provide pro bono assistance on the design and construction of any of the site resources. The storage facilities, compost facility, farm stand, and greenhouse will be of particular interest to these programs.
6. Reach out to local solar power installers for assistance on developing a scope of work and cost proposal for the solar panels proposed for the roof of the existing pavilion. Work with the installer to receive pro bono assistance toward the installation costs. If pro-bono assistance is not possible, an installer should at minimum provide a project scope and cost proposal to aid in fundraising.
7. Install separate main lines and meters for drip irrigation to serve garden beds and Plant It Forward farms.
8. Configure existing cistern to supply water to garden irrigation and provide connection from City of Houston water for makeup line.
9. Construct the new and enhanced site resources incrementally based on the phasing timetable in the *Master Plan*.

LIGHTING

Lighting refers to the range of new light fixtures proposed to improve safety, accessibility, and site use in the evening hours. A 'family' of light fixtures is proposed to address different needs for different areas of the site. Throughout, an ethic of restraint has guided the selection of light fixture types and their frequency of placement to insure that there is a balance between sufficient safety and accessibility for people and an effort to prevent excessive light pollution from affecting visibility of the nighttime sky. This 'dark sky compliant' design also prioritizes habitat protection efforts on site where other species may experience disruptions in their migratory, sleeping, or eating habits due to light pollution.

At the most basic level, new and upgraded street lights are proposed along both Greencraig and Dunlap Streets to benefit both the site and its immediate neighbors. New city-standard street lights are located near the vehicular entrance to the site where there is currently a lack of lighting. These lamps and the existing street lamps should be upgraded with shields or screening to ensure dark sky compliance. Moving into the site, a network of dark sky compliant bollard lights are proposed to define the pedestrian circulation of the site at site entrances, key intersections and on-site parking areas. Dark sky compliant building-mounted fixtures are proposed for the few buildings on site where nighttime activities might take place. Finally, simple, affordable and easy-to-install string lights are proposed for the new deck area to encourage use of that space for evening events.

The various site lighting fixtures will need to rely on either electricity provided by the solar panelsproposed for the existing pavilion roof, in which case wiring will be required throuhgout the site, or integral solar power within the fixtures themselves. It is likely that some combination of these strategies will be most practical.

Street Light with Shield Upgrade (for Dark Sky Compliance)

Dark Sky Compliant- Bollard Light (motion-activated)

Dark Sky Compliant- Building - Mounted Light (motion-activated)

String Lights


Dunlap St
Driveway
STRING LIGHTS
BUILDING-MOUNTED LIGHT
NEW STREET LIGHT
EXISTING STREET LIGHT
BOLLARD LIGHT
LEGEND
New Street Light
Existing Street Light
Bollard Light (motion activated)
Building-Mounted Light (motion activated)
String Light
0'
40'
80'
160'

LIGHTING

Recommendations:

1. Integrate the approved lighting framework from the *Master Plan* into all future site planning and development. The approved framework focuses on improving safety, accessibility and site use during the evening hours.
2. Install the new lighting fixtures incrementally based on the phasing timetable in the *Master Plan*.
3. Incorporate the light fixture selection process into the scope for related site development projects: select the precise bollard light fixture product when constructing the roadway, parking and path network, select the building-mounted light fixture product for the existing pavilion when designing and constructing the new Demonstration Platform, and select the building-mounted light fixture products for the new buildings when designing and constructing them. An architect or landscape architect should be a part of the selection process in each case.
4. Work with the Brays Oaks Management District to priortitize, coordinate, and fund the installation of the new street lights and existing street light upgrades for Greencraig and Dunlap streets.
5. Educate the garden membership and all other regular site users on the intent and value of dark sky compliant light fixtures.
6. Set policies on nighttime use of the site to limit cost of lighting the site.

SIGNAGE

Signage refers to the various new and improved signs needed to properly identify the site to visitors (identity signage), guide visitors through the site (wayfinding signage), educate visitors on the intent and rules related to specific site features (educational signage), and expand visitors' understanding of the site's mission, history, area context and ecology (interpretive signage). These signs are intended to be designed as a coordinated 'family' of signs that may vary in size and content, but share a similar style. Material choice, shape and typography are common design strategies for insuring that the signs are seen as a coordinated system across the entire site. In all cases, the signage design and exact placement of each sign should be carefully considered to defer to the landscape of the site, help to inform it and enhance it, and not overwhelm it. Additionally, while the identity signage must be designed for visibility by passing vehicles, the large majority of the signs are intended exclusively for pedestrian visibility, and as such, should be unobtrusive and scaled appropriately.

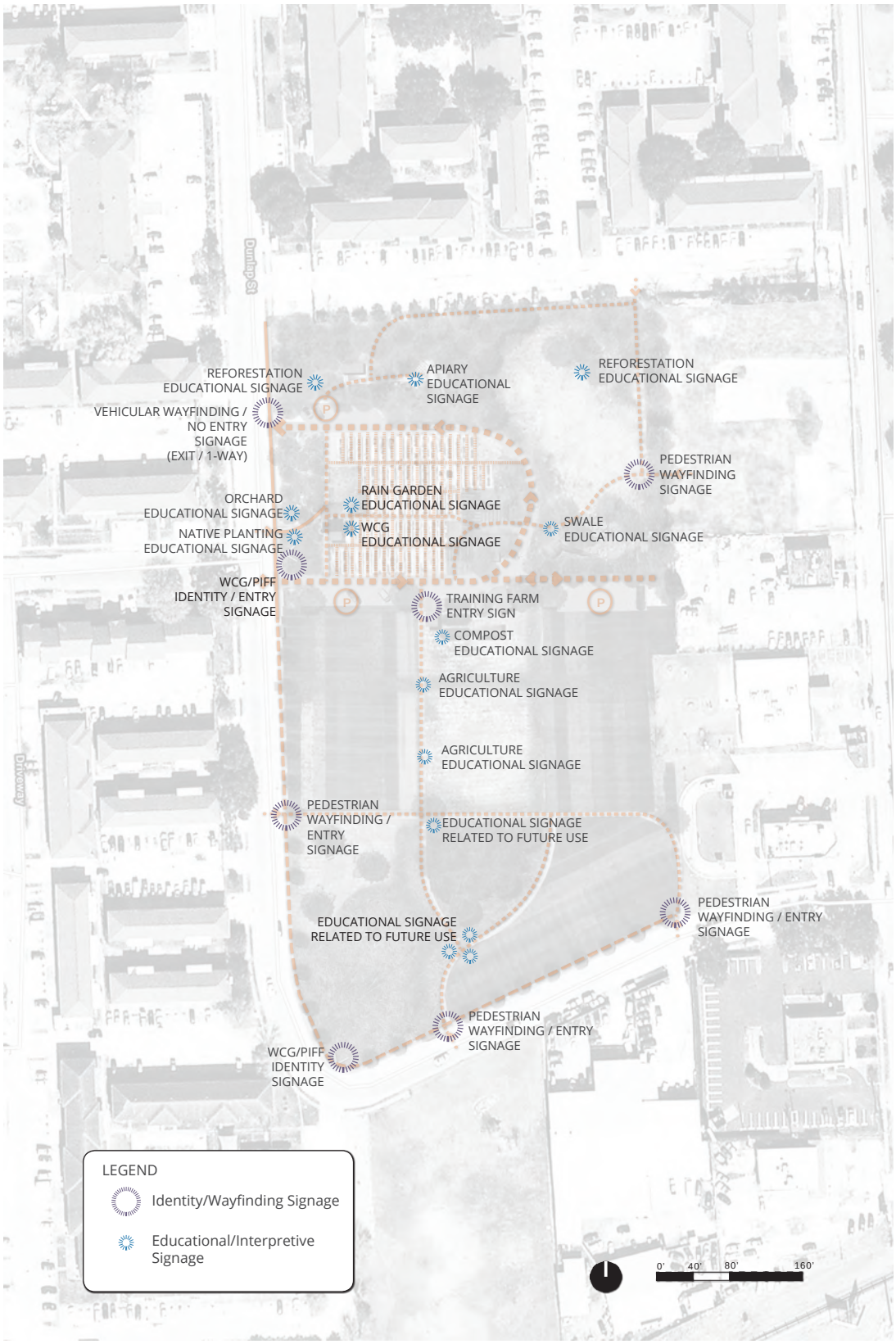
The signage is a relatively low-cost investment in the site but carries an oversized value to the site if done well. Given that Westbury Community Garden has strived to project a positive image of itself to the surrounding community and the broader city, the signage can help to reinforce this image and facilitate positive experiences on site by insuring that new visitors are properly informed and come away with a complete understanding of the site's many nuances and exemplary features. Ultimately, the signage must do more than just identify the site and its features; it must help to tell the evolving story of the site and encourage responsible stewardship by all site users and visitors.

Identity Signage

Pedestrian Wayfinding Signage

Educational Signage

Interpretive Signage


REFORESTATION EDUCATIONAL SIGNAGE
APIARY EDUCATIONAL SIGNAGE
REFORESTATION EDUCATIONAL SIGNAGE
VEHICULAR WAYFINDING / NO ENTRY SIGNAGE (EXIT / 1-WAY)
PEDESTRIAN WAYFINDING SIGNAGE
ORCHARD EDUCATIONAL SIGNAGE
RAIN GARDEN EDUCATIONAL SIGNAGE
NATIVE PLANTING EDUCATIONAL SIGNAGE
WCG EDUCATIONAL SIGNAGE
SWALE EDUCATIONAL SIGNAGE
WCG/PIFF IDENTITY / ENTRY SIGNAGE
TRAINING FARM ENTRY SIGN
COMPOST EDUCATIONAL SIGNAGE
AGRICULTURE EDUCATIONAL SIGNAGE
AGRICULTURE EDUCATIONAL SIGNAGE
PEDESTRIAN WAYFINDING / ENTRY SIGNAGE
EDUCATIONAL SIGNAGE RELATED TO FUTURE USE
EDUCATIONAL SIGNAGE RELATED TO FUTURE USE
PEDESTRIAN WAYFINDING / ENTRY SIGNAGE
PEDESTRIAN WAYFINDING / ENTRY SIGNAGE
WCG/PIFF IDENTITY SIGNAGE
LEGEND
Identity/Wayfinding Signage
Educational/Interpretive Signage
0'
40'
80'
160'

SIGNAGE

Recommendations:

1. Integrate the approved signage framework from the *Master Plan* into all future site planning and development. The approved framework focuses on improving the visibility of the site, guiding visitors through the site, and informing visitors of the many diverse features and qualities of the site.
2. Install the new signage types incrementally based on the phasing timetable in the *Master Plan*.
3. Work with a graphic designer who specializes in environmental graphics and park signage to develop graphic standards and the specific designs for the various signage types. The signage types should be designed in such a way as to facilitate straightforward replication. The scope of the graphic designer should include signage concept design through construction documents.
4. Incorporate the signage fabrication process into the scope for related site development projects: identity and wayfinding signage should be fabricated and installed with the roadway, parking and path network design and construction; and educational and interpretive signage should be fabricated and installed with the design and construction of associated program spaces. A landscape architect should be a part of this process in each case.
5. Coordinate with Plant It Forward Farms and other future organizations stewarding portions of the site on all signage relevant to their activities and program spaces.
6. Work with interested garden members, and relevant stakeholders including Brays Oaks Management District, Plant It Forward Farms, Urban Harvest and the Native Plant Society on the content for the educational and interpretive signage.

SITE FURNISHINGS

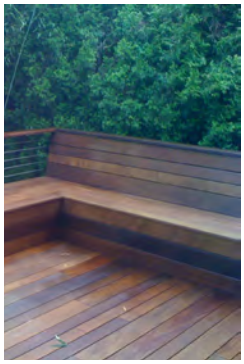
Site Furnishings refers to the new park benches, trash receptacles and bike racks intended to enhance the overall experience of the site, maintain its orderliness and keep it clean for regular users and new visitors alike. These furnishings are located strategically in places where they will either complement the proposed program use or simply function most optimally: bike racks are located at the primary parking areas near the site entrances to encourage cyclists to leave their bikes in dedicated locations at the edge of the site, benches and tables are located at gathering spaces, and trash receptacles are similarly located where we anticipate higher concentrations of use.

While there is a tremendous range of options for the look and feel of these furnishings, the *Master Plan* recommends above all that these selections are coordinated to insure that they form a 'family' of furnishings and help to reinforce a shared visual identity for the overall site.

In selecting the appropriate furnishings for the site, attention must be directed toward durability, ease of installation and functionality as much as look and feel. To deter theft, furnishings should be selected that can be anchored to the ground either through surface mounting or direct embedment.

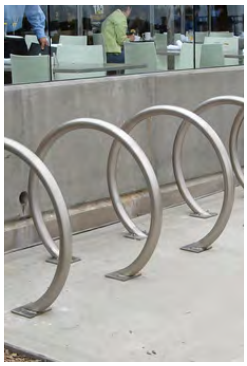
Bench - Option 1
Contemporary Design
Source: Fermob

Bench - Option 2
Traditional Design
Source: Lowes



Bench - Option 3
Integral Design

Picnic Table

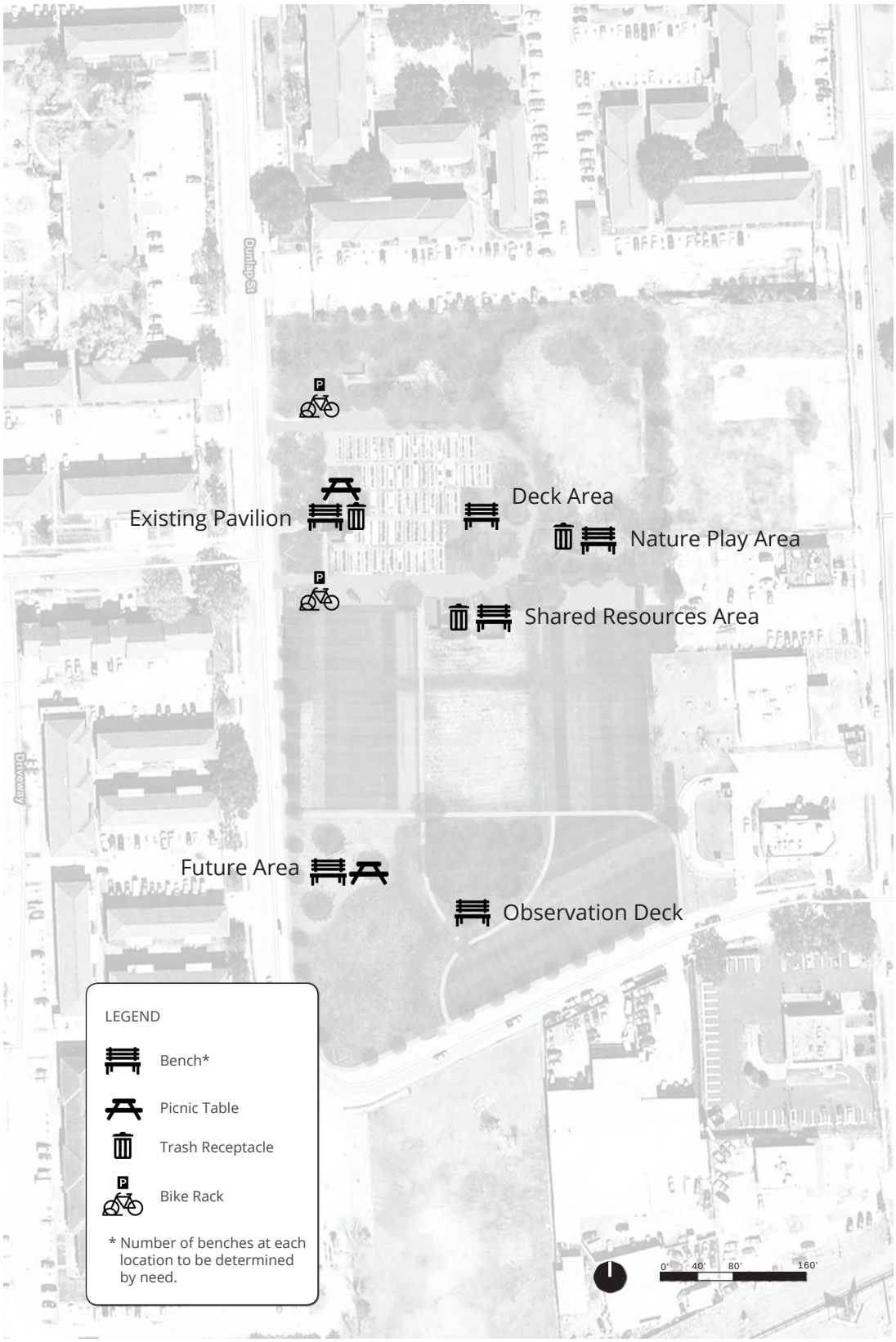


Anchored
Bicycle Rack

Non-anchored
Bicycle Rack

Artistic
Bicycle Rack

Combined
Trash and
Recycling
Receptacle


Dunlap St
Driveway
Existing Pavilion
Deck Area
Nature Play Area
Shared Resources Area
Future Area
Observation Deck
LEGEND
Bench*
Picnic Table
Trash Receptacle
Bike Rack
* Number of benches at each location to be determined by need.
0'
40'
80'
160'

SITE FURNISHINGS

Recommendations:

1. Integrate the approved site furnishings framework from the *Master Plan* into all future site planning and development. The approved framework focuses on improving the overall site experience, orderliness and cleanliness for both regular users and visitors alike.

2. Form a site furnishings committee to coordinate the selection of an approved 'family' of site furnishings products that can be used across the site. If past decisions have been made in regard to the selection of specific furnishings, consider a reassessment in light of the approved *Master Plan*. Work with a landscape architect to assist in this process.

3. Incorporate the installation of the new site furnishings into the scope for related site development projects: install new benches, table, and trash receptacle at the existing pavilion as part of the Demonstration Platform project, install new benches at the *Event Deck* when that space is designed and constructed, install new benches and trash receptacle at the *Nature Play Area* when that space is designed and constructed, install new benches and trash receptacle at the *Shared Resources Area* when that space is designed and constructed, install new bench at the observation platform when that space is designed and constructed.

4. Coordinate with Plant It Forward Farms and other future organizations stewarding portions of the site on all site furnishings relevant to their activities and program spaces.

5. Appeal to relevant stakeholders including the City of Houston Department of Neighborhoods, City of Houston Parks & Recreation Department, Green Building Resource Center, Office of Coucil member Larry Green, the Brays Oaks Management District, and Keep Houston Beautiful for assistance in funding and installing the site furnishings.

IMPLEMENTATION

PHASING

The projects recommended in the previous chapter of this document are envisioned as incremental improvements to the site that can be implemented when funding is available. The table on the facing page provides a straightforward timetable for realizing these projects by prioritizing the projects and identifying any required critical path to realizing them. The critical path is a means of recommending efficiencies that will ensure minimal conflicts, eliminate redundancies, and promote site planning coordination over time. 'Priority Projects' are defined as those projects most critical to stabilizing the site and establishing the preferred conditions for other projects to be realized. 'Secondary Projects' by definition are less critical to the immediate future of the site but could be prioritized should funding become available in the near term. 'Longer Range Projects' are simply those projects with a less defined timeline for realization, though no less important than the 'Secondary Projects' and as such could also be easily prioritized with available funding.

While several of the projects will require some form of construction permit from the City of Houston (identified with *), most of the projects will not. Also, while many of the projects will require a contractor to complete, there are several projects that can be more easily realized with volunteer labor (identified with ***) , and this will in turn build community at the site.

The projects in the phasing table are categorized by type corresponding to the following abbreviations:

CIR = Circulation

DRA = Drainage and Grading

PSP = Program Spaces

SRE = Site Resources

VEG = Vegetation

LIG = Lighting

SIG = Signage

SFU = Site Furnishings

* Refers to standard City of Houston construction permitting process
** Refers to City of Houston and BOMD prioritizing of project
*** Volunteer project opportunity
**** *Trees for Houston* has committed to fund new tree planting on the site provided the Westbury Community Garden commits to stewarding the new trees.

PROJECT PHASING CHART

#	Type	Project	Contingent Upon
Priority Projects			
1	CIR	Roadway and Parking Construction	funding, City permit*
2	CIR	Sidewalks along Greencraig and Dunlap Streets	funding, City approval**
3	DRA	North-South Swale Construction and Site Grading	funding, combine with #1
4	DRA	East -West Swale Construction and Grading	funding, combine with #3 if possible
5	DRA	Garden Path Drainage Installation	funding, combine with #1,3
6	SRE	Irrigation Upgrades to Garden	funding, combine with #5
7	SRE	Irrigation Upgrades to PIFF	funding, combine with #6
8	SRE	Relocate Dumpster and Install Enclosure	funding, completion of #1
9	SIG	Signage Design Standards	funding only
10	SIG	Identity Signage Installation	funding, combine with #1
11	SIG	Wayfinding Signage Installation along Roadway	funding, combine with #1
12	LIG	Bollard Lighting Installation along Roadway	funding, combine with #1
13	LIG	Street Light Upgrades	funding, combine with #2, City approval**
Secondary Projects			
14	CIR	Pedestrian Path System Construction	funding, completion of #1
15	LIG	Bollard Lighting along Path System	funding, combine with #12
16	PSP	Event Deck Design and Construction	funding, completion of #1,3,5, City permit*
17	PSP	Nature Play Area Design and Construction	funding ***, completion of #1,3
18	PSP	Demonstration Platform Design and Construction	funding, City permit*
19	PSP	Apiary Planning, Design, and Installation	funding only***
20	PSP	Relocate and Consolidate Prairie Restoration	completion of #3 ***
21	PLA	Reforestation Planting	funding***, Stewardship Committment****
22	PLA	Rain Garden Installation and Planting	funding only***
23	PLA	Swale Planting	funding, completion of #3 and/or 4
24	SRE	Restroom Installation	funding, completion of #1
25	SRE	Compost Facility Design and Construction	funding, completion of #1,3
26	SRE	Solar Panel Installation	funding, combine with #18
27	LIG	Pavilion Lighting	funding, combine with #18,22
28	SIG	Education and Interpretive Signage	funding, combine with #14,17,19,20,21,22,25,32
29	SFU	Site Furnishings Selection and Installation	funding, combine with #14,15,16,17,18,31,32
Longer Range Projects			
30	PSP	Solicit Interest in Future Areas	completion of #3
31	PSP	Farm Stand Design and Construction	funding, completion of #1
32	PSP	Observation Platform Design and Construction	funding, completion of #13 ***
33	PSP	Greenhouse and Training Farm	funding, completion of #1,3, City permit*
34	SRE	Storage Shed Design and Construction/Installation	funding, completion of #1, City permit*
35	PSP	Future Area development	funding, stakeholder interest

COST ESTIMATION

The cost estimates on the facing page are provided as a companion to the phasing chart, to assist with ongoing fundraising and site planning, based on the understanding that these projects will be implemented incrementally and funded seperately or combined with other projects when practical. The estimates represent ranges of probable cost based on the understanding that more precise costing will require further design development on each of the projects. The actual cost of construction is based on numerous factors including market demand, material cost and labor costs, and can fluctuate dramatically from year to year, season to season, or even month to month. In many cases, actual costs can be significantly reduced through volunteer assistance and in-kind contributions of materials, of which there is significant precedent at the site. Indeed, several of the projects identified are more specific to the mission of Plant It Forward Farms and in all likelihood would be funded and developed primarily through that organization.

Additionally, the budgets of many projects will be determined through the input of multiple stakeholders who will help to set expectations and standards. This being said, an implementable master plan relies on a basic understanding of the scale of cost for recommended improvements to facilitate prioritization, incrementalization, and overall sound decision-making.

Disclaimer on the Opinion of Probable Cost

This opinion of probable construction cost is made on the basis of Asakura Robinson's experience and qualifications and represents Asakura Robinson's best judgment as an experienced and qualified professional generally familiar with the industry. However, since Asakura Robinson has no control over the cost of labor, materials, equipment, or services furnished by others, or over the Contractor's methods of determining prices, or over competitive bidding or market conditions, Asakura Robinson cannot and does not guarantee that proposals, bids, or actual construction cost will not vary from opinions of probable construction cost as prepared by Asakura Robinson.

COST ESTIMATION

COST ESTIMATION CHART		
CIRCULATION		
PHASE	PROJECT	COST RANGE
PRIORITY	Roadway and Parking Construction	$180,000 - $200,000
PRIORITY	Sidewalks along Greencraig and Dunlap Streets	$24,000 - $30,000+
SECONDARY	Pedestrian Path System Construction	$30,000 - $40,000
	SUBTOTAL	**$234,000 - $270,000**
DRAINAGE		
PRIORITY	Swale Construction and Site Grading	$8,000 - $10,000
PRIORITY	Garden Path Drainage Installation	$10,000 - $12,000
	SUBTOTAL	**$18,000 - $22,000**
PROGRAM SPACES		
SECONDARY	Event Deck Design and Construction	$50,000 - $75,000
SECONDARY	Nature Play Area Design and Construction	$10,000 - $30,000
SECONDARY	Outdoor Kitchen Design and Construction	$10,000 - $30,000
SECONDARY	Apiary Installation	$1,500 - $10,000
SECONDARY	Relocate and Consolidate Prairie Restoration	Volunteer time only
LONGER-RANGE	Farm Stand Design and Construction	$10,000 - $25,000
LONGER-RANGE	Observation Platform Design and Construction	$15,000 - $20,000
LONGER-RANGE	Greenhouse and Training Farm	$40,000 - $60,000
	SUBTOTAL	**$136,500 - $250,000**
PLANTING		
SECONDARY	Reforestation Planting	$2,000 - $10,000
SECONDARY	Rain Garden Installation and Planting	$5,000 - $15,000
SECONDARY	Swale Planting	$5,000 - $15,000
	SUBTOTAL	**$12,000 - $40,000**
SITE RESOURCES		
PRIORITY	Irrigation upgrades to garden	$2,500 - $10,000
PRIORITY	Irrigation upgrades to PIFF	$5,000 - $15,000
PRIORITY	Relocate Dumpster and Install Enclosure	$5,000 - $10,000
SECONDARY	Restroom Installation	$25,000 - $34,000 ++
SECONDARY	Compost Facility Design and Construction	$10,000 - $20,000
SECONDARY	Solar Panel Installation	$20,000 - $30,000
LONGER-RANGE	Storage Shed Design and Construction/Installation	$15,000 - $30,000
	SUBTOTAL	**$82,500 - $149,000**

COST ESTIMATION

COST ESTIMATION CHART		
SIGNAGE		
PHASE	PROJECT	COST RANGE
PRIORITY	Signage Design Standards	$10,000 - $20,000
PRIORITY	Identity Signage Installation	$3,000 - $6,000 +++
PRIORITY	Wayfinding Signage Installation along Roadway	$6,000 - $9,000 ++++
SECONDARY	Education and Interpretive Signage	$22,500 - $30,000 +++++
	SUBTOTAL	**$41,500 - $65,000**
LIGHTING		
PRIORITY	Bollard Lighting Installation along Roadway	$4,500 - $9,000 ++++++
PRIORITY	Street Light Upgrades along Greencraig and Dunlap	$12,500 - $20,000
SECONDARY	Bollard Lighting Installation along Path System	$12,000 - $24,000 ++++++
SECONDARY	Pavilion Lighting	$500 - $2,000
	SUBTOTAL	**$29,500 - $55,000**
SITE FURNISHINGS		
SECONDARY	Site Furnishings Selection and Installation	$10,000 - $20,000
	SUBTOTAL	**$10,000 - $20,000**
	TOTAL	**$564,000 - $871,000**

\+ Based on City of Houston standard 5ft sidewalk design
++ Based on M54 Trailhead Series restroom by Clivus Multrum
+++ Includes two (2) signs
++++ Includes six (6) signs
+++++ Includes fifteen (15) signs
+++++ Not inclusive of site electical system upgrades and wiring

FUNDING & SUPPORT

Over its seven year history, the site has benefited significantly from the contributions of numerous local organizations, charitable foundations, private companies, municipal agencies, and elected officials, in the form of direct funding, in-kind donations, and volunteer labor. Indeed, this master planning effort itself would not be possible without the generous financial contributions of Council member Larry Green, Brays Oaks Management District, United Way of Houston and numerous smaller donations from individuals raised through the Westbury Community Garden's capital campaign. Virtually everything added to the site since the WCG's founding can be traced to the altruism of multiple individuals. The garden membership in particular has provided a critical support mechanism for the ongoing budget and operations of the site, and through this commitment has become a distinguishing feature of the site in its own right.

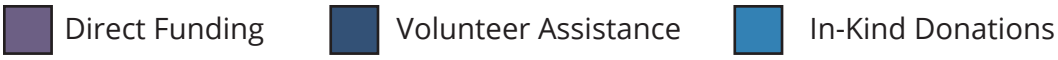
As the garden and other site users move to implement the projects of the *Master Plan*, diversified funding and support in many forms will be critical. Past funders and contributors must be called upon to build on their past investments by expanding on existing programs and resources and finding new interests to support. The following is a chart of past, present and future major contributors organized by the type of support they have provided in the past and what they might offer in the future to help implement the various recommendations of the *Master Plan*. Efforts have been made to include new potential funders, but this list is not comprehensive.

Direct Funding Volunteer Assistance In-Kind Donations

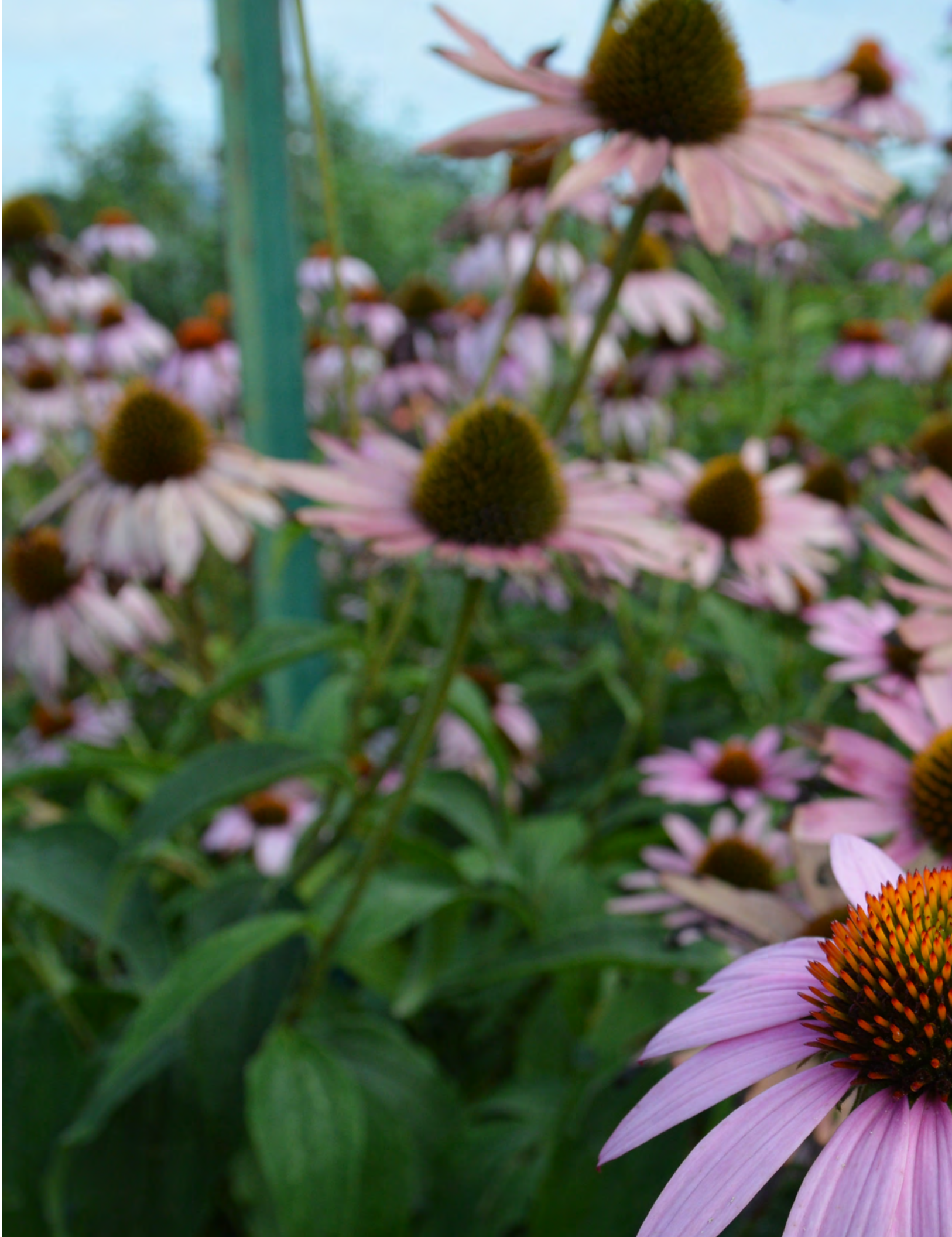
FUNDING AND SUPPORT CHART

ORGANIZATION	PAST CONTRIBUTION	FUTURE CONTRIBUTION
WCG Members		
Government		
City of Houston - City Council member		
City of Houston - Department of Neighborhoods		
City of Houston - Parks & Recreation		
City of Houston - Green Building Res. Center		
Brays Oaks Management District		
Texas Parks & Wildlife Department		
Houston First Corporation		
Go Healthy Houston / City of Houston Health & Human Services		
Harris Health System		

FUNDING & SUPPORT



ORGANIZATION	PAST CONTRIBUTION	FUTURE CONTRIBUTION
Community Organizations		
Westbury Area Improvement Corporation		
Westbury Civic Club		
United Way of Houston		
Boy Scouts / Girl Scouts		
Environmental Organizations		
Plant It Forward Farms		
Trees for Houston		
Urban Harvest		
Keep Houston Beautiful		
Keep America Beautiful		
Native Prairies Association		
Westbury High School		
River Oaks Garden Club		
Educational Institutions		
Westbury High School		
Foerster Elementary		
Corporate Foundations		
Scott's Miracle Gro		
Lloyd's of London		
Houston Astros		
Starbucks		
Cigna		
MD Anderson Cancer Center		
Houston Texans		
Houston Rockets		



APPENDICES

COMMUNITY MEETING #1: SIGN-IN SHEETS

WESTBURY COMMUNITY GARDEN MASTER PLAN
COMMUNITY FORUM SIGN-IN SHEET
TUESDAY, JUNE 21, 2016, 6:00 - 8:00PM

WCG WESTBURY COMMUNITY GARDEN

	NAME	EMAIL ADDRESS	PHONE NUMBER	AFFILIATION
1	Kay Dotsey			
2	Wayne Slaiken			
3	Amelia Goldberg			
4	Steve Goldberg			
5	Kat Elder			WCG
6	Keiji Asakura			
7	Gary Edmondson			WCF
8	Debbie Gordon			WCG
9	[illegible]			BCMD
10	George Rejsek			
11	Mike Knox			CM AT-LARGE 1
12	Lisa Gossett			WCG
13	Cindy Chapman			WAIC, WCG, BOMD, SWHood, etc
14	Jasmin Kegaler			WBG WCG.
15	Sharon Young			
16	Hazel Heddings			WCG.
17	Lauren Talley			WFM
18	LARRY FRIANIC			PIFF/WCG
19	Martha Huebel			WCG
20	[illegible]			WCG
21	Sonya Barrios			City of Houston DON
22	Gordon Wingate			Leadership Houston
23	ELAINE GASKAMP			BVMD
24	MARCY WILLIAMS			BOSN36
25	Ray Sher			WCG - Urban Harv

WESTBURY COMMUNITY GARDEN MASTER PLAN
COMMUNITY FORUM SIGN-IN SHEET
TUESDAY, JUNE 21, 2016, 6:00 - 8:00PM

WCG WESTBURY COMMUNITY GARDEN

	NAME	EMAIL ADDRESS	PHONE NUMBER	AFFILIATION
26	Veronica Hernandez		832-395-9914	City of Houston DON
27	Donald Perkins	donald.perkins@houstontx.gov	832-393-3066	City of Houston - Dist. K
28	Marcia Hartman	mmhartman@hotmail.com	832-545-8822	WCG
29	Betina Wolfbow	wolfbow.c2betina@gmail.com	832-548-1017	WCG
30	Pat Dorsey	pldorsey@att.net	713 504-3419	BVW
31	Melanie Dando	melanie_dando@hotmail		WCG
32	Betsy Longoria			WCG
33	Bob Longoria			husband of WCG
34	[illegible]		713-645-1542	
35	Mary [illegible]			
36	Candice Salmon		832 9692547	gardener
37				
38				
39				
40				
41				

COMMUNITY MEETING #2: SIGN-IN SHEETS

WESTBURY COMMUNITY GARDEN MASTER PLAN - COMMUNITY FORUM #2
SIGN-IN SHEET SEPTEMBER 20, 2016

WCG WESTBURY COMMUNITY GARDEN MASTER PLAN

	NAME	EMAIL ADDRESS	PHONE NUMBER	AFFILIATION
1	LARRY FRANK	Larry.Frank@houstonpolice.org	713-448-0305	PLANT-IT-FORWARD FARMS
2	Kay Dotsey	kdotsey@gmail.com	713 502 3847	WCG
3	Kat Elder	KATELDER@sbcglobal.net	713-729-5481	WCG
4	Marcia Hartman	on File	832-545-8822	WCG
5	Noreen Hoard	noreen.hoard@att.net		PRAIRIES
6	Cindy Chapman	Cpchapman@yahoo.com		WCG/WAIC/BOMD
7	Elles Fernandez	emfernandez1201@gmail.com	832 748-7685	(Jennifer's sister)
8	Jennifer Ettelson	jettelbea@gmail.com	832 74 87682	WCG
9	Alyce Coffey	alyce.coffey@houstontx.gov	7-504-7438	
10	Betsy Longoria	betsylongoria@sbcglobal.net	832-647-5364	WCG
11	Bob Longoria	boblongoria@hotmail.com		WCG
12	Becky Edmondson	beckyedmondson@sbcglobal.net	7134433451	WCC/SW
13	CARRIE SALMON	Kissthesky@yahoo.com	8329692847	WCG
14	Diane King	dpkwcg@yahoo.com	361-548-8495	"
15	Wayne Slaikeu	LP025769280msn.com	832-452-9271	"
16	Teresa O'Donnell	teresa@plant-it-forward.org	713-502-6317	Plant It Forward
17	Oksana Zagorodna	oksana.zagorodna@gmail.com	515-306-2682	WCG
18	Jasmin Regalado	jsmnregalado@yahoo.com	713 870-0054	WCG.
19	Debbie Gordon	debbie@digiroo.com	715-485-0059	WCG
20	V Bennington			WCG
21				
22				
23				
24				
25				

SUSTAINABLE SITES SCORECARD

The score cards below are provided for reference only and only represent the credits the planning team anticipates receiving for certification. The *Master Plan* is currently in the process of tabulating documentation and actual credit points for the Sustainable SITES certification process and this document will be updated when the certification is complete.

SITES v2 Scorecard Summary

YES	?	NO			
0	0	0	**1: SITE CONTEXT**	**Possible Points:**	**13**
Y			CONTEXT P1.1	Limit development on farmland	
Y			CONTEXT P1.2	Protect floodplain functions	
Y			CONTEXT P1.3	Conserve aquatic ecosystems	
Y			CONTEXT P1.4	Conserve habitats for threatened and endangered species	
✓			CONTEXT C1.5	Redevelop degraded sites	3 to 6
✓			CONTEXT C1.6	Locate projects within existing developed areas	4
✓			CONTEXT C1.7	Connect to multi-modal transit networks	2 to 3
0	0	0	**2: PRE-DESIGN ASSESSMENT + PLANNING**	**Possible Points:**	**3**
Y			PRE-DESIGN P2.1	Use an integrative design process	
Y			PRE-DESIGN P2.2	Conduct a pre-design site assessment	
Y			PRE-DESIGN P2.3	Designate and communicate VSPZs	
✓			PRE-DESIGN C2.4	Engage users and stakeholders	3
0	0	0	**3: SITE DESIGN - WATER**	**Possible Points:**	**23**
Y			WATER P3.1	Manage precipitation on site	
Y			WATER P3.2	Reduce water use for landscape irrigation	
✓			WATER C3.3	Manage precipitation beyond baseline	4 to 6
	✓		WATER C3.4	Reduce outdoor water use	4 to 6
✓			WATER C3.5	Design functional stormwater features as amenities	4 to 5
		✓	WATER C3.6	Restore aquatic ecosystems	4 to 6
0	0	0	**4: SITE DESIGN - SOIL + VEGETATION**	**Possible Points:**	**40**
Y			SOIL+VEG P4.1	Create and communicate a soil management plan	
Y			SOIL+VEG P4.2	Control and manage invasive plants	
Y			SOIL+VEG P4.3	Use appropriate plants	
✓			SOIL+VEG C4.4	Conserve healthy soils and appropriate vegetation	4 to 6
✓			SOIL+VEG C4.5	Conserve special status vegetation	4
✓			SOIL+VEG C4.6	Conserve and use native plants	3 to 6
✓			SOIL+VEG C4.7	Conserve and restore native plant communities	4 to 6
✓			SOIL+VEG C4.8	Optimize biomass	1 to 6
✓			SOIL+VEG C4.9	Reduce urban heat island effects	4
		✓	SOIL+VEG C4.10	Use vegetation to minimize building energy use	1 to 4
	✓		SOIL+VEG C4.11	Reduce the risk of catastrophic wildfire	4
0	0	0	**5: SITE DESIGN - MATERIALS SELECTION**	**Possible Points:**	**41**
Y			MATERIALS P5.1	Eliminate the use of wood from threatened tree species	
✓			MATERIALS C5.2	Maintain on-site structures and paving	2 to 4
✓			MATERIALS C5.3	Design for adaptability and disassembly	3 to 4
✓			MATERIALS C5.4	Use salvaged materials and plants	3 to 4
✓			MATERIALS C5.5	Use recycled content materials	3 to 4
✓			MATERIALS C5.6	Use regional materials	3 to 5
✓			MATERIALS C5.7	Support responsible extraction of raw materials	1 to 5
	✓		MATERIALS C5.8	Support transparency and safer chemistry	1 to 5
✓			MATERIALS C5.9	Support sustainability in materials manufacturing	5

SUSTAINABLE SITES SCORECARD

YES	?	NO			
0	0	0	**6: SITE DESIGN - HUMAN HEALTH + WELL-BEING**	**Possible Points:**	**30**
	✓		**HHWB C6.1**	Protect and maintain cultural and historic places	**2 to 3**
✓			**HHWB C6.2**	Provide optimum site accessibility, safety, and wayfinding	**2**
✓			**HHWB C6.3**	Promote equitable site use	**2**
✓			**HHWB C6.4**	Support mental restoration	**2**
✓			**HHWB C6.5**	Support physical activity	**2**
✓			**HHWB C6.6**	Support social connection	**2**
✓			**HHWB C6.7**	Provide on-site food production	**3 to 4**
✓			**HHWB C6.8**	Reduce light pollution	**4**
✓			**HHWB C6.9**	Encourage fuel efficient and multi-modal transportation	**4**
✓			**HHWB C6.10**	Minimize exposure to environmental tobacco smoke	**1 to 2**
✓			**HHWB C6.11**	Support local economy	**3**
0	0	0	**7: CONSTRUCTION**	**Possible Points:**	**17**
Y			**CONSTRUCTION P7.1**	Communicate and verify sustainable construction practices	
Y			**CONSTRUCTION P7.2**	Control and retain construction pollutants	
Y			**CONSTRUCTION P7.3**	Restore soils disturbed during construction	
✓			**CONSTRUCTION C7.4**	Restore soils disturbed by previous development	**3 to 5**
✓			**CONSTRUCTION C7.5**	Divert construction and demolition materials from disposal	**3 to 4**
✓			**CONSTRUCTION C7.6**	Divert reusable vegetation, rocks, and soil from disposal	**3 to 4**
✓			**CONSTRUCTION C7.7**	Protect air quality during construction	**2 to 4**
0	0	0	**8. OPERATIONS + MAINTENANCE**	**Possible Points:**	**22**
Y			**O+M P8.1**	Plan for sustainable site maintenance	
Y			**O+M P8.2**	Provide for storage and collection of recyclables	
✓			**O+M C8.3**	Recycle organic matter	**3 to 5**
✓			**O+M C8.4**	Minimize pesticide and fertilizer use	**4 to 5**
✓			**O+M C8.5**	Reduce outdoor energy consumption	**2 to 4**
✓			**O+M C8.6**	Use renewable sources for landscape electricity needs	**3 to 4**
✓			**O+M C8.7**	Protect air quality during landscape maintenance	**2 to 4**
0	0	0	**9. EDUCATION + PERFORMANCE MONITORING**	**Possible Points:**	**11**
✓			**EDUCATION C9.1**	Promote sustainability awareness and education	**3 to 4**
✓			**EDUCATION C9.2**	Develop and communicate a case study	**3**
	✓		**EDUCATION C9.3**	Plan to monitor and report site performance	**4**
0	0	0	**10. INNOVATION OR EXEMPLARY PERFORMANCE**	**Bonus Points:**	**9**
			INNOVATION C10.1	Innovation or exemplary performance	**3 to 9**

YES	?	NO		
0	0	0	**TOTAL ESTIMATED POINTS**	**Total Possible Points: 200**

KEY		SITES Certification levels	Points
YES	Project confident points are achievable	CERTIFIED	70
?	Project striving to achieve points, not 100% confident	SILVER	85
NO	Project is unable to achieve these credit points	GOLD	100

SOIL TESTS - ORGANIC CONTENT & NUTRIENTS

The soil test results for organic content and major nutrients were produced by Texas A&M University's AgriLife Extension and based on the soil samples identified in the soil sample map on Page 47 of this document.

Harris County
Laboratory Number: 464470
Customer Sample ID: 5
Crop Grown: GARDEN

Area Represented: 43560 sqft

Analysis	Results	CL*	Units	ExLow VLow Low Mod High VHigh Excess.
pH	6.3	(6.5)	-	Slightly Acid
Conductivity	175	(-)	umho/cm	None
Nitrate-N	1	(-)	ppm**	
Phosphorus	14	(50)	ppm	
Potassium	112	(175)	ppm	
Calcium	1,794	(180)	ppm	
Magnesium	234	(50)	ppm	
Sulfur	7	(13)	ppm	
Sodium	22	(-)	ppm	
Iron				
Zinc				
Manganese				
Copper				
Boron				
Limestone Requirement				
Organic Matter	5.53		%	

Fertilizer Recommended
1.4 lbs N/1000sqft
2.8 lbs P2O5/1000sqft
1.4 lbs K20/1000sqft
0 lbs Ca/1000sqft
0 lbs Mg/1000sgft
0.5 lbs S/1000sqft
10.00 lbs/1000sqft

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Harris County
Laboratory Number: 464470
Customer Sample ID: 5
Crop Grown: BLUESTEM (GRAZING OR HAY)

Area Represented: 1 acres

Analysis	Results	CL*	Units	ExLow VLow Low Mod High VHigh Excess.
pH	6.3	(5.8)	-	Slightly Acid
Conductivity	175	(-)	umho/cm	None
Nitrate-N	1	(-)	ppm**	
Phosphorus	14	(50)	ppm	
Potassium	112	(125)	ppm	
Calcium	1,794	(180)	ppm	
Magnesium	234	(50)	ppm	
Sulfur	7	(13)	ppm	
Sodium	22	(-)	ppm	
Iron				
Zinc				
Manganese				
Copper				
Boron				
Limestone Requirement				
Organic Matter	5.53		%	

Fertilizer Recommended
35 lbs N/acre
40 lbs P2O5/acre
10 lbs K20/acre
0 lbs Ca/acre
0 lbs Mg/acre
10 lbs S/acre
0.00 tons 100ECCE/acre

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

SOIL TESTS - ORGANIC CONTENT & NUTRIENTS

Laboratory Number: 464469
Customer Sample ID: 4
Crop Grown: BLUESTEM (GRAZING OR HAY)

Analysis	Results	CL*	Units	ExLow VLow Low Mod High VHigh Excess.	Fertilizer Recommended
pH	7.7	(5.8)	-	Mod. Alkaline	
Conductivity	226	(-)	umho/cm	None	
Nitrate-N	1	(-)	ppm**		35 lbs N/acre
Phosphorus	15	(50)	ppm		35 lbs P2O5/acre
Potassium	105	(125)	ppm		15 lbs K20/acre
Calcium	3,175	(180)	ppm		0 lbs Ca/acre
Magnesium	273	(50)	ppm		0 lbs Mg/acre
Sulfur	6	(13)	ppm		10 lbs S/acre
Sodium	20	(-)	ppm		
Iron					
Zinc					
Manganese					
Copper					
Boron					
Limestone Requirement					0.00 tons 100ECCE/acre

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Harris County
Area Represented: 43560 sqft
Laboratory Number: 464468
Customer Sample ID: 3
Crop Grown: GARDEN

Analysis	Results	CL*	Units	ExLow VLow Low Mod High VHigh Excess.	Fertilizer Recommended
pH	7.6	(6.5)	-	Mod. Alkaline	
Conductivity	283	(-)	umho/cm	None	
Nitrate-N	26	(-)	ppm**		0.2 lbs N/1000sqft
Phosphorus	38	(50)	ppm		0.9 lbs P2O5/1000sqft
Potassium	73	(175)	ppm		2.3 lbs K20/1000sqft
Calcium	15,231	(180)	ppm		0 lbs Ca/1000sqft
Magnesium	286	(50)	ppm		0 lbs Mg/1000sgft
Sulfur	16	(13)	ppm		0 lbs S/1000sqft
Sodium	19	(-)	ppm		
Iron					
Zinc					
Manganese					
Copper					
Boron					
Limestone Requirement					0.00 lbs/1000sqft

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

SOIL TESTS - ORGANIC CONTENT & NUTRIENTS

Harris County
Laboratory Number: 464466
Customer Sample ID: 1
Crop Grown: BLUESTEM (GRAZING OR HAY)

Area Represented: 1 acres

Analysis	Results	CL*	Units	ExLow VLow Low Mod High VHigh Excess.	Fertilizer Recommended
pH	7.2	(5.8)	-	Slightly Alkaline	
Conductivity	246	(-)	umho/cm	None	
Nitrate-N	11	(-)	ppm**		15 lbs N/acre
Phosphorus	51	(50)	ppm		0 lbs P2O5/acre
Potassium	147	(125)	ppm		0 lbs K20/acre
Calcium	3,969	(180)	ppm		0 lbs Ca/acre
Magnesium	251	(50)	ppm		0 lbs Mg/acre
Sulfur	16	(13)	ppm		0 lbs S/acre
Sodium	22	(-)	ppm		
Iron					
Zinc					
Manganese					
Copper					
Boron					
Limestone Requirement					0.00 tons 100ECCE/acre
Organic Matter	8.76		%		

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Printed on: 7/26/2016

Harris County
Laboratory Number: 464467
Customer Sample ID: 2
Crop Grown: GARDEN

Area Represented: 43560 sqft

Analysis	Results	CL*	Units	ExLow VLow Low Mod High VHigh Excess.	Fertilizer Recommended
pH	7.6	(6.5)	-	Slightly Alkaline	
Conductivity	269	(-)	umho/cm	None	
Nitrate-N	1	(-)	ppm**		1.4 lbs N/1000sqft
Phosphorus	29	(50)	ppm		1.7 lbs P2O5/1000sqft
Potassium	147	(175)	ppm		0.6 lbs K20/1000sqft
Calcium	5,570	(180)	ppm		0 lbs Ca/1000sqft
Magnesium	250	(50)	ppm		0 lbs Mg/1000sgft
Sulfur	17	(13)	ppm		0 lbs S/1000sqft
Sodium	24	(-)	ppm		
Iron					
Zinc					
Manganese					
Copper					
Boron					
Limestone Requirement					0.00 lbs/1000sqft

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

SOIL TESTS - POLLUTION

Houston Health Department
Bureau of Pollution Control and Prevention
Complaint Investigation Report

HOUSTON HEALTH DEPARTMENT

Complaint Request: 101002346646
Date/Time Received: 9/17/2016 10:00 AM
Date/Time Investigated: 9/28/2016 9:30 AM
Referring Agency/Complainant Name:Virginia Livingston, Westbury Community Garden and Rebekah Dye, Landscape Architect
Phone #: Rebekah 713-337-5830 ext 116, Virginia 713-723-2658
Investigator(s): Lisa Groves
Water body affected (if known): Willow Waterhole
Site Address or Intersection: Dunlap @ Greencraig Dr
Complaint Type: Pollution Report

Introduction:
During the 2016 Carp-a-thon event at Willow Waterhole, the president of the Westbury Community Garden approached investigator L. Groves and discussed a concern about the soil underneath the garden where volunteers had discovered remnants of construction waste including drums and conduit. The garden is accessible to the public and plans for expansion are in the works. The land is owned by the Brays Oaks Management district and leased to the community garden board.

Following the discussion, L. Groves received an email from the landscape architect who was working on the expansion. She was interested in having the soil tested before recommending the expansion. L. Groves discussed the testing limitations of the HHD lab and informed the architect that certain analyses would have to be performed by a private lab. The requested testing was for informational purposes only and not a pre-construction requirement.

Investigation:

On 9/28/16, Investigator L. Groves met with the landscape architect and Westbury Community Garden president on site. The landscape architect pointed out the boundaries of the proposed expansion area. The areas of concern included the undeveloped southern portion of the field as well as the areas where trees and crops were already planted in-ground.

L. Groves selected 3 locations, 2 in the undeveloped area and one in the recently tilled ground and collected soil samples for TPH, metals, SVOC and VOC analysis. GPS coordinates for the 3 sites were recorded (see table below). Samples were collected between 0.5 – 1 ft depth which was the depth at which most of the crops were planted.

Samples for metals and TPH were delivered to the HHD lab at approximately 1:00 PM that afternoon. Samples for SVOC and VOC analysis were kept on ice for later submission to a private lab pending approval from the community garden board.

SOIL TESTS - POLLUTION

Houston Health Department
Bureau of Pollution Control and Prevention
Complaint Investigation Report

HOUSTON HEALTH DEPARTMENT

Field Readings and Lab Results:

Location/GPS	Sample Lab ID#
#1) 29.6379081, -95.4949943	160928021.01
#2) 29.637701, -95.494539	160928021.02
#3) 29.638015, -95.494539	160928021.03
#4) Background sample 29.641190, -95.478617	160928021.04

Sample	pH	Cadmium mg/Kg	Chromium mg/kg	Copper mg/Kg	Lead mg/Kg	Manganese mg/Kg	Nickel mg/Kg	Silver mg/Kg	Zinc mg/Kg
#1	5.03	<2	7.38	5.58	16.2	67.2	<10	<2	34.3
#2	6.94	<2	7.47	<5	13.0	83.3	<10	<2	21.1
#3	7.50	<2	8.63	5.07	10.5	139	<10	<2	13.6
#4	7.56	<2	15.8	8.06	<10	240	<10	<2	41

TPH (nC_6 to nC_{25}) was < MRL of 50 mg/Kg for all 4 samples.

Complaint and Compliance History:
No known complaints or prior records in database from this location.

Conclusion:

Based on results of metals and TPH analyses, exposure risks could not be confirmed. TPH concentrations for representative samples were below detectible limits. Heavy metals that were measured as part of the analyses were below U.S. EPA regulatory limits for application to soils*.

Due to current analytical limitations of the Houston Health Department lab, recommendations include consultation with independent consultants if exposure to other specific contaminants is still a concern.

(*Source USDA NRCS: http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_053279.pdf)

Created by: Lisa Groves
10/14/2016

Ver 1.1 Updated 9/9/2016 by LG

RP161005002

Houston Health Department

Bureau of Laboratory Services
2250 Holcombe Blvd
Houston, TX 77030
832-393-3900

Laboratory Report - Inorganic

Submitter:	Bureau of Pollution Control and Prevention	**Sample ID:**	160928021.01
	7411 Park Place Blvd	**Site Address:**	Westbury CG 1
		Station ID:	
	Houston, TX, 77087	**Collector:**	L. Groves
Project:		**Collection Date/Time:**	09/28/2016 10:00 AM
Matrix:	Solid	**Received Date/Time:**	09/28/2016 12:58 **By:** HN

Sample Received on Ice?: Yes **Preservation Checked?:** **pH < 2**

Note: This report contains only the results for the sample described above. This report cannot be reproduced, except in full. All data reported meets or exceeds all QC criteria unless noted below.

Parameter	Result	Qual	Units	Container ID	MRL	Analysis Date/Time	Analyst	Method
pH	5.03 @ 13.4 °C		s.u.		N/A	09/28/2016 17:03	RB	SW-846 9045D
Cadmium	< 2		mg/Kg		2	09/30/2016 14:33	JP	SW-846 6010B
Chromium	7.38		mg/Kg		5	09/30/2016 14:33	JP	SW-846 6010B
Copper	5.58		mg/Kg		5	09/30/2016 14:33	JP	SW-846 6010B
Lead	16.2		mg/Kg		10	09/30/2016 14:33	JP	SW-846 6010B
Manganese	67.2		mg/Kg		5	09/30/2016 14:33	JP	SW-846 6010B
Nickel	< 10		mg/Kg		10	09/30/2016 14:33	JP	SW-846 6010B
Silver	< 2		mg/Kg		2	09/30/2016 14:33	JP	SW-846 6010B
Zinc	34.3		mg/Kg		10	09/30/2016 14:33	JP	SW-846 6010B

Additional Comments:

Approving Supervisor: Emina Marjanovich **Signature:** **Report Date:** 10/05/2016

Rev. 11/2013

SOIL TESTS - POLLUTION

RP161005002

Houston Health Department

Bureau of Laboratory Services
2250 Holcombe Blvd
Houston, TX 77030
832-393-3900

Laboratory Report - Inorganic

Submitter:	Bureau of Pollution Control and Prevention	**Sample ID:**	160928021.02	
	7411 Park Place Blvd	**Site Address:**	Westbury CG 2	
		Station ID:		
	Houston, TX, 77087	**Collector:**	L. Groves	
Project:		**Collection Date/Time:**	09/28/2016 10:30 AM	
Matrix:	Solid	**Received Date/Time:**	09/28/2016 12:58	**By:** HN

Sample Received on Ice?: Yes **Preservation Checked?:** **pH < 2**

Note: This report contains only the results for the sample described above. This report cannot be reproduced, except in full. All data reported meets or exceeds all QC criteria unless noted below.

Parameter	Result	Qual	Units	Container ID	MRL	Analysis Date/Time	Analyst	Method
pH	6.94 @ 15.7 °C		s.u.		N/A	09/28/2016 17:13	RB	SW-846 9045D
Cadmium	< 2		mg/Kg		2	09/30/2016 14:45	JP	SW-846 6010B
Chromium	7.47		mg/Kg		5	09/30/2016 14:45	JP	SW-846 6010B
Copper	< 5.0		mg/Kg		5	09/30/2016 14:45	JP	SW-846 6010B
Lead	13.0		mg/Kg		10	09/30/2016 14:45	JP	SW-846 6010B
Manganese	83.3		mg/Kg		5	09/30/2016 14:45	JP	SW-846 6010B
Nickel	< 10		mg/Kg		10	09/30/2016 14:45	JP	SW-846 6010B
Silver	< 2		mg/Kg		2	09/30/2016 14:45	JP	SW-846 6010B
Zinc	21.1		mg/Kg		10	09/30/2016 14:45	JP	SW-846 6010B

Additional Comments:

Approving Supervisor: Emina Marjanovich **Signature:** **Report Date:** 10/05/2016

Rev. 11/2013

RP161005002

Houston Health Department

Bureau of Laboratory Services
2250 Holcombe Blvd
Houston, TX 77030
832-393-3900

Laboratory Report - Inorganic

Submitter:	Bureau of Pollution Control and Prevention	**Sample ID:**	160928021.03	
	7411 Park Place Blvd	**Site Address:**	Westbury CG 3	
		Station ID:		
	Houston, TX, 77087	**Collector:**	L. Groves	
Project:		**Collection Date/Time:**	09/28/2016 11:00 AM	
Matrix:	Solid	**Received Date/Time:**	09/28/2016 12:58	**By:** HN

Sample Received on Ice?: Yes **Preservation Checked?:** **pH < 2**

Note: This report contains only the results for the sample described above. This report cannot be reproduced, except in full. All data reported meets or exceeds all QC criteria unless noted below.

Parameter	Result	Qual	Units	Container ID	MRL	Analysis Date/Time	Analyst	Method
pH	7.50 @ 16.3 °C		s.u.		N/A	09/28/2016 17:14	RB	SW-846 9045D
Cadmium	< 2		mg/Kg		2	09/30/2016 14:48	JP	SW-846 6010B
Chromium	8.63		mg/Kg		5	09/30/2016 14:48	JP	SW-846 6010B
Copper	5.07		mg/Kg		5	09/30/2016 14:48	JP	SW-846 6010B
Lead	10.5		mg/Kg		10	09/30/2016 14:48	JP	SW-846 6010B
Manganese	139		mg/Kg		5	09/30/2016 14:48	JP	SW-846 6010B
Nickel	<10		mg/Kg		10	09/30/2016 14:48	JP	SW-846 6010B
Silver	< 2		mg/Kg		2	09/30/2016 14:48	JP	SW-846 6010B
Zinc	13.6		mg/Kg		10	09/30/2016 14:48	JP	SW-846 6010B

Additional Comments:

Approving Supervisor: Emina Marjanovich **Signature:** **Report Date:** 10/05/2016

Rev. 11/2013

RP161005002

Houston Health Department

Bureau of Laboratory Services
2250 Holcombe Blvd
Houston, TX 77030
832-393-3900

Laboratory Report - Inorganic

Submitter:	Bureau of Pollution Control and Prevention	**Sample ID:**	160928021.04	
	7411 Park Place Blvd	**Site Address:**	Background	
		Station ID:		
	Houston, TX, 77087	**Collector:**	L. Groves	
Project:		**Collection Date/Time:**	09/28/2016 11:30 AM	
Matrix:	Solid	**Received Date/Time:**	09/28/2016 12:58	**By:** HN

Sample Received on Ice?: Yes **Preservation Checked?:** **pH < 2**

Note: This report contains only the results for the sample described above. This report cannot be reproduced, except in full. All data reported meets or exceeds all QC criteria unless noted below.

Parameter	Result	Qual	Units	Container ID	MRL	Analysis Date/Time	Analyst	Method
pH	7.56 @ 17.2 °C		s.u.		N/A	09/28/2016 17:14	RB	SW-846 9045D
Cadmium	< 2		mg/Kg		2	09/30/2016 14:50	JP	SW-846 6010B
Chromium	15.8		mg/Kg		5	09/30/2016 14:50	JP	SW-846 6010B
Copper	8.06		mg/Kg		5	09/30/2016 14:50	JP	SW-846 6010B
Lead	< 10		mg/Kg		10	09/30/2016 14:50	JP	SW-846 6010B
Manganese	240		mg/Kg		5	09/30/2016 14:50	JP	SW-846 6010B
Nickel	< 10		mg/Kg		10	09/30/2016 14:50	JP	SW-846 6010B
Silver	< 2		mg/Kg		2	09/30/2016 14:50	JP	SW-846 6010B
Zinc	41.0		mg/Kg		10	09/30/2016 14:50	JP	SW-846 6010B

Additional Comments:

Approving Supervisor: Emina Marjanovich **Signature:** **Report Date:** 10/05/2016

Rev. 11/2013

SOIL TESTS - POLLUTION

Field No: 1

CITY OF HOUSTON
Organic Lab Report

Lab Date/Time Stamp
2016 Sep 28 PM 1:11

Houston Health Department
Bureau of Laboratory Services
2250 Holcombe Blvd
Houston, TX 77030
832-393-3900

SUBMITTER: Bureau of Pollution Control & Prevention

ADDRESS: 7411 Park Place Houston, TX 77087

Matrix: Non Potable Water / Solid

Method: TCEQ 1005 (Modified)

Reporting Unit: mg/L for Non Potable Water / mg/Kg for Solid

	Analysis	Result	Suffix*	Analyst	Analysis Date
1	TPH (nC_6 to nC_{12})	< MRL (50 mg/kg)	TPH	MK	10-04-2016
2	TPH (nC_{12} to nC_{28})		TPH		
3	TPH (nC_{28} to nC_{35})		TPH		
4	TPH (nC_6 to nC_{35})		TPH		

Note: All data reported meets or exceeds all QC criteria unless noted below. *Suffix TPH 1, TPH 2, TPH 3 to numbers for TPH samples and replicates; TPH is a NELAC certified parameter.

Additional Laboratory Information, if appropriate, is provided on a separate sheet; **Note:** Results are from samples collected in bulk sampling jars rather than hermetically sealed vials. If prior sample information is not available or if nC_6 to nC_{12} hydrocarbons are suspected to be present in the soil samples, sampling should be done in hermetically sealed vials using coring device.
Under the 30 TAC 334, Petroleum Storage Tank (PST) rule, samples can be collected by bulk sampling method for samples related to PST.

Additional Information: _____

QC Review Cynthia Baldwin Date 10/11/2016

Supervisor Approval Robert Reagan Date 10/11/2016

Page 1 of 1
Rev 09/2016

END OF REPORT

P 1609280210 1

SOIL TESTS - POLLUTION

Field No: 2

CITY OF HOUSTON
Organic Lab Report

Lab Date/Time Stamp
2016 SEP 28 PM 1 1

Houston Health Department
Bureau of Laboratory Services
2250 Holcombe Blvd
Houston, TX 77030
832-393-3900

SUBMITTER: Bureau of Pollution Control & Prevention

ADDRESS: 7411 Park Place Houston, TX 77087

Matrix: Non Potable Water / Solid

Method: TCEQ 1005 (Modified)

Reporting Unit: mg/L for Non Potable Water / mg/Kg for Solid

	Analysis	Result	Suffix*	Analyst	Analysis Date
1	TPH (nC_6 to nC_{12})	< MRL (50 mg/Kg)	TPH	MK	10-04-2016
2	TPH (nC_{12} to nC_{28})		TPH		
3	TPH (nC_{28} to nC_{35})		TPH		
4	TPH (nC_6 to nC_{35})		TPH		

Note: All data reported meets or exceeds all QC criteria unless noted below. *Suffix TPH 1, TPH 2, TPH 3 to numbers for TPH samples and replicates; TPH is a NELAC certified parameter.

Additional Laboratory Information, if appropriate, is provided on a separate sheet; **Note:** Results are from samples collected in bulk sampling jars rather than hermetically sealed vials. If prior sample information is not available or if nC_6 to nC_{12} hydrocarbons are suspected to be present in the soil samples, sampling should be done in hermetically sealed vials using coring device.
Under the 30 TAC 334, Petroleum Storage Tank (PST) rule, samples can be collected by bulk sampling method for samples related to PST.

Additional Information: _____

QC Review Cynthia Bowie Date 10/11/2016

Supervisor Approval Scott Rempe Date 10/11/2016

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Rev 09/2016

END OF REPORT

1609280210 2

SOIL TESTS - POLLUTION

Field No: 3

CITY OF HOUSTON
Organic Lab Report

Lab Date/Time Stamp
2016 Sep 28 PM 1:11

Houston Health Department
Bureau of Laboratory Services
2250 Holcombe Blvd
Houston, TX 77030
832-393-3900

SUBMITTER: Bureau of Pollution Control & Prevention

ADDRESS: 7411 Park Place Houston, TX 77087

Matrix: Non Potable Water / Solid

Method: TCEQ 1005 (Modified)

Reporting Unit: mg/L for Non Potable Water / mg/Kg for Solid

	Analysis	Result	Suffix*	Analyst	Analysis Date
1	TPH (nC_6 to nC_{12})		TPH		
2	TPH (nC_{12} to nC_{28})	<MRL (50 mg/kg)	TPH	MK	10-04-2016
3	TPH (nC_{28} to nC_{35})		TPH		
4	TPH (nC_6 to nC_{35})		TPH		

Note: All data reported meets or exceeds all QC criteria unless noted below. *Suffix TPH 1, TPH 2, TPH 3 to numbers for TPH samples and replicates; TPH is a NELAC certified parameter.

Additional Laboratory Information, if appropriate, is provided on a separate sheet: **Note:** Results are from samples collected in bulk sampling jars rather than hermetically sealed vials. If prior sample information is not available or if nC_6 to nC_{12} hydrocarbons are suspected to be present in the soil samples, sampling should be done in hermetically sealed vials using coring device.
Under the 30 TAC 334, Petroleum Storage Tank (PST) rule, samples can be collected by bulk sampling method for samples related to PST.

Additional Information: _____

QC Review Cynthia Bowles Date 10/11/2016

Supervisor Approval Scott Reagan Date 10/11/2016

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Rev 09/2016

END OF REPORT

P 160928021 03

SOIL TESTS - POLLUTION

Field No: 4

CITY OF HOUSTON
Organic Lab Report

Lab Date/Time Stamp
2016 Sep 28 PM 1:11

Houston Health Department
Bureau of Laboratory Services
2250 Holcombe Blvd
Houston, TX 77030
832-393-3900

SUBMITTER: Bureau of Pollution Control & Prevention

ADDRESS: 7411 Park Place Houston, TX 77087

Matrix: Non Potable Water / Solid

Method: TCEQ 1005 (Modified)

Reporting Unit: mg/L for Non Potable Water / mg/Kg for Solid

	Analysis	Result	Suffix*	Analyst	Analysis Date
1	TPH (nC_6 to nC_{12})		TPH		
2	TPH (nC_{12} to nC_{28})	< MRL (50 mg/kg)	TPH	MK	10/04/2016
3	TPH (nC_{28} to nC_{35})		TPH		
4	TPH (nC_6 to nC_{35})		TPH		

Note: All data reported meets or exceeds all QC criteria unless noted below. *Suffix TPH 1, TPH 2, TPH 3 to numbers for TPH samples and replicates; TPH is a NELAC certified parameter.

Additional Laboratory Information, if appropriate, is provided on a separate sheet: **Note:** Results are from samples collected in bulk sampling jars rather than hermetically sealed vials. If prior sample information is not available or if nC_6 to nC_{12} hydrocarbons are suspected to be present in the soil samples, sampling should be done in hermetically sealed vials using coring device.
Under the 30 TAC 334, Petroleum Storage Tank (PST) rule, samples can be collected by bulk sampling method for samples related to PST.

Additional Information: _____

QC Review Cynthia Bailey Date 10/11/2016

Supervisor Approval Robert Reyna Date 10/11/2016

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Rev 09/2016

END OF REPORT

PI 160928021 04

TREE LISTS - CITY OF HOUSTON APPROVED STREET TREES

Street Tree List

Scientific Name	Common Name	Height	Spread	Growth Rate	Comments
Large Trees					
Acer barbatum	Texas sugar maple	Large	30	Medium	Fall color
Acer rubrum	Red maple	Large	30	Medium	Fall color
Carya illinoensis	Pecan	Large	50	Slow	Fruit
Carya texana	Black hickory	Large	20	Slow	Fall color
Fraxinus americana	White ash	Large	40	Fast	Fall color
Ginko biloba	Ginko	Large	40	Slow	Fall color/male only
Juglans nigra	Black walnut	Large	40	Slow	Fall color
Liquidambar stryaciflua	Sweetgum	Large	40	Fast	Fall color
Magnolia grandiflora	Southern magnolia	Large	45	Slow	Evergreen
Nyssa sylvatica	Black gum	Large	30	Medium	Fall color
Pinus taeda	Loblolly pine	Large	30	Fast	Evergreen
Platanus mexicana	Mexican sycamore	Large	50	Fast	Unique leaf
Quercus acutissima	Sawtooth oak	Large	40	Fast	Drought tolerant
Quercus alba	White oak	Large	50	Slow	Sandy soils
Quercus falcata	Southern red oak	Large	40	Slow	Fall color
Quercus laurifolia	Laurel oak	Large	40	Slow	Semi-
Quercus lyrata	Overcup oak	Large	40	Slow	Large acorn
Quercus macrocarpa	Bur oak	Large	50	Slow	Large acorn
Quercus michauxii	Swamp chestnut oak	Large	40	Slow	Fall color
Quercus muehlenbergii	Chinkapin oak	Large	40	Slow	Fall color
Quercus nigra	Water oak	Large	40	Medium	Decidious
Quercus nutallii	Nuttall oak	Large	40	Medium	Fall color
Quercus phellos	Willow oak	Large	40	Medium	Decidious
Quercus polymorpha	Monterray oak	Large	40	Fast	Drought tolerant
Quercus rizophyllia	Loquat leaf oak	Large	40	Fast	Drought tolerant
Quercus shumardii	Shumard oak	Large	40	Slow	Fall color
Quercus stellata	Post oak	Large	40	Slow	Decidious
Quercus virginiana	Live oak	Large	50	Slow	Semi-
Taxodium distichum	Bald cypress	Large	30	Fast	Decidious
Taxodium mucronatum	Montezuma cypress	Large	40	Fast	Semi-
Ulmus alata	Winged elm	Large	30	Medium	Drought tolerant
Ulmus crassifolia	Cedar elm	Large	30	Medium	Drought tolerant
Ulmus parvifolia	Chinese elm	Large	30	Fast	Unique bark
Ulmus parvifolia var Drakii	Drake elm	Large	30	Fast	Unique bark
Ulmus parvifolia var Emer II	Allee elm	Large	30	Fast	Drought tolerant
Small Trees					
*Bumelia lanuginosa**	Wholly bucket	Small	30	Slow	Unique leaf
*Diospyros virginiana**	Texas persimmon	Small	20	Medium	Drought tolerant
*Ehretia anacua**	Anacua	Small	20	Slow	Unique leaf
*Fraxinus texensis**	Texas ash	Small	25	Fast	Decidious
*Ilex opaca**	American holly	Small	15	Slow	Evergreen
*Ilex x attenuata var East palatka**	East palatka holly	Small	15	Slow	Evergreen
*Ilex x attenuata var Savannah**	Savannah holly	Small	15	Slow	Evergreen
*Magnolia virginiana**	Sweetbay magnolia	Small	20	Slow	Evergreen

TREE LISTS - CITY OF HOUSTON APPROVED STREET TREES

*Pistacia chinensis**	Chinese pistache	Small	25	Slow	Fall color
*Prunus serotina**	Black cherry	Small	20	Medium	Unique leaf
*Quercus cambii**	Camby oak	Small	20	Medium	Drought tolerant
*Tilia carolinana**	Basswood	Small	15	Slow	Large leaf

TREE LISTS - NATIVE PLANT SOCIETY OF TEXAS

TREES SELECTION GUIDE

EVERGREEN TREES

Texas Persimmon *Diospyros texana (2 3 6)*
Anaqua *Ehretia anacua (2 6)*
Dahoon Holly *Ilex cassine (1)*
Bay-GALL Holly *Ilex coriacea (1)*
Ink-berry Holly *Ilex glabra (1)*
American Holly *Ilex opaca (1 2 3 6)*
Yaupon Holly *Ilex vomitoria (1 2 3 6)*
Eastern Red Cedar *Juniperus virginiana (1 2 3)*
Southern Magnolia *Magnolia grandiflora (1 2 3)*
Southern Wax-myrtle *Myrica cerifera (1 2 3 6)*
Bayberry Wax-myrtle *Myrica heterophylla (1)*
Shortleaf Pine *Pinus echinata (1 2 3)*
Long Leaf Pine *Pinus palustris (1 2 3)*
Loblolly Pine *Pinus taeda (1 2·3)*
Cherry-laurel *Prunus caroliniana (1 2)*
Laurel Oak *Quercus laurifolia (1 2 3)*
Live Oak *Quercus virginiana (2 3 6)*
Texas Palm *Sabal mexicana (6)*
Texas Mountain Laurel *Sophora secundiflora (2 6)*

TREES FOR SHADY AREAS

Southern Sugar Maple *Acer barbatum (1)*
Chalk Maple *Acer leucoderme (1)*
Drummond Red Maple *Acer rubrum var.drummondii (1 2 3)*
Sugar Maple *Acer saccharum (1)*
Red Buckeye *Aesculus pavia (1 2 3)*
Hazel Alder *Alnus serrulata (1 3)*
Devil's Walking Stick *Aralia spinosa (1 2 3)*
Pawpaw *Asimina triloba (1)*
American Hornbeam *Carpinus caroliniana (1 2 3)*
Redbud *Cercis canadensis (1 2 3)*
Fringe Tree *Chionanthus virginica (1 2 3)*
Rough Leaf Dogwood *Cornus drummondii (1 2 3 6)*
Flowering Dogwood *Cornus florida (1 2 3)*
Blueberry Hawthorn *Crataegus brachyacantha (1 2 3)*
Cockspur Hawthorn *Crataegus crusgalli (1 3)*
Parsley Hawthorn *Crataegus marshallii (1 2 3)*
May Haw *Crataegus opaca (1 2)*
Little Hip Hawthorn *Crataegus spathulata (1 2 3)*
Texas Haw *Crataegus texana (2)*
American Beech *Fagus grandifolia (1 2 3)*
White Ash *Fraxinus americana (1 2 3)*
Green Ash *Fraxinus pennsylvanica (1 2 3 6)*
Dahoon Holly *Ilex cassine (1)*
Deciduous Holly *Ilex decidua (1 2 3)*
American Holly *Ilex opaca (1 2 3 6)*
Yaupon Holly *Ilex vomitoria (1 2 3 6)*
Black Walnut *Juglans nigra (1 2 3)*
Southern Magnolia *Magnolia grandiflora (1 2 3)*
Sweet Bay Magnolia *Magnolia virginiana (1)*
Pyramid Magnolia *Magnolia pyrmidata (1)*
Wild-crab-apple *Malus angustifolia (1)*
Red Mulberry *Morus rubra (1 2 3 6)*
Southern Wax-myrtle *Myrica cerifera (1 2 3 6)*
Bayberry Wax-myrtle *Myrica heterophylla (1)*
Water Tupelo *Nyssa aquatica (1 2)*
Black Gum *Nyssa sylvatica (1 2 3)*
Wooly Hophornbeam *Ostrya virginiana (1 2)*
Red Bay *Persea borbonia (1 2)*
Water Elm *Planera aquatica (1 2 3)*
Cherry-laurel *Prunus caroliniana (1 2)*
Mexican Plum *Prunus mexicana (1 2 3)*
Flatwoods Plum *Prunus umbellata (1)*
Buckthorn *Rhamnus caroliniana (1 2 3 6)*
Flame Leaf Sumac *Rhus copallina (1 2 3)*
Soap-berry *Sapindus drummondii (1 2 3 6)*
Sassafras *Sassafras albidum (1 2 3)*
Basswood *Tilia caroliniana (1 2 3)*
Winged Elm *Ulmus alata (1 2 3)*
Mexican Buckeye *Ungnadia speciosa (2 6)*
Farkleberry *Vaccinium arboreum (1 2 3 6)*
Rusty Black-haw Viburnum *Viburnum rufidulum (1 2 3)*

TREES FOR HOT, FULL SUN EXPOSURE

Huisache *Acacia farnesiana (2 3 6)*
Devil's Walking Stick *Aralia spinosa (1 2 3)*
Wooly-bucket Bumelia *Bumelia lanuginosa (1 2 3 6)*
Shagbark Hickory *Carya ovata (1 2)*
Black Hickory *Carya texana (1 2 3 6)*
Mockernut Hickory *Carya tomentosa (1 2 3)*
Sugarberry *Celtis laevigata (1 2 3 6)*
Fringe Tree *Chionanthus virginica (1 2 3)*
Cluster Cordia *Cordia podicephala (2 6)*
Green Haw *Crataegus viridis (1 2 3)*
Leatherwood *Cyrilla racemiflora (1 2)*
Texas Persimmon *Diospyros texana (2 3 6)*
Common Persimmon *Diospyros virginiana (1 2 3)*
Anaqua *Ehretia anacua (2 6)*
White Ash *Fraxinus americana (1 2 3)*
Green Ash *Fraxinus pennsylvanica (1 2 3 6)*
Deciduous Holly *Ilex decidua (1 2 3)*
American Holly *Ilex opaca (1 2 3 6)*
Winterberry Holly *Ilex verticillata (1 2)*
Yaupon Holly *Ilex vomitoria (1 2 3 6)*
Black Walnut *Juglans nigra (1 2 3)*
Eastern Red Cedar *Juniperus virginiana (1 2 3)*
Sweetgum *Liquidambar styraciflua (1 2 3)*
Osage Orange *Maclura pomifera (1 2 3)*
Southern Magnolia *Magnolia grandiflora (1 2 3)*
Red Mulberry *Morus rubra (1 2 3 6)*
Southern Wax-myrtle *Myrica cerifera (1 2 3 6)*
Bayberry Wax-myrtle *Myrica heterophylla (1)*
Water Tupelo *Nyssa aquatica (1 2)*
Black Gum *Nyssa sylvatica (1 2 3)*
Ratama *Parkinsonia aculeata (2 3 6)*
Shortleaf Pine *Pinus echinata (1 2 3)*
Long Leaf Pine *Pinus palustris (1 2 3)*
Loblolly Pine *Pinus taeda (1 2 3)*
Sycamore *Platanus occidentalis (1 2 3 6)*
Honey Mesquite *Prosopis glandulosa (1 2 3 6)*
Flame Leaf Sumac *Rhus copallina (1 2 3)*
Smooth Sumac *Rhus glabra (1 2 3)*
Black Locust *Robinia pseudo-acacia (1 2 3)*
Texas Palm *Sabal mexicana (6)*
Soap-berry *Sapindus drummondii (1 2 3 6)*
Eve's Necklace *Sophora affinis*
Texas Mountain Laurel *Sophora secundiflora (2 6)*
Bald Cypress *Taxodium distichum (1 2 3 6)*
Pond Cypress *Taxodium distichum var.nutans (1 2 3 6)*
Montezuma Bald Cypress *Taxodium mucronatum (6)*
Basswood *Tilia caroliniana (1 2 3)*
Winged Elm *Ulmus alata (1 2 3)*
American Elm *Ulmus americana (1 2 3 6)*
Cedar Elm *Ulmus crassifolia (1 2 3 6)*
Slippery Elm *Ulmus rubra (1 3 6)*
Mexican Buckeye *Ungnadia speciosa (2 6)*
Rusty Black-haw Viburnum *Viburnum rufidulum (1 2 3)*
Hercules Club *Zanthoxylum clava-herculis (1 2 3)*
Lime Prickly Ash *Zanthoxylum fagara (2 6)*

TREE LISTS - NATIVE PLANT SOCIETY OF TEXAS

SALT TOLERANT TREES

Ink-berry Holly *Ilex glabra (1)*
Yaupon Holly *Ilex vomitoria (1 2 3 6)*
Eastern Red Cedar *Juniperus virginiana (1 2 3)*
Osage Orange *Maclura pomifera (1 2 3)*
Live Oak *Quercus virginiana (2 3 6)*
Buckthorn *Rhamnus caroliniana (1 2 3 6)*
Black Locust *Robinia pseudo-acacia (1 2 3)*
Texas Palm *Sabal mexicana (6)*
Texas Mountain Laurel *Sophora secundiflora (2 6)*
Mexican Buckeye *Ungnadia speciosa (2 6)*
Hercules Club *Zanthoxylum clava-herculis (1 2 3)*
Lime Prickly Ash *Zanthoxylum fagara (2 6)*

TREES FOR EROSION CONTROL

Hazel Alder *Alnus serrulata (1 3)*
River Birch *Betula nigra (1 2 3)*
American Hornbeam *Carpinus caroliniana (1 2 3)*
Flame Leaf Sumac *Rhus copallina (1 2 3)*
Smooth Sumac *Rhus glabra (1 2 3)*
Bald Cypress *Taxodium distichum (1 2 3 6)*
Pond Cypress *Taxodium distichum var.nutans (1 2 3 6)*
Montezuma Bald Cypress *Taxodium mucronatum (6)*

TREES FOR HEDGES

Rough Leaf Dogwood *Cornus drummondii (1 2 3 6)*
Dahoon Holly *Ilex cassine (1)*
Bay-GALL Holly *Ilex coriacea (1)*
Deciduous Holly *Ilex decidua (1 2 3)*
Yaupon Holly *Ilex vomitoria (1 2 3 6)*
Southern Wax-myrtle *Myrica cerifera (1 2 3 6)*
Bayberry Wax-myrtle *Myrica heterophylla (1)*
Cherry-laurel *Prunus caroliniana (1 2)*
Texas Mountain Laurel *Sophora secundiflora (2 6)*
Mexican Buckeye *Ungnadia speciosa (2 6)*
Lime Prickly Ash *Zanthoxylum fagara (2 6)*

TREES FOR WINDBREAKS, SCREENS, & BUFFERS

Drummond Red Maple *Acer rubrum var.drummondii (1 2 3)*
Sugarberry *Celtis laevigata (1 2 3 6)*
Common Persimmon *Diospyros virginiana (1 2 3)*
Bay-GALL Holly *Ilex coriacea (1)*
American Holly *Ilex opaca (1 2 3 6)*
Yaupon Holly *Ilex vomitoria (1 2 3 6)*
Eastern Red Cedar *Juniperus virginiana (1 2 3)*
Osage Orange *Maclura pomifera (1 2 3)*
Southern Magnolia *Magnolia grandiflora (1 2 3)*
Southern Wax-myrtle *Myrica cerifera (1 2 3 6)*
Bayberry Wax-myrtle *Myrica heterophylla (1)*
Cherry-laurel *Prunus caroliniana (1 2)*
Live Oak *Quercus virginiana (2 3 6)*
Mexican Buckeye *Ungnadia speciosa (2 6)*
Hercules Club *Zanthoxylum clava-herculis (1 2 3)*
Lime Prickly Ash *Zanthoxylum fagara (2 6)*

TREES THAT CAN WITHSTAND HIGH WINDS

River Birch *Betula nigra (1 2 3)*
Yaupon Holly *Ilex vomitoria (1 2 3 6)*
Osage Orange *Maclura pomifera (1 2 3)*
Live Oak *Quercus virginiana (2 3 6)*
Texas Palm *Sabal mexicana (6)*
Bald Cypress *Taxodium distichum (1 2 3 6)*
Pond Cypress *Taxodium distichum var.nutans (1 2 3 6)*
Montezuma Bald Cypress *Taxodium mucronatum (6)*

FAST GROWING TREES

Devil's Walking Stick *Aralia spinosa (1 2 3)*
River Birch *Betula nigra (1 2 3)*
Catalpa *Catalpa bignonioides (1)*
Redbud *Cercis canadensis (1 2 3)*
Rough Leaf Dogwood *Cornus drummondii (1 2 3 6)*
Green Ash *Fraxinus pennsylvanica (1 2 3 6)*
Water Locust *Gleditsia aquatica (1 2 3)*
Honey-Locust *Gleditsia triacanthos (1 2 3 6)*
Sweetgum *Liquidambar styraciflua (1 2 3)*
Red Mulberry *Morus rubra (1 2 3 6)*
Southern Wax-myrtle *Myrica cerifera (1 2 3 6)*
Water Tupelo *Nyssa aquatica (1 2)*
Shortleaf Pine *Pinus echinata (1 2 3)*
Long Leaf Pine *Pinus palustris (1 2 3)*
Loblolly Pine *Pinus taeda (1 2 3)*
Sycamore *Platanus occidentalis (1 2 3 6)*
Nuttall Oak *Quercus texana (1)*
Shumard Oak *Quercus shumardii (1 2 3)*
Flame Leaf Sumac *Rhus copallina (1 2 3)*
Smooth Sumac *Rhus glabra (1 2 3)*
Black Locust *Robinia pseudo-acacia (1 2 3)*
Soap-berry *Sapindus drummondii (1 2 3 6)*
Bald Cypress *Taxodium distichum (1 2 3 6)*
Pond Cypress *Taxodium distichum var.nutans (1 2 3 6)*
Montezuma Bald Cypress *Taxodium mucronatum (6)*
Mexican Buckeye *Ungnadia speciosa (2 6)*

TREES WITH COARSE TEXTURED FOLIAGE

Red Buckeye *Aesculus pavia (1 2 3)*
Devil's Walking Stick *Aralia spinosa (1 2 3)*
Pawpaw *Asimina triloba (1)*
Catalpa *Catalpa bignonioides (1)*
Fringe Tree *Chionanthus virginica (1 2 3)*
Cluster Cordia *Cordia podicephala (2 6)*
Osage Orange *Maclura pomifera (1 2 3)*
Southern Magnolia *Magnolia grandiflora (1 2 3)*
Pyramid Magnolia *Magnolia pyrmidata (1)*
Sycamore *Platanus occidentalis (1 2 3 6)*
Overcup Oak *Quercus lyrata (1 2 3)*
Burr Oak *Quercus macrocarpa (1 2 3)*
Swamp Chestnut Oak *Quercus michauxii (1 2)*
Texas Palm *Sabal mexicana (6)*

TREE LISTS - NATIVE PLANT SOCIETY OF TEXAS

TREES THAT ATTRACT BIRDS

Drummond Red Maple *Acer rubrum var.drummondii (1 2 3)*
Red Buckeye *Aesculus pavia (1 2 3)*
Sugarberry *Celtis laevigata (1 2 3 6)*
Flowering Dogwood *Cornus florida (1 2 3)*
Green Haw *Crataegus viridis (1 2 3)*
Anaqua *Ehretia anacua (2 6)*
Dahoon Holly *Ilex cassine (1)*
Deciduous Holly *Ilex decidua (1 2 3)*
Ink-berry Holly *Ilex glabra (1)*
American Holly *Ilex opaca (1 2 3 6)*
Winterberry Holly *Ilex verticillata (1 2)*
Yaupon Holly *Ilex vomitoria (1 2 3 6)*
Sweetgum *Liquidambar styraciflua (1 2 3)*
Southern Magnolia *Magnolia grandiflora (1 2 3)*
Sweet Bay Magnolia *Magnolia virginiana (1)*
Pyramid Magnolia *Magnolia pyrmidata (1)*
Wild-crab-apple *Malus angustifolia (1)*
Red Mulberry *Morus rubra (1 2 3 6)*
Water Tupelo *Nyssa aquatica (1 2)*
Black Gum *Nyssa sylvatica (1 2 3)*
Red Bay *Persea borbonia (1 2)*
Honey Mesquite *Prosopis glandulosa (1 2 3 6)*
Cherry-laurel *Prunus caroliniana (1 2)*
Mexican Plum *Prunus mexicana (1 2 3)*
Black Cherry *Prunus serotina (1 2 3)*
Flatwoods Plum *Prunus umbellata (1)*
Buckthorn *Rhamnus caroliniana (1 2 3 6)*
Flame Leaf Sumac *Rhus copallina (1 2 3)*
Smooth Sumac *Rhus glabra (1 2 3)*
Sassafras *Sassafras albidum (1 2 3)*
Winged Elm *Ulmus alata (1 2 3)*
American Elm *Ulmus americana (1 2 3 6)*
Cedar Elm *Ulmus crassifolia (1 2 3 6)*
Slippery Elm *Ulmus rubra (1 3 6)*
Farkleberry *Vaccinium arboreum (1 2 3 6)*
Rusty Black-haw Viburnum *Viburnum rufidulum (1 2 3)*

TREES THAT PROVIDE GOOD WILDLIFE FOOD

Devil's Walking Stick *Aralia spinosa (1 2 3)*
Pawpaw *Asimina triloba (1)*
Wooly-bucket Bumelia *Bumelia lanuginosa (1 2 3 6)*
American Hornbeam *Carpinus caroliniana (1 2 3)*
Water Hickory *Carya aquatica (1 2 3)*
Bitternut Hickory *Carya cordiformis (1 2 3)*
Pecan *Carya illinoiensis (1 2 3 6)*
Nutmeg Hickory *Carya myristicaeformis (1 2 3)*
Shagbark Hickory *Carya ovata (1 2)*
Black Hickory *Carya texana (1 2 3 6)*
Mockernut Hickory *Carya tomentosa (1 2 3)*
Sugarberry *Celtis laevigata (1 2 3 6)*
Redbud *Cercis canadensis (1 2 3)*
Flowering Dogwood *Cornus florida (1 2 3)*
Blueberry Hawthorn *Crataegus brachyacantha (1 2 3)*
Cockspur Hawthorn *Crataegus crusgalli (1 3)*
Parsley Hawthorn *Crataegus marshallii (1 2 3)*
May Haw *Crataegus opaca (1 2)*
Little Hip Hawthorn *Crataegus spathulata (1 2 3)*
Texas Haw *Crataegus texana (2)*
Green Haw *Crataegus viridis (1 2 3)*
Texas Persimmon *Diospyros texana (2 3 6)*
Common Persimmon *Diospyros virginiana (1 2 3)*
Anaqua *Ehretia anacua (2 6)*
American Beech *Fagus grandifolia (1 2 3)*
White Ash *Fraxinus americana (1 2 3)*
Green Ash *Fraxinus pennsylvanica (1 2 3 6)*
Dahoon Holly *Ilex cassine (1)*
Bay-GALL Holly *Ilex coriacea (1)*
Deciduous Holly *Ilex decidua (1 2 3)*
Ink-berry Holly *Ilex glabra (1)*
American Holly *Ilex opaca (1 2 3 6)*
Winterberry Holly *Ilex verticillata (1 2)*
Yaupon Holly *Ilex vomitoria (1 2 3 6)*
Black Walnut *Juglans nigra (1 2 3)*
Eastern Red Cedar *Juniperus virginiana (1 2 3)*
Sweetgum *Liquidambar styraciflua (1 2 3)*
Southern Magnolia *Magnolia grandiflora (1 2 3)*
Sweet Bay Magnolia *Magnolia virginiana (1)*
Pyramid Magnolia *Magnolia pyrmidata (1)*
Wild-crab-apple *Malus angustifolia (1)*
Red Mulberry *Morus rubra (1 2 3 6)*
Southern Wax-myrtle *Myrica cerifera (1 2 3 6)*
Bayberry Wax-myrtle *Myrica heterophylla(1)*
Water Tupelo *Nyssa aquatica (1 2)*
Black Gum *Nyssa sylvatica (1 2 3)*
Wooly Hop Hornbeam *Ostrya virginiana (1 2)*
Red Bay *Persea borbonia (1 2)*
Shortleaf Pine *Pinus echinata (1 2 3)*
Long Leaf Pine *Pinus palustris (1 2 3)*
Loblolly Pine *Pinus taeda (1 2 3)*
Honey Mesquite *Prosopis glandulosa (1 2 3 6)*
Cherry-laurel *Prunus caroliniana (1 2)*
Mexican Plum *Prunus mexicana (1 2 3)*
Black Cherry *Prunus serotina (1 2 3)*
Flatwoods Plum *Prunus umbellata (1)*
White Oak *Quercus alba (1 2 3)*
Durand Oak *Quercus durandii (1)*
Southern Red Oak *Quercus falcata (1 2 3)*
Laurel Oak *Quercus laurifolia (1 2 3)*
Overcup Oak *Quercus lyrata (1 2 3)*
Burr Oak *Quercus macrocarpa (1 2 3)*
Water Oak *Quercus nigra (1 2 3)*
Nuttall Oak *Quercus texana (1)*
Willow Oak *Quercus phellos (1 2 3)*
Swamp Chestnut Oak *Quercus michauxii (1 2)*
Shumard Oak *Quercus shumardii (1 2 3)*
Post Oak *Quercus stellata (1 2 3 6)*
Live Oak *Quercus virginiana (2 3 6)*
Compton's Oak *Quercus virginiana x lyrata (1)*
Buckthorn *Rhamnus caroliniana (1 2 3 6)*
Flame Leaf Sumac *Rhus copallina (1 2 3)*
Smooth Sumac *Rhus glabra (1 2 3)*
Texas Palm *Sabal mexicana (6)*
Soap-berry *Sapindus drummondii (1 2 3 6)*
Sassafras *Sassafras albidum (1 2 3)*
Winged Elm *Ulmus alata (1 2 3)*
American Elm *Ulmus americana (1 2 3 6)*
Cedar Elm *Ulmus crassifolia (1 2 3 6)*
Slippery Elm *Ulmus rubra (1 3 6)*
Farkleberry *Vaccinium arboreum (1 2 3 6)*
Rusty Black-haw Viburnum *Viburnum rufidulum (1 2 3)*