

# Tree Planting

## Memorial Park Demonstration Project

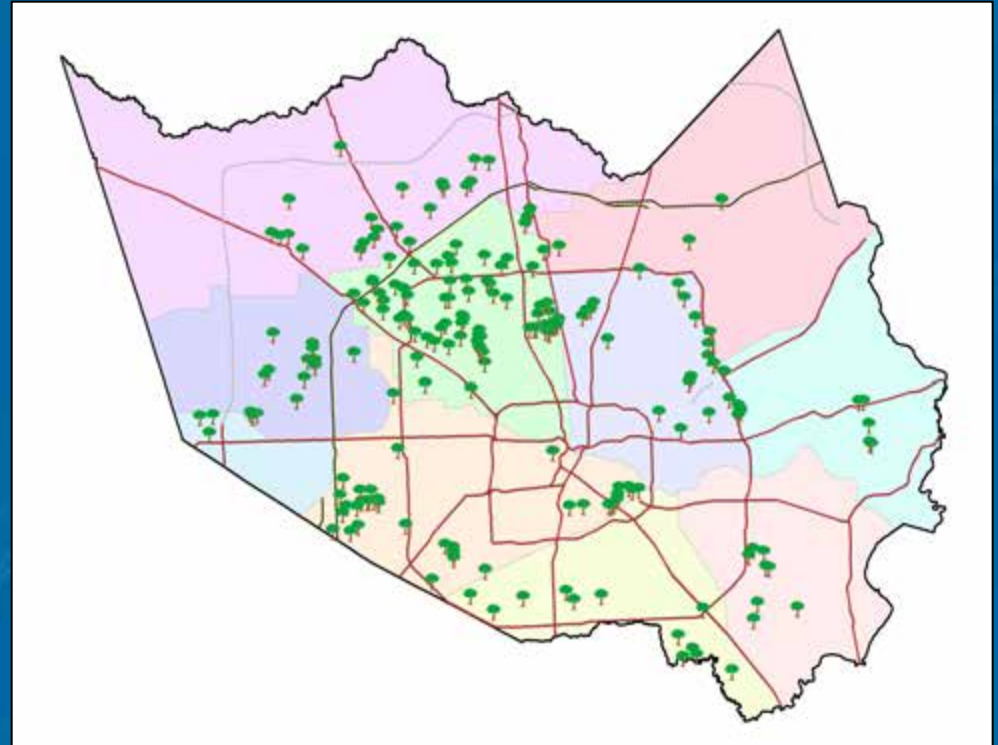
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# Tree Planting Program Objectives

- Establish a closed canopy of trees to reduce or eliminate cyclical maintenance
- Create a self-sustaining system that requires little to no long term maintenance
- Maximize benefits trees provide:
  - Erosion Control
  - Habitat Restoration/Creation
  - Shading of Aquatic Habitat

# HCFCFD Tree Planting Since 2001

- Average annual planting of 18,000 to 20,000 trees
- 180 planting sites
- Over 1,000 acres
- 198,000 trees & shrubs
- 71 different species



# Are we meeting our objectives?

- Canopy Closure: E500-06-00 (9-years)



# Tree Planting Process

- Tree species are selected based on site conditions
- Trees are planted and maintained by our Contractor
- Trees are planted using ISA Best Management Practices

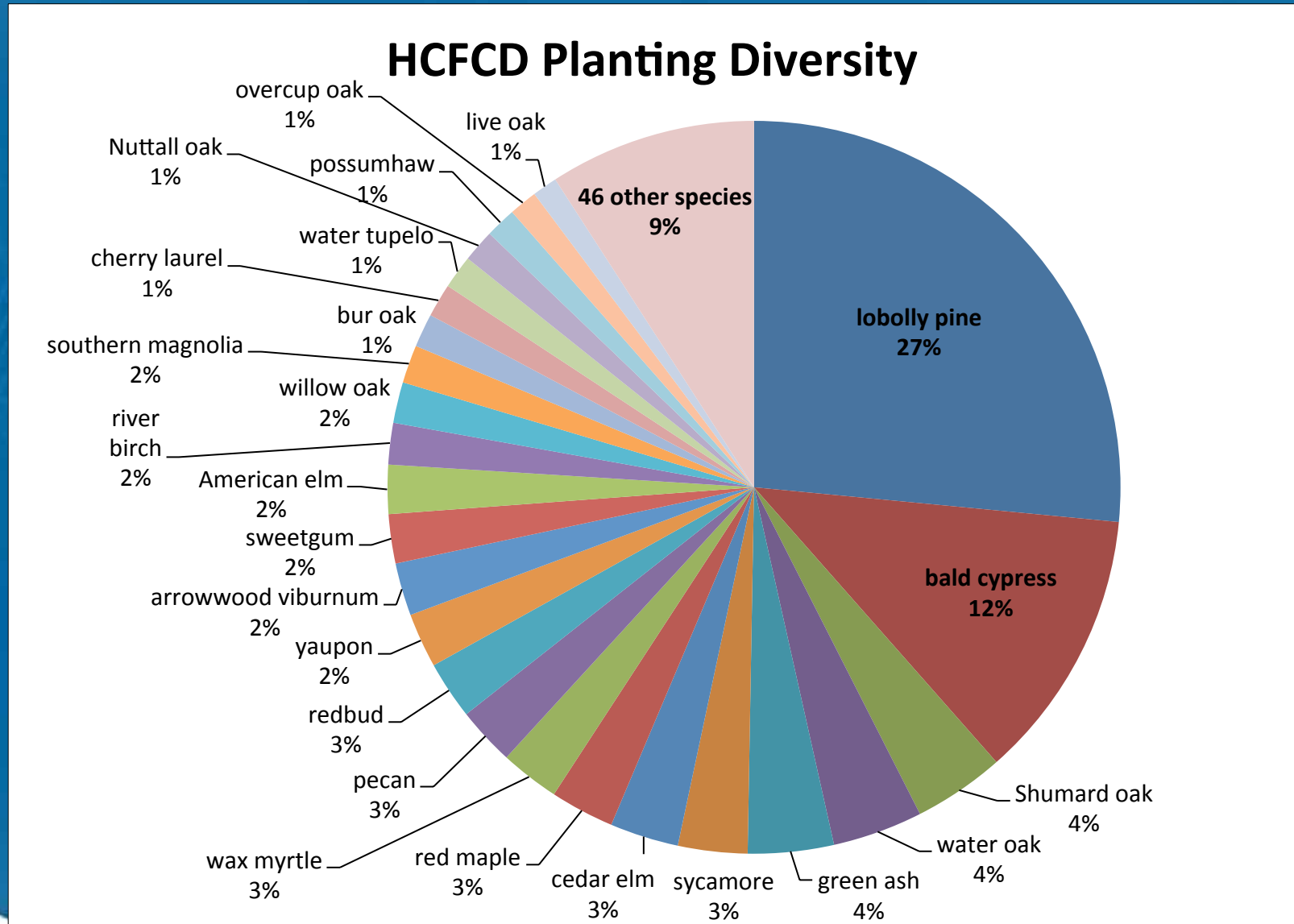


# Tree Maintenance

- Tree Maintenance for 2 years post planting
- Maintenance plan submitted for HCFCD approval
- Regular site visits by HCFCD Inspectors
- Maintenance payment based on an annual inventory of healthy trees

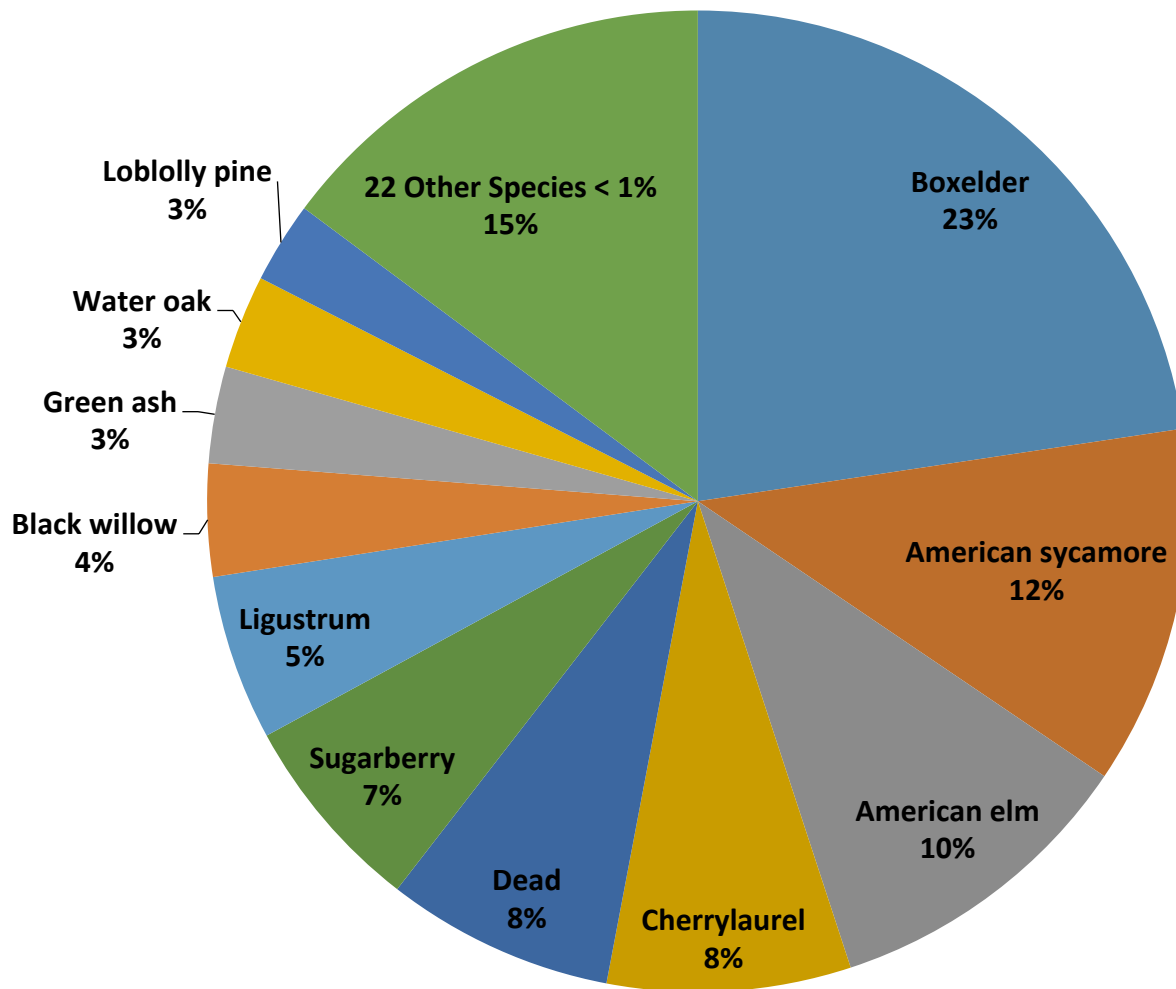


# Planting Statistics



# MPDP Tree Inventory

## MPDP Tree Species Count





# HCFCD Species Availability

Large Trees	Small Trees	Shrubs
lobolly pine ( <i>Pinus taeda</i> )	redbud ( <i>Cercis canadensis</i> )	wax myrtle ( <i>Myrica cerifera</i> )
bald cypress ( <i>Taxodium distichum</i> )	cherry laurel ( <i>Prunus caroliniana</i> )	yaupon ( <i>Ilex vomitoria</i> )
Shumard oak ( <i>Quercus shumardii</i> )	parsley hawthorne ( <i>Crateagus marshallii</i> )	arrowwood viburnum ( <i>Viburnum dentatum</i> )
water oak ( <i>Quercus nigra</i> )	persimmon ( <i>Diospyros virginiana</i> )	possumhaw ( <i>Ilex decidua</i> )
green ash ( <i>Fraxinus pennsylvanica</i> )	mayhaw ( <i>Crateagus opaca</i> )	Turk's cap ( <i>Malvaviscus drummondii</i> )
sycamore ( <i>Platanus occidentalis</i> )	red mulberry ( <i>Morus rubra</i> )	buttonbush ( <i>Cephalanthus occidentalis</i> )
cedar elm ( <i>Ulmus crassifolia</i> )	American plum ( <i>Prunus americana</i> )	American beautyberry ( <i>Callicarpa americana</i> )
red maple ( <i>Acer rubrum</i> )	Mexican plum ( <i>Prunus mexicana</i> )	Virginia sweetsprie ( <i>Itea virginica</i> )
pecan ( <i>Carya illoinensis</i> )	fringe tree ( <i>Chionanthus virginicus</i> )	spicebush ( <i>Lindera benzoin</i> )
sweetgum ( <i>Liquidambar styraciflua</i> )	rusty blackhaw ( <i>Viburnum rufidulum</i> )	white mist flower ( <i>Eupatorium wrightii</i> )
American elm ( <i>Ulmus americana</i> )	Carolina buckthorn ( <i>Rhamnus caroliniana</i> )	flame-leaf sumac ( <i>Rhus copallinum</i> )
river birch ( <i>Betula nigra</i> )	strawberry bush ( <i>Euonymus americanus</i> )	
willow oak ( <i>Quercus phellos</i> )	pawpaw ( <i>Asimina triloba</i> )	
southern magnolia ( <i>Magnolia grandiflora</i> )	Walters' viburnum ( <i>Viburnum obovatum</i> )	
bur oak ( <i>Quercus macrocarpa</i> )	smooth sumac ( <i>Rhus glabra</i> )	
water tupelo ( <i>Nyssa aquatica</i> )		
Nuttall oak ( <i>Quercus nuttallii</i> )		
overcup oak ( <i>Quercus lyrata</i> )		
live oak ( <i>Quercus virginiana</i> )		
laurel oak ( <i>Quercus laurifolia</i> )		
swamp chestnut oak ( <i>Quercus michauxii</i> )		
black gum ( <i>Nyssa sylvatica</i> )		
winged elm ( <i>Ulmus alata</i> )		
sweetbay magnolia ( <i>Magnolia virginiana</i> )		
southern red oak ( <i>Quercus falcata</i> )		
swamp white oak ( <i>Quercus bicolor</i> )		
chinquapin oak ( <i>Quercus muehlenbergii</i> )		
sugarberry ( <i>Celtis laevigata</i> )		
white oak ( <i>Quercus alba</i> )		
American hornbeam ( <i>Carpinus caroliniana</i> )		
water hickory ( <i>Carya aquatica</i> )		
cherrybark oak ( <i>Quercus pagodafolia</i> )		
eastern red cedar ( <i>Juniperus virginiana</i> )		
black locust ( <i>Robinia pseudoacacia</i> )		
black walnut ( <i>Juglans nigra</i> )		
post oak ( <i>Quercus stellata</i> )		
black willow ( <i>Salix nigra</i> )		
yellow poplar ( <i>Liriodendron tulipifera</i> )		

# MPDP Planting Plan

- Planting is divided into hydrologic zones totaling 14.5 acres

(Terms below used in Draft 80% Plans)

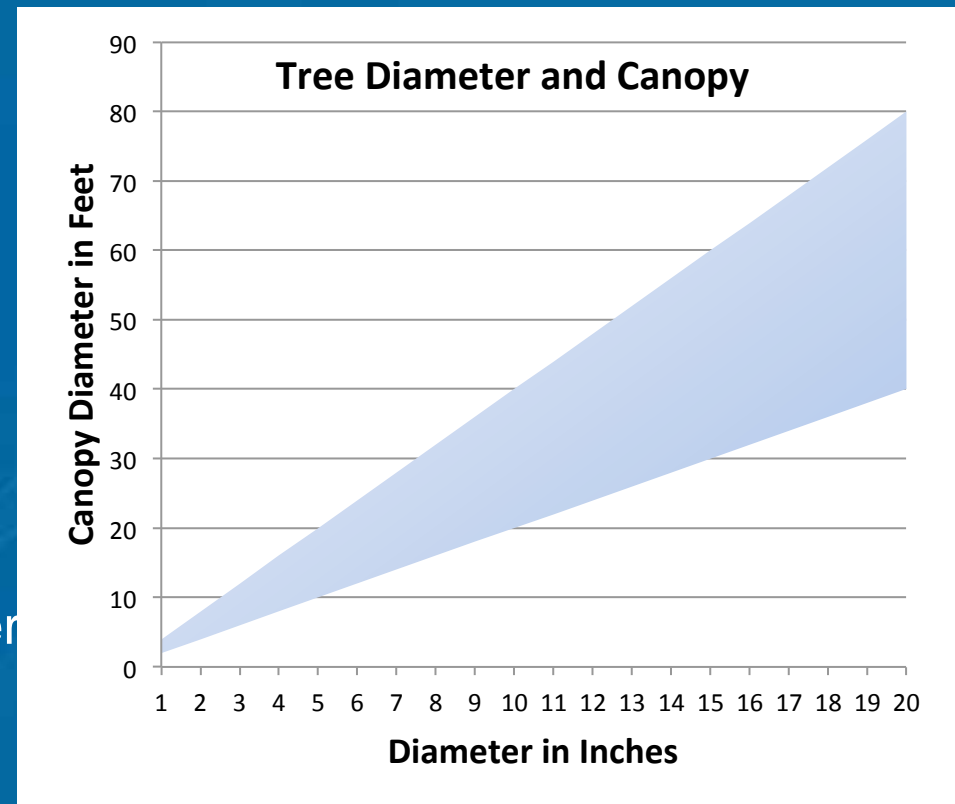
- “Live stakes”: 3.18 acres
- “Flood Plain”: 7.12 acres
- “Upland”: 3.0 acres
- “Wetland”: 1.18 acres



- Planting densities between 110 and 300 TPA will result in between 1,600 and 4,400 trees planted over the project area

# MPDP Growth and Canopy Closure

- Growth Rates
  - Average between 0.2" and 0.5" annual diameter growth
  - Canopy width 2'-4' per 1" trunk diameter
- Yearly Mortality
  - 10%–15% for the first year
  - Approximately 30% total after 10 years



# Planting Density and Canopy Closure

- Planting density - 194 TPA
- 0.5" per year annual diameter growth
- Trunk to canopy ratio of 1in to 3ft
- Including Average Mortality

**Canopy Closure  
~12 Years**

