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Tree Management Plan Summary

Plan by Davey Resource Group



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Tree Management Plan Summary

During the early summer of 2016, Davey Resource Group conducted a street tree inventory which captured all streets in West Lafayette including some that are maintained by Purdue (i.e., Harrison Street) but excluding those owned by INDOT (i.e., Sagamore Parkway). Corrections will be made to add the trees on Sagamore Parkway but since we're currently replanting it, this report is written using the numbers provided by DRG. Following is a brief summary of the inventory and DRG management plan.

The West Lafayette Urban Forest contains 9425 street trees with a replacement value of 6.4 million dollars. The overall condition is rated as good. These trees provide \$503,881 in benefits each year which includes aesthetic, air quality, energy, stormwater and carbon sequestration.

A popular (but not universally accepted) concept in urban forestry is the 10-20-30 rule meaning a city should not exceed 10% of any one species, 20% of any one genus and 30% of any one family.

West Lafayette's urban forest has 15% red maple, an overage that we'd already identified as problematic. Our second and third most common species are honeylocust and sugar maple, both at 5%. We will be removing red maple from our approved planting list in January and will not reinstate it until we've reached a better balanced urban forest.

With a recommended peak of 20% of any one genus, we have 30% maple (combined red, silver, sugar, etc.), 9% oak, 6% ash and elm and 5% honeylocust. The city and the tree friends have not planted maples in recent years. These high numbers are due to builders of new homes planting almost exclusively maples. This too will be corrected with the change in the approved street tree list.



West Lafayette trees provide \$

Data for number of trees in any one family was not provided by DRG. We will calculate that number this fall.

DRG points out that we have many young trees but that the issue isn't that there are too many young trees, instead that there are too few old trees. We need to help our young trees mature with continued care in the years after planting.

West Lafayette has .22 street trees per person which is slightly below the mean ratio of .37 for 22 US cities studied by McPherson & Rowntree in 1989. We have one tree for every 4.5 residents. We have been unable to find the 1989 study to clarify if it contains park trees also.

West Lafayette has an estimated street tree canopy cover of 85 acres. This is nearly 2% of the total area of the city. The calculated tree canopy coverage of streets and sidewalks is 18% of the estimated street

and sidewalk area (481 acres) within the city. American Forests recommends that cities set an overall canopy cover goal of 40%-- the equivalent of 20 large trees per acre. West Lafayette's amount of existing tree canopy is 25%. This includes ALL of the city, not just street trees.

69% of our trees are in good condition. 431 are in poor condition.

The average replacement value per tree is \$684.

Per DRG, using a calculation, there is room for 11,464 trees on city streets. They recommend we plant 375 trees/year to fill those spots in 25 years. We question the accuracy of this number.

1106 trees have clearance issues (this was before the fall pruning session), only 2% caused raised sidewalks, and we need to inspect 73 trees (many have been inspected since).

Trees provide \$503,881 in economic and environmental benefits per year at an average of \$54 per tree and \$12 per capita. This is under the benchmark of \$84/tree and \$15/capita but this will change as the plethora of young trees mature.

West Lafayette trees intercept 6.7 million gallons of rainfall each year saving \$180,241 in stormwater management costs per year. Silver maples contribute the most to stormwater benefits. 3% of our street trees are silver maples intercepting 690,000 gallons. In contrast, 15% of our trees are red maples intercepting 551,000 gallons. This too will change with the maturing of our young forest.

West Lafayette trees remove 1530 pounds of air pollutants each year through deposition and sequester 862 tons of carbon each year.

Goals include planting more trees that will become large canopy trees, adjust the diversity of the urban forest and provide maintenance for our young trees.

48 trees were listed as priority 1 trees for removal

333 trees were listed as priority 2 trees for removal

City staff needs to write an updated urban forest management plan as the DRG plan doesn't address goals regarding ordinance improvements, Tree Friends, outreach/education, our current pruning program and more.

Appendix

Table of # of trees & percentage by species

Tree condition by relative age

Annual Ecosystem Benefits Provided by West Lafayette's Urban Tree Canopy

Priority 1 and 2 pruning by diameter