

Wooster Square Park Cherry Tree Management Plan

Executive Summary

The iconic cherry trees of Wooster Square overall are in fair condition, but some interventions are needed to maintain their vigor and vitality. Existing community efforts focus upon replanting and stewardship, leaving the most immediate need of proper and timely pruning. Thus the top priority is properly pruning identified hazard trees, which will reduce potential liability, increase aesthetics and be a visible sign of city stewardship. Secondly, an experienced and reputable contractor should be contracted to carry out sensitive pruning lower branches of mature shade trees to increase sunlight the cherry trees need. Finally, replanting declining trees should be done gradually (2-3 annually) to eventually create a more diverse age and resilient stand of cherry trees. City staff or outside contractors are needed to remove dying trees and remaining stumps. Continuing to support the community in replanting is essential to the valuable advocacy and stewardship by the neighborhood volunteers.

Introduction to Wooster Square Park

Established in 1825 on the model of the New Haven Green, this six acre forested park in the heart of the Wooster Square neighborhood is a timeless testament to good urban planning. The park continues to engender civic pride and meet the passive recreational needs of local residents. In 1970, Wooster Square became a New Haven's first local historic district. Shortly thereafter, the Historic Commission in conjunction with the Parks Commission planted the perimeter ring of cherry trees inspired by the Yoshino Cherries that had been planted nearby on Hughes Place in 1968. The first Cherry Blossom Festival was held in 1973 and has continued for the past 37 years.

Over the past decade, in partnership with URI's Community Greenspace Program, volunteers of the Friends of Wooster Square have inventoried the entire park, replanted many trees, and have maintained some of the park. One of the objectives of this group of volunteers has been to replant missing and dying cherry trees. Recently the volunteer group has been working with the Parks Department to remove two or three declining trees annually and replant with new Yoshino cherries. This spring the group plans to replant three trees as part of the Cherry Blossom Festival. The Group will also conduct pruning and mulching on existing cherries as part of the day's celebration.

Yoshino Cherry Trees: A Natural History

Prunus yedoensis or the Yoshino Cherry is the emblematic species that defines the perimeter of Wooster Square Park. Yoshino cherry trees are a hybrid of unknown origin, most likely between *Prunus speciosa* and *Prunus subhirtella* (Takenaka

1964). It occurs as a natural hybrid in Japan, where it has long been cultivated (Yoshino, Japan) and from which its common name comes from.

The Yoshino cherry was introduced to America in 1902. In Japan there is a legend that each spring a fairy maiden hovers low in the warm sky, wakening the sleeping Cherry trees to life with her delicate breath. This tree, along with the cultivar "Kwanzan" (derived from the related *Prunus serrulata*), are the species recognized for their spectacular pink color show each spring in Washington, D.C. and other cities, such as New Haven.

It is a small deciduous tree that at maturity grows to be 5-12 m (rarely 15 m) tall. It grows well in hardiness zones 5-8 (New Haven is zone 6a-7a) and does well in full sun and moist but well drained soil. The leaves are alternately arranged, 6-15 cm long and 4-7 cm broad, with a serrated margin; they are often bronze-toned when newly emerged, becoming dark green by summer. The flowers emerge before the leaves in early spring; they are fragrant, 3-3.5 cm diameter, with five white or pale pink petals. The flowers grow in clusters of five or six together. The fruit, a small cherry, is a globose drupe 8-10 mm in diameter; they are an important source of food for many small birds and mammals, including robins and thrushes. The fruit contain little flesh and much concentrated red juice, which can stain clothing and brick. The fruit is only marginally sweet to the human palate (Huxley 1992; Rushforth 1999).

Assessment

Currently there are seventy-one Yoshino cherry trees planted evenly along the entire perimeter of Wooster Square Park. A relative age distribution of these trees was determined by measuring the diameter of trees at breast height (DBH). While this does not depict age as trees may grow at varying rates, it does provide a general distribution that reflects basic age classes. The diameter assessment revealed that 25% of the cherry trees have less than 6 inch DBH, suggesting that a quarter of the trees are quite young. The 18-24 inch DBH range included the highest percentage of trees. This general distribution of DBH class reflects the mix of aging cherry trees and the new planting efforts in recent years by the Wooster Square Greenspace group. While the majority of the cherry trees are a common grafted variety, there are a few non-graft varieties concentrated by the corner of Academy and Chapel St., on the Academy run of the park.

Cherry Tree DBH (inches)	# of Trees	%
<6 in.	18	25
6-12 in.	9	12.5
12-18 in.	11	15.5
18-24 in.	28	39
>24 in.	5	7
Total	71	100

In addition to a general census, assessment of the Wooster Square cherry trees accounted for overall *tree health* and *safety/hazard concerns*. In both categories of concern assessments were based on a three level scale: None (not observed or of issue), Minor, and Significant. The details of these findings are revealed in tables and maps which depict the distribution of these trees.

General Tree Health:

General health was determined through observation and assessment of individual tree crown, conflict with or crowding and shading by other trees, and evidence of tree decay observed through cavities, frost cracks, and indications of moisture such as the presence of mushrooms. Canopy cover percentage was estimated by branching pattern, stem density, and relative vigor. While not displayed in data tables, this canopy information supported projection of the cherry tree’s resilience and expected ability to withstand other environmental impacts.

Cavities, Decay	# of Trees
None/Insignificant	31
Minor Decay, Cavity, Frost Cracks	15
Significant Decay and/or Cavities	25

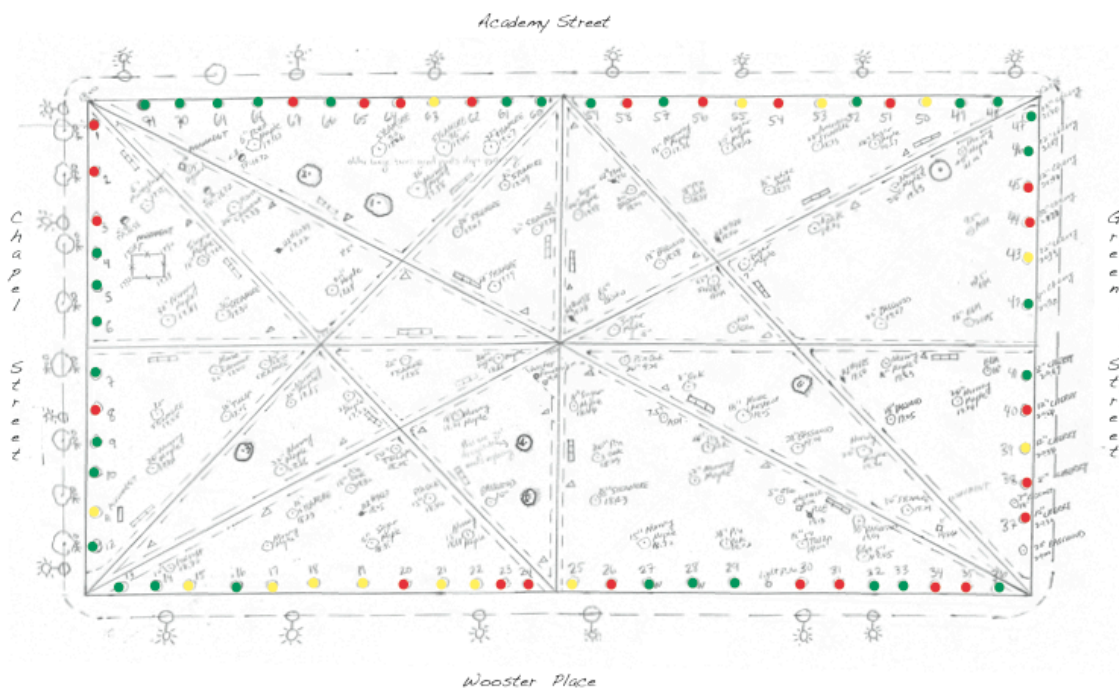


Figure 1: Distribution of Cavity and Decay (None, Minor, Significant)

Many of the cherry trees within Wooster Square demonstrate some level of decay or presence of cavities. Of the 71 cherry trees assessed, 15 were observed to have minor decay. Many of the trees classified as minor decay have minor “frost cracks” which occur the length of trunk and limbs as a result of the expansion and contraction of water with changing temperatures. Other signs of impending decay are the presence of mushrooms, which reveal issues with moisture and overall lack of vigor.

Twenty-five cherry trees displayed significant decay and cavities. Many of these trees suffer from poor pruning and broken limbs which have allowed rot to occur in joints and nooks along major limbs and the main trunk. Such decay is likely to persist and impair the overall health of the tree. In some instances this decay is directly related to hazard and safety concerns, which are described in the following section.

General health is also impacted by relationship of cherry trees to neighboring trees. Nearly half of the cherry trees are subjected to canopy disturbance as a result of crowding or shading by neighboring trees. These neighboring trees include both street trees, as well as trees within the park. The canopy conflict has affected trees differently. Some demonstrate stunted canopy growth, which negatively affects a tree’s general health and resilience. Often canopy impairment is related to neighboring tree limbs reaching into or over the canopy of the cherry tree. In many instances young cherry trees are overshadowed by larger park or street trees. These cherry trees are noticeably struggling and are described as “reaching”, or extending long limbs with limited canopy spread.

Along Chapel Street, many of the cherry trees are impacted by the row of oaks which line the treebelt outside of the park fence and along the road.

Canopy Conflict With Other Trees	# of Trees
None	38
Minor	3
Significant Canopy Disturbance	30

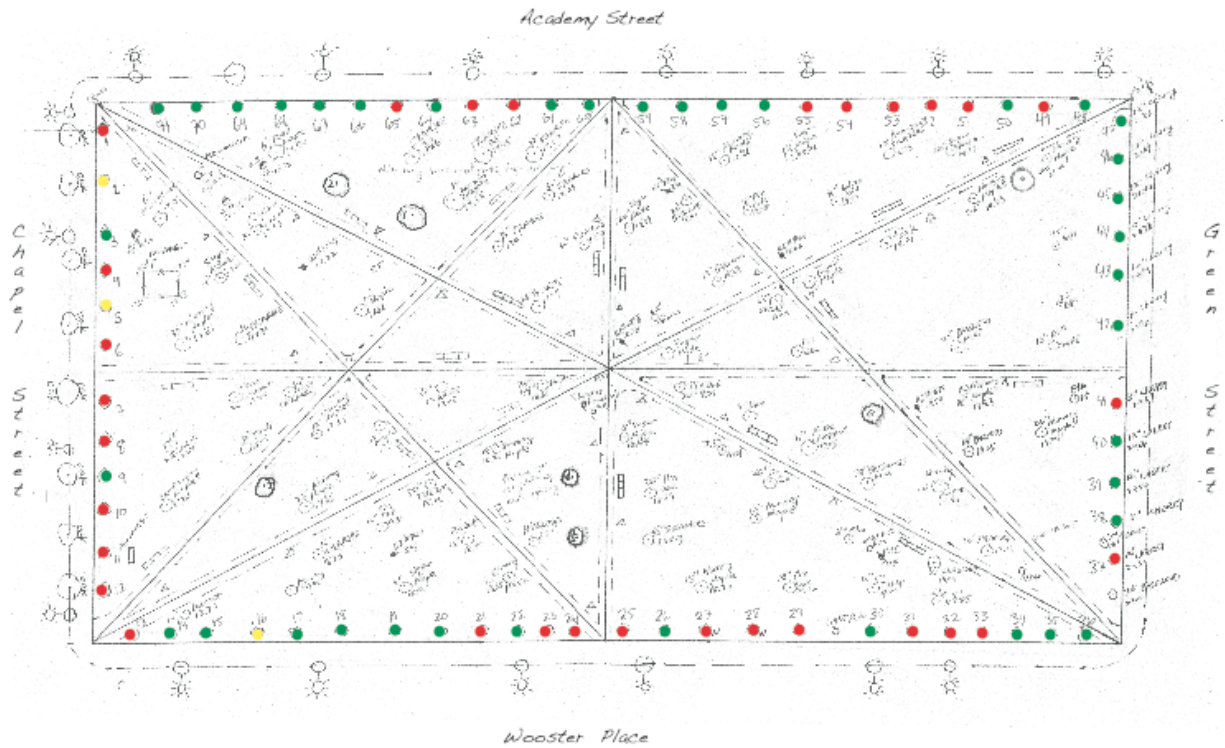


Figure 2: Distribution of Canopy Conflict With Neighboring Trees (None, Minor, Significant)

Hazards and Public Safety:

In addition to trees with general health concerns, several trees were identified as potentially hazardous for park users, pedestrians, and utilities. While many of the trees identified as hazardous are also in poor health, there are several “risk” trees that if acted upon and cared for appropriately will have an extended life.

Trees that pose threat to sidewalk and park pedestrians typically have decaying or dead limbs. These trees were identified as needing pruning on a scale of No immediate pruning need, Minor required pruning, and Significant or Urgent required pruning. It is important to note that not all trees identified as needing pruning needs are necessarily hazard trees. Hazard trees are identified in the individual tree notes, which can be found in the complete cherry tree data sheet. However, in many cases, addressing pruning early is an effective method, both from the perspective of tree health and economically, of reducing future hazards and improving cherry tree vigor.

Pruning Need	# of Trees
None	32
Minimal/Less Urgent	10
Immediate Pruning Required	29

Other than direct public safety, other cherry trees pose a potential hazard to utility infrastructure, specifically electrical and telephone lines running parallel to the park's perimeter. Seventeen trees were identified as having a conflict with utility lines. In most instances, these are mature cherry trees whose canopy extends into the utility lines. The potential hazard in which such conflict occurs varies. Some trees have significant limbs which are supported by wires; others are only beginning to become entangled in the lines. These minor instances will pose a hazard in the future.

Conflict with Utilities	# of Trees
None	51
Minor Conflict with Utilities	3
Significant Conflict with Utilities	17

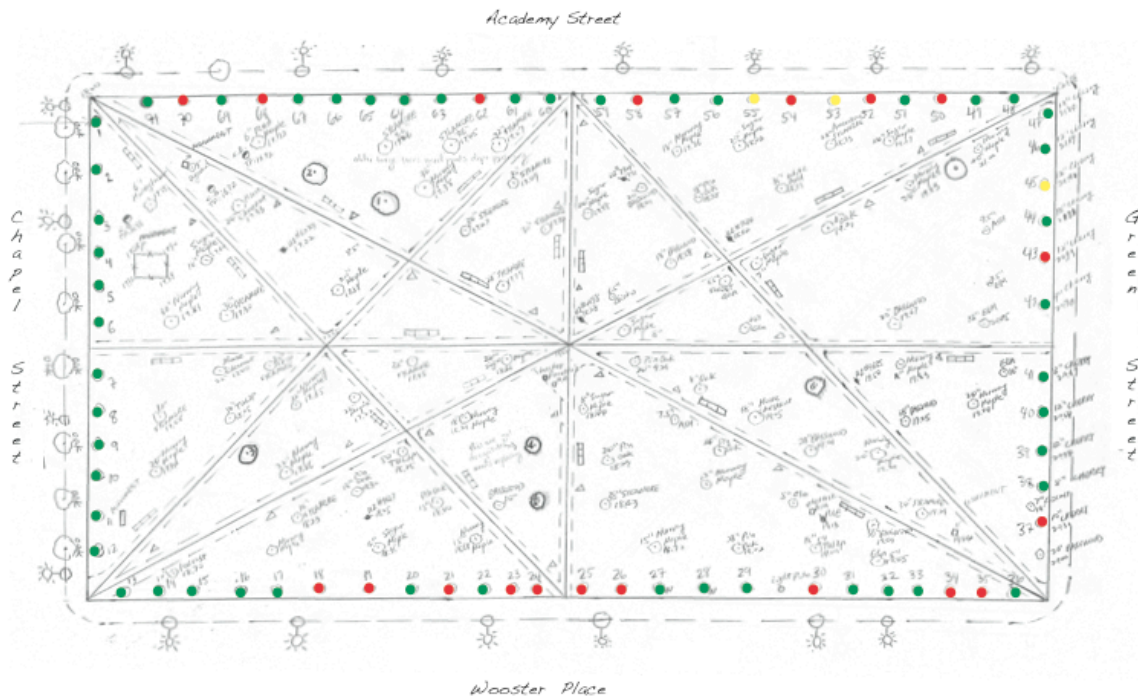


Figure 3: Distribution of Conflict With Utilities (None, Minor, Significant)

Together, these general health and hazard assessments were used to develop a compounded classification which projects cherry tree life expectancy. It is important to note that these classifications may be subject to change with unexpected disturbance events. Classification is depicted in four scales of life expectancy including, Immediate Removal, 5-10 years, 10-20 years, and 20+ years. It is important to note that there are several newly planted trees which given present conditions are struggling. These trees will persist, but will not flourish and

will remain stunted in growth and less attractive unless given the opportunity for proper growth (proper pruning, addressing neighboring tree conflicts, etc). These issues are expounded upon in the following recommendations section.

Life Expectancy Years Until Concern	# of Trees
Immediate Removal	2
5-10 years	9
10-20 years	20
20+ years	31
***New But Struggling (Can Expect 20+)	9

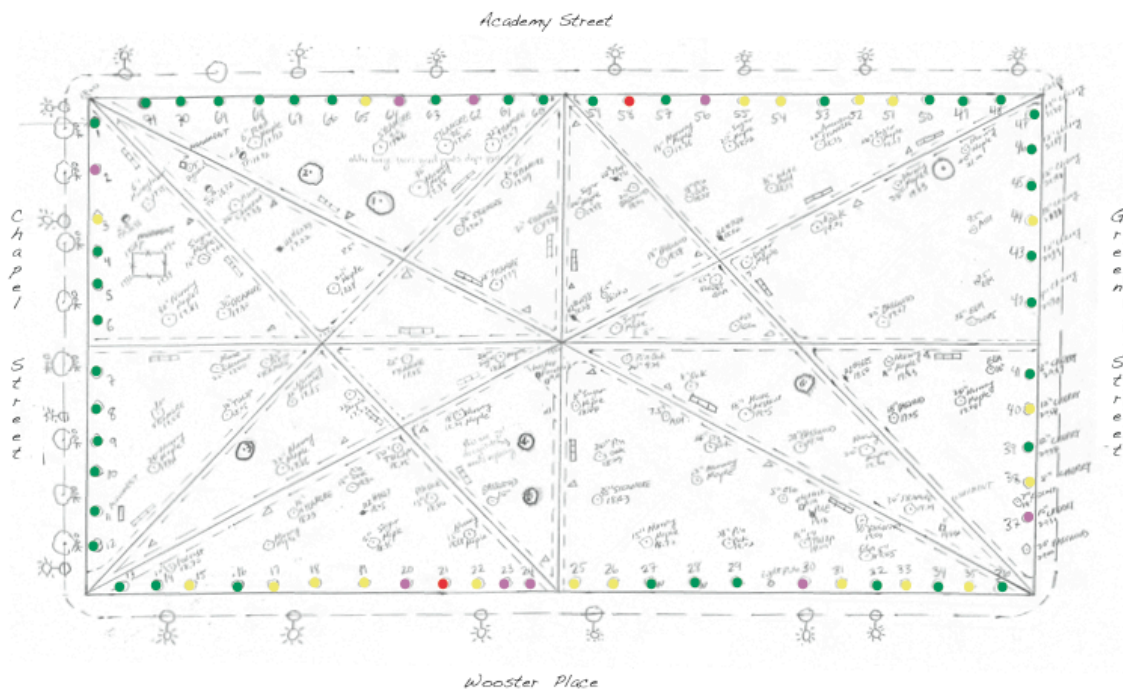


Figure 4: Distribution of Life Expectancy (<5, 5-10 years, 10-20 years, 20+ years)

Recommendations

The following recommendations for the management of cherry trees in Wooster Square is to remove immediate hazard and encourage healthy growth so as to extend life and vibrancy of the park trees, while also reducing or minimizing future hazards and management effort. It is important that management not only be reactive, but proactive, with an eye to future and supporting tree succession, growth, and vigor, while mitigating potential hazards and conflicts.

Recommendations are provided not only for the perimeter cherry trees, but also park and street trees that interact with the cherry trees. Management tradeoffs exist, thus it is important to revisit again community vision and relative importance of inner park plantings, neighboring infrastructure, and pedestrian passage/space. Interventions range in severity, including reactive and proactive general *pruning* or complete *tree removal/replacement plantings*. Both subcategories of management recommendations are organized by priority: *High* (Immediate Action Required), *Medium* (Action Required), *Low* (No Action).

These recommendations are accompanied with maps depicting individual trees and their associated priority and required action. Priority considers immediate hazard, cost/effort, and gained benefit. The tree removal recommendations extend beyond priority to include phasing of intervention recommendations, again seen in the associated map.

Tree Pruning

Tree pruning is imperative to assuring health and of the Wooster Square trees, as well as general public safety. Careful and strategic planning, will result in healthier canopy growth, reduce disease susceptibility, reduce cavity decay and cavity development, increase tree strength and thereby reduce public safety concern and address conflict with utilities and other city infrastructure.

1. Prune Hazard Limbs **(High)**
2. Preventative/Best Management Pruning **(High/Medium)**
3. Prune Neighboring Trees **(Medium)**
 - a. Park Trees
 - b. Street Trees

Pruning lower branches of the mature shade trees in the park's interior will eliminate conflicts with the cherry trees planting along the perimeter park which would increase amount of sunlight to the cherry trees. Creating this zone of increased sunlight can be readily achieved on the east and west side of the park, but the north side will require a larger zone.

The south side along Chapel Street (facing Russo Park and the Farmer's Market) is flanked by red oaks; many are stunted by the sidewalk infrastructure or heavy pruning due to conflict with utility lines. This area needs further study and community input. A careful reexamination of this intersection can enhance Chapel Street and both Russo and Wooster Square.

We recommend enlisting an experienced reputable contractor to prune both the cherry trees and the interior "lifting" of branches because of the sensitive nature of the work. Overly aggressive or poor pruning can have negative long term effects. The community group can prune for suckering and future structure on emerging branches.

The conflict between the cherry trees and utilities is less of a concern at this time. The utilities have provided support wires to their communication lines on which many of the cherry tree branches rest. If these were to be pruned off of these lines, the trees would look disfigured and possibly become distressed.

Tree Removal

As the assessment section reveals there is a range of life expectancies for the cherry trees of Wooster Square. Tree removal is both of immediate concern due to safety hazards, but also of general concern for the sustainability and longevity of cherry trees and public experience of Wooster Square. The critical input from the City is to designate removal and stump grinding of identified priorities in time for planting in the spring. The recommendations for tree removal extend upon the model followed by the Wooster Square Greenspace group, which has strategically located a few trees each year to be removed and replaced. The following priorities of removal would allow for a sustainable and manageable removal/replanting effort, supporting a more seamless transition and introduction of young cherry trees. Replanting efforts will only go so far as pruning and care with respect to neighboring trees extends. As seen in the analysis there are several young trees planted in recent years that are struggling as a result of poor placement, proximity to trees, and poor pruning.

1. Hazard Trees (**High**)
2. Phased Removal (**Medium**)
3. Street Trees (**Low**)
4. Park Trees (**Low**)

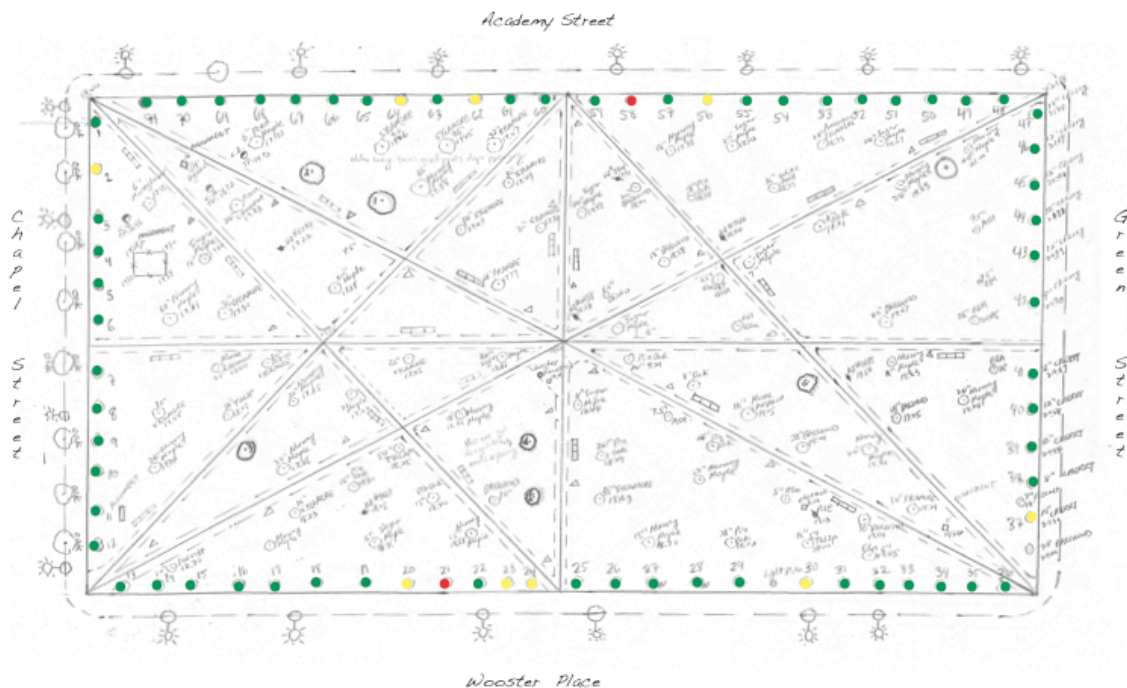


Figure 5: Distribution of 10 year Removal/Replanting Recommendations (Immediate Removal, Intermediate 2-10 years, Future Analysis Required)

Conclusion

The cherry trees of Wooster Square Park are a source of beauty, pride, and community building. Sustaining these trees to their full life expectancy depends on thoughtful consideration and management of immediate and future conditions. The above assessment and recommendations are an initial step. Projections and conditions are likely to undergo unforeseen disturbance and change, thus there will be a need for interior tree assessment and a reassessment of the cherry trees every five-years. Recommendations from this assessment can be evaluated for effectiveness and the City will be able to forecast future management demands and reduce potential liability, while assuring that these trees keep their prominent place in the New Haven community.

Appendix

Tree #	DBH	Cavity	Tree Crowding	Prune	Utility	% Canopy	Life Expectancy Class	Notes
1	3.5	2	2	0	0	60	New	Shaded by oak, leaning, Base Damage, Street Oak
2	22	2	1	2	0	80	5	Located in oak gap, substantial cavities, poor pruning on street side has left vulnerable, Cavities run length of lateral branches
3	24	2	0	2	0	75	10	Frost cracks, minor cross branching, mushrooms, cavities, still shows vigorous sprouting, in need of prune and care
4	3	0	2	2	0	60	New	Shaded by oak, stunted growth, leaning, in need of pruning
5	5,3	0	1	0	0	90	New	Locaed in

5	5,3	0	1	0	0	90	New	Locaed in oak gap, reaching
6	2.5	0	2	1	0	40	New	Stunted growth, Shaded by oak, in need of pruning
7	4	0	2		0	50	New	Reaching, crowded by oak
8	11, 11, 7	2	2	2	0			Needs Immediate Pruning
9	3	0	0	0	0	75	20	Located in gap
10	4	0	2	0	0	50	20	Oak crowding
11	7	1	2	0	0	60	20	Struggling , oak crowding
12	6	0	2	0	0	70	20	Conflict with Oak
13	3	0	2	0	0		New	Locust crowding, reaching, leaning, stunted, not on map
14	6	0	0	0	0	80	20	Not on map
15	22	1	0	0	0	85	10	
16	6	0	1	0	0	75	20	Leaning
17	21	1	0	0	0	70	10	
18	23	1	0	2	2	85	10	
19	20	1	0	1	2	75	10	
20	19	2	0	2	0	60	5	Prune Immediately, substantial cavities
21	13	1	2	2	0	65	1	May be immediate removal...
22	21	1	0	2	0	75	10	
23	21	2	2	2	2	80	5	
								Major base

25	20	1	2	0	2		10	
26	19	2	0	2	2	70	10	Central cavity
27	6	0	2	0	0		20	Leaning
28	6	0	2	0	0	65	20	
29	3	0	2	0	0	50	20	Stump Sprout is next to this newly planted tree
30	17	2	0	1	2	40	5	Gnarly, bad pruning
31	17	2	2	2	0	60	10	
32	5	0	2	0	0	50	20	Reaching
33	19	0	2	2	0	65	10	
34	25	2	0	2	2	75	20	Prune Immediately, powerlines are an issue
35	26	2	0	2	2	70	10	Prune immediately, hazardous prune, central cavity
36	2, 5	0	0	0	0	85	20	vigorous growth
37	16	2	2	2	2	60	5	
38	17	2	0	2	0	70	10	Hazardous limb (sidewalk)
39	19	1	0	2	0	85	20	Pruning needed, hazard limb, small cavity
40	24	2	0	1	0	70	10	Potential hazard
41	3	0	2	0	0	35	New	Stunted, reaching, struggling, has guy-wire attached to it, conflicts

									with park trees
42	5	0	0	0	0	65	20	Reaching, young,	
43	20	1	0	1	2	80	20		
44	13	2	0	2	0	65	10	Struggling, suffering from bad pruning	
45	25	2	0	0	1	80	20		
46	3	0	0	0	0	60	20	REACHING	
47	9	0	0	0	0	70	20	Leaning	
48	11	0	0	0	0	90	20		
49	21	0	2	2	0		20	Park tree in need of pruning-prune immediately	
50	23	1	0	2	2		20	Sidewalk pruning	
51	16	2	2	0	0		10	Major tree conflict	
52	23	1	2	2	2		10	Prune Immediately, sidewalk hazard, powerlines hazard, vigorous sprouting	
53	21	1	2	1	1		20		
54	24	2	2	2	2		10	Major powerline conflict, major cavities, conflict with park tree-Immediate Pruning	
55	13	1	2	2	1		10	overtopped by red maple, leaning, base scar	
56		2	0	2	0		5	Immediate Prune	
57	New	0	0	0	0		New	Newly	

								planted
58		2	0	2	0		1	Immediate Removal
59		0	0	0	0		20	Ok
60		0	0	0	0		20	Ok
61	New	0	0	0	0		20	Newly planted
62		2	2	2	2		5	Utility conflict, Conflict with existing trees, Cavities, Suckers, Needs Pruning
63	New	1	2	1	0	New		Can respond with pruning of london plane, Leaning, Conflict with park tree
64		2	0	2	0		5	Leaning, Bark growing against bark, decay, hazardous to sidewalk
65		2	2	1	0		10	Conflict with park tree (London P.), Central leader was cut, decay
66		0	0	2	0		20	Pruning needed, good vigor
67		2	0	2	0		20	Immediate Prune,

67		2	0	2	0		20	Immediate Prune, Hazardous limb
68		0	0	1	2		20	Old graft, Conflict with power lines
69		0	0	0	0		20	No graft, well placed
70		0	0	1	2		20	No graft,, old, conflict with power lines
								New- not