Background
The Community Gardens were established over 80 years ago as part of the original design of the city. Three gardens remain: Gardenway, Hamilton Place and Henry's Hollow. In the FPAB's report to city council (2013-03) we requested that the city establish an 8 foot buffer zone around the gardens. We believe more is needed now in order for the gardens to remain viable. On July 11, 2020 the FPAB and the Community Garden conducted a public walk through of the gardens.

This document outlines proposed actions to assure adequate sunlight for community gardens and establish a basis for environmentally sound stewardship of boundary areas. This includes removal of invasive species and planting of "forest garden" species for ecological restoration and conservation of border areas as "soft edges." It draws on field observations and discussions by FPAB members, the Garden Club Executive Committee, and gardeners.

General basis for specific recommended cuts:
The gardens need about eight hours of sunlight during the growing season from early April to the end of August.

The tall trees right at the edge of the 8 foot buffer will have to be felled or drastically trimmed to get more light to the garden plots that are right next to the buffer. Felling and limbing up trees on the 8 foot buffer is the easiest first step.

The trees which significantly lead to greater sunlight in the long term are on the southern edges of Gardenway and Henry's Hollow, the southeastern edge of Hamilton Gardens and on the strips that divide the 2 sections of Henry's Hollow and Gardenway. Fewer changes are needed in the east-west buffers.

In order for plots to have enough sunlight (8 hours from early April through August), there has to be clear sky above 60 degrees looking south and above 30 degrees looking east/west. That puts a limit on how high trees can be based on how far they are located away from the gardens. This table gives a general sense about how far away the tree is and how tall it can be to meet our goals.

Looking South

Distance (ft.)	Max Tree Height (ft.)
8	13.8
16	27.7
24	41.6
32	55.4
40	69.3

On the east/west sides, you need more clear sky:

Distance (ft.)	Max Tree Height (ft.)
8	4.6
16	9.2
24	13.9
32	18.5
40	23.1

Hamilton Gardens

Propose to remove ~20 trees on the south edges of garden plots, seen in blue polygons in Figure 1. Eight trees are relatively small black walnuts that shade the southwestern plots of the main section of Hamilton (Figure 2a and Photo 1). Seven trees are black walnuts and other species that shade the southern plot in the main section of Hamilton (Figure 2a and Photo 2). There are also 2-4 trees in the Hamilton homestead area (not pictured) that are beginning to shade gardens in the main section of Hamilton. There are five trees proposed for removal in the small southern section of Hamilton gardens (Figure 2b and Photo 3).

There are two trees in the area proposed to be reclaimed as garden plots (to the north of the small southern section that are proposed for removal. To the east of the main sections there is a former plot area that is proposed to be reclaimed and converted to forest garden or orchard (Figure 1, pink outlines).

To the north we propose to limb up all branches that overhang the 8 foot buffer (Figure 1, red line).

Total trees to remove: ~25

Henry's Hollow

Propose to remove the row of trees that divides the two sections of Henry's Hollow (Figure 3, lavender box and text). This row shades a large portion of the west section of the garden area throughout the morning and shades the small eastern row of plots in the afternoon. We estimate that there are ~60 trees in this strip that are shading the gardens. Most of these are young red maples, elms, and other species. This strip of trees has grown in over the past XXX years; the area was formerly garden plots. This section would be converted to a food forest by replanting with native fruit-bearing trees and other native plants that can provide fiber or other useful products. This area would be managed by the club and would not be divided into plots.

Propose to remove all trees taller than 50 feet on the western edge of the large section Henry's Hollow to a distance of 25' from the garden fence (Figure 3; blue box and text, and Photo 4). The area between Henry's Hollow and the GHI units to the west was once all garden plots. The row of trees that is closest to the fence appears to be taller than the trees farther into the forest on this side of the plots. Removing the tall trees along this axis will allow more late afternoon sun to reach the plots. After removal this area should be restored with native shrubs, fruit trees and other small native trees that typically do not grow taller than 20' (dogwood, redbud, serviceberry chokeberry). This area may be to small to actively manage as a forest garden, but it can be considered for that use.

We propose to remove one large red maple at the southwest corner of Henry's Hollow (Figure 3; pink circle, and Photo 5). This tree shades a significant portion of the southern plots and the removal of this one tree will alleviate nearly 100% of the shading issues for these plots.

Commented [OD(1]: BB: This should be reviewed to check on impacts on assuring sunlight, which might need more than 5 trees on the south and perhaps some trees on the east.

Commented [OD(2]: JPS: These areas are currently heavily infested with invasive plants - most notably Wisteria in the area that is proposed to be reclaimed as garden plots. Restoring these to gardens will actually eliminate a threat to the surrounding forest, and in my opinion is likely a net gain. If these are not reclaimed as garden areas some other management action should be taken - which would be no small task.

Commented [OD(3]: BB: Hamilton Cemetery area needs to be marked. For that area, planting as forest garden might be suitable but not orchard.

Commented [OD(4]: BB: This should be checked further. There appear to be a few nearby tall trees that might also cause problems, especially if they are no longer shaded by the maple.

We propose to remove two large trees at the southeast corner of the large section of Henry's Hollow (Figure 3; pink circle, and Photo 6). These trees shade the southern plots. During much of the day.

We propose to remove 10-12 trees on the southern end of the eastern strip of plots and 8-10 trees on the eastern edge of those plots (Figure 3; pink boxes, and Photos 7-9). These trees shade the southern plots during most of the day.

Gardenway

The two sections of the Gardenway community garden plots are oriented nearly exactly on an east-west axis. The sections are separated by a wide strip of trees (60'-80') that runs between them. This strip shades a significant portion of the northern section. The forest on the southern section of plots is also close to the garden and shades many plots. The shading in both sections can be relieved by the removal of ~60 trees.

We propose to remove ~18 trees on the southern edge of the southern section of plots (Figure 4, red boxes, and Photos 10 and 11. This includes the willow oak that is adjacent to the fence line in the southeast corner. On the western edge of this section there is one tree that should be removed (Figure 4, orange circle) and two trees with large limbs that shade the plots (Figure 4, green circles). See Photo 12.

FPAB and garden club members spent a significant amount of time thinking about how to manage the strip of trees between the two plot sections. After reviewing literature and websites that describe the path of the sun, members calculated the height and distance that trees can be on the southern edge to eliminate shading on the plots to the north. This earlier analysis also informed the recommendations made for Henry's Hollow and Hamilton Gardens. FPAB and club members measured and marked these distances in the strip of trees and measured the heights of many of the trees. We designated two zones each with a different tree height limitation. In the zone that is 8 - 30' from the southern fence of the northern row of plots, tree canopies can reach no higher than 12' (at the northern edge of the zone) to 50' (at the very southern edge of the zone) to avoid shading the garden plots. Given that tree canopies within that zone tend to be either below 12' or above 50' in height, all trees above 50' in the 8 - 30' zone were marked for removal.

In the second zone, which is between 30' - 48' from the southern fence of the northern row of plots, tree canopies can reach no higher than 50' (at the northern edge of the zone) to 75' (at the very southern edge of the zone). Given that tree canopies within that zone tend to be either near 50' or near 75', all trees nearing 75' in height were marked for removal."

With these estimates we counted the number of trees in each zone that must be removed. In the 30' zone there are ~31 trees that are >50' tall. In the 30'-45' zone there are ~9 trees that are >75' tall. We propose to remove these trees. See Photos 13-16 for approximate locations of the trees that are proposed for removal. ~~FPAB and garden club members spent s significant amount of time thinking about how to manage the strip of trees between the two plot sections. After reviewing literature and websites that describe the path of the sun, members calculated~~

~~the height and distance that trees can be on the southern edge to eliminate shading on the plots to the north. FPAB and club members measured and marked these distances in the strip of trees and measured the heights of many of the trees. We designated two zones each with a different tree height limitation. In the zone that is 30' or less from the fence trees must be ~50' or less; in the zone that is between 30' and 45' trees must be below 75' tall. FPAB and club members measure the heights of several trees in each zone and estimated the heights on neighboring trees. With these estimates we counted the number of trees in each zone that must be removed. In the 30' zone there are ~31 trees that are >50' tall. In the 30'-45' zone there are ~9 trees that are >75' tall. We propose to remove these trees. See Photos 13-16 for approximate locations of the trees that are proposed for removal. [insert language about forest gardening and invasive plant removal here]~~

Finally, there is on small elm on the western edge of the northern section and one elm in the fence line. Both should be removed. The northern and eastern edges of the garden plots should be limbed up where there are overhanging branches.

Forest Gardens

Invasive Plants

Future Stewardship of Garden Boundaries

The garden fences, as shown on current maps and remote imagery or as further specified in this plan will define the permanent boundaries for the community gardens, subject to any future changes approved by the City Council.

The Garden Club will have primary responsibility for continuing stewardship of the boundary areas beyond the mowed area.

- The City will continue mowing a border of about 8 feet around the garden fences. The city will be responsible for removing tree limbs above the mown area, to the extent this is not done by the Garden Club.

Canopy growth may be controlled to limit shading and assure continued sunlight for gardens, managing the boundary areas as sloping "soft edges." This can be done by the Garden Club, who may request help from Greenbelt City Public Works.

- On the southern edges, at a distance of 8 feet from the fence, canopy may be limited to a maximum of 12 feet high, about 45 feet at 25 feet from the fence, and about 75 feet high at 45 feet away. In other words, due south of a garden, a canopy of any height must be at a minimum distance of 60% of its height from the garden boundary. (This is a ratio of rise to run of about 1.7 and approximately equivalent to a 60° angle.)
- In principle to assure sufficient sunlight, eastern and western edges would need to have a much lower slope. Due east or due west of a garden, a tree canopy of

any height must be at a minimum distance of about twice its height (1.8x) from the garden boundary in order to avoid shading. (This would be a rise to run ratio of 0.52, e.g. only 12 feet high at a distance of 25 feet from the fence.) This would apply particularly to any areas subject to shading from both east and west, such as the southeastern patch in Hamilton Gardens and the southern patch in Gardenway.

- Management of border areas will be reviewed at five-year intervals by FPAB and the Garden Club. The review will include assessing the impact of shading by trees more than 45 feet away from the garden fence and any other measures needed for continuing implementation of this plan. Any major revisions to this plan may be proposed to City Council for approval.

Figure 1. Proposed tree removal and other maintenance activities to alleviate shading on the boundaries of Hamilton Gardens and to recover and restore several garden plot areas that have been abandoned since the

Forest Preserve was created.

Figure 2a.

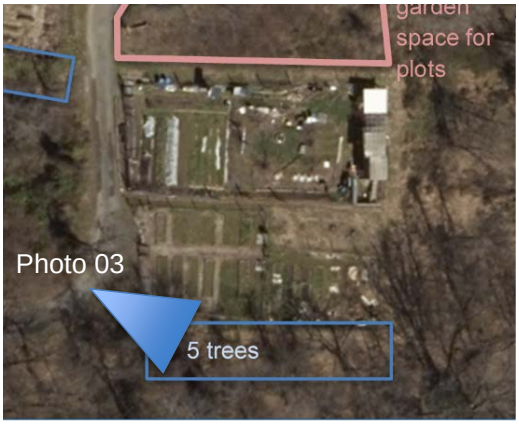

Figure 2b.

Figure 2. Two aerial images showing the location and approximate direction of Photos 1-3, which are below. The blue triangles show the

Photo 1. The approximate locations of 7 trees proposed for removal

Photo 02. The approximate locations of 8 trees proposed for removal

Photo 02. Approximate locations of 5 trees proposed for removal on the south side of the small section of Hamilton gardens.

~~Henry's Hollow~~

Figure 3. Proposed actions to alleviate shading of the garden plots in Henrys' Hollow.

Photo 4. West border of Henry's Hollow showing the strip of trees proposed for removal. All trees >50' tall and less than 25' from the fence are proposed for removal

Photo 5. The large maple at the southern end of Henry's Hollow that is proposed for removal.

Photo 6. Two large trees at the SE corner of the large section of Henry's Hollow that are proposed for removal.

Photo 7. Six of the 10-12 trees proposed for removal at the southern end of the east part of Henry's Hollow.

Photo 8. 4-6 trees proposed for removal at the southern end of the east part of Henry's Hollow.

Photo 9. Eight to ten trees proposed for removal on the eastern border of the eastern part of Henry's Hollow.

~~Figure 4~~

Figure 4. Proposed actions to manage shading of the two Gardenway community garden plot sections. Blue triangles indicate the approxinate view of the photos that are labeled. Photos are below.

Photo 10. Trees on the southwest corner and southern edge of the southern section of plots at Gardenway. Approximately 10 trees are marked and proposed for removal.

Photo 11. Trees along the southern edge and southeast corner of the southern section of plots at Gardenway. Approximately 8 trees are marked and proposed for removal, including the large willow oak next to the fence.

Photo 12. Three trees along the western edge of the southern Gardenway plot section.

Photo 13. Approximately 15 trees that are proposed for removal along the southern edge of the northern section of plots at Gardenway.

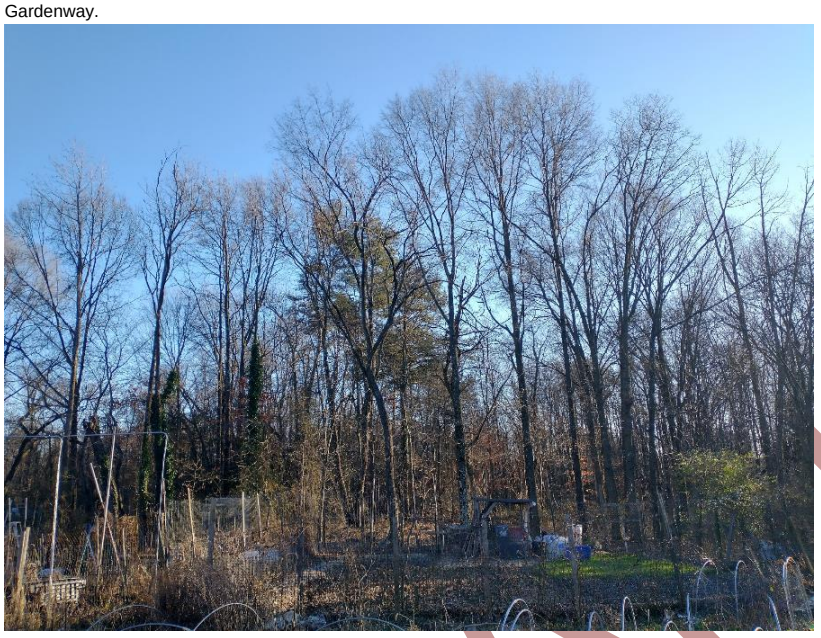

Photo 14. Trees in the strip between Gardenway sections. These trees are labelled in Photo 13.

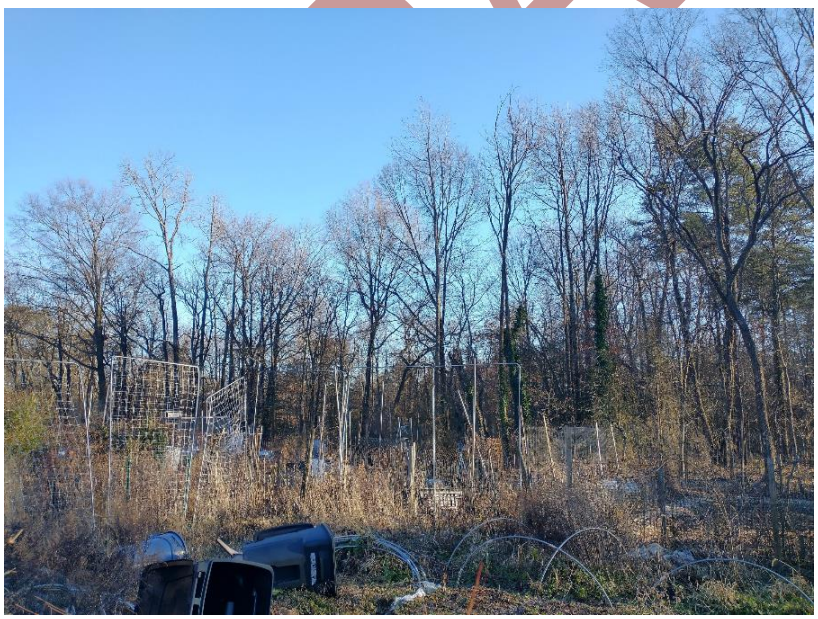

Photo 15. Trees in the strip between Gardenway sections. These trees are labelled in Photo 13 and 16.

Photo 16. Trees in the strip between Gardenway sections that are proposed for removal