

Carderock Springs Citizens Association Committee on Tree Preservation Under the Covenants  
Tree Preservation Guidelines, including Explanations –**Adopted January 16, 2023 at the Carderock  
Springs Citizens’ Association Board Meeting**

**Introduction**

*Purpose and Scope of the Guidelines: Preserving and Restoring Carderock Springs as a Wooded  
Community*

The purpose and scope of these Guidelines is to gain support from all Carderock Springs homeowners, prospective owners and realtors for recognizing that a special purpose of creating the C.S. neighborhood was preserving its natural beauty, especially its hardwood trees, and having all owners **respect** the covenants running with the land by obtaining community approval before cutting down sound hardwood trees.

When award-winning developer Edmund Bennett created Carderock Springs in the early 1960s, he had an extraordinary vision: to preserve the natural beauty of this hilly, wooded area while designing and placing each house so-as to maximize its owners’ views of nature and their privacy from other neighbors. To preserve its mid-century modern architecture and wooded nature, residents are subject to certain covenants and restrictions on lots located in the community. Certain of these covenants legally obligate all Carderock Springs homeowners to obtain community approval before being allowed to make most exterior changes to their houses, even cosmetic, and before cutting down sound hardwood trees.

Specifically, one of the explicit purposes of the Covenants is “*to preserve, so far as practicable, the natural beauty of [each building site.]*” (Emphasis added) Covenants, Art. II. To preserve the “natural beauty,” the developer gave priority to preserving hardwood trees, the trees forming the wooded canopy: “*No sound hardwood trees shall be removed from any lot without written approval by the Corporations or their successors or assigns [i.e., the Carderock Springs Citizens Association (CSCA), its Architectural Review Committee (ARC) or other entity to which they may delegate this authority.]*” (Emphasis added) Covenants. Art. VI. To make the Covenants legally enforceable, the CSCA or “lot owners [are] entitled to apply for relief by injunction to restrain any ... breach or violation ... of the restrictions or covenants herein provided [.]” Covenants, Art. XIV.

In addition to the Covenants themselves, the “Carderock Springs Architectural Review Committee Design Guidelines, October 2007” – explicitly founded on the Covenants, see Guidelines, p. 2 – emphasize that: “Trees should be retained to the fullest extent possible.” (p. 4) More recently, our placement on the National Register of Historic Places in 2009 was predicated on “Carderock Springs [having been] planned to take full advantage of the existing landscape and topography, with curvilinear streets and cul-de-sacs serving wooded, sloping lots.”

The CSCA believes that preserving Carderock’s wooded character is essential to preserving the beautifully natural and private quality of life that Carderock Springs residents enjoy. Trees also help to filter the air, absorb stormwater runoff, provide shelter for birds and small mammals, and provide shade that helps moderate temperatures and keep us more comfortable in the hot Bethesda summers. To preserve that character and those natural benefits, we believe that sound hardwood trees must be protected both in the ARC’s review of proposed architectural improvements and the Tree Committee (TC)’s review of requests to remove sound hardwood trees outside the architectural improvement process.

Unfortunately, in recent years, some owners have made extensive renovations without obtaining prior approval from the ARC. Moreover, some owners have removed sound hardwood trees, including large ones, without obtaining approval from the Tree Committee or the ARC. These actions have detrimentally impacted the beautiful, wooded character and privacy of the neighborhood. This has contributed to the serious loss of tree cover in Carderock Springs in recent years, which we estimate to be approximately 1% a year.

These proposed Guidelines are designed to address the two objectives approved by the CSCA Board when it approved the Charter creating a Tree Preservation Committee (TPC) (see Appendix A): “the problem of non-compliance with the covenants’ requirements of prior approvals and to most effectively promote the preservation of hardwood trees and their replacement where removal is needed [.]” We believe that key to preserving and restoring hardwood trees is for all homeowners, and particularly the CSCA Tree Committee and Architectural Review Committee on their behalf, to consider all practicable alternatives before cutting down a sound hardwood tree and permit that only where such alternatives are not available.

The CSCA Tree Committee is made up of volunteers living in Carderock Springs appointed by the Board of Carderock Springs Citizens Association who have an interest in serving the community. Members of this committee generally have some knowledge and expertise in natural habitat and/or landscape design. Their objectives are to work with homeowners to achieve a balanced solution to the homeowner’s desires to improve or maintain the safety of their properties while seeking to preserve to the maximum extent possible the natural tree canopy. In working with the homeowners, members of the Tree Committee – will look to support from a certified ISA (or equivalent) arborist providing expert consultation or advice as appropriate. They can often offer suggestions on options to pursue which may include trimming of branches, remediation of disease or pest infestations, removal of underbrush, immature trees or other vegetation, and the like.

These Guidelines were originally approved in proposed form by the CSCA Board of Directors at its August 2022 meeting. Following such approval, the proposed Guidelines were made available to the entire Carderock Springs community and a survey was circulated to solicit comments from the community. Following review of the comments received from over fifty households at CSCA’s November 2022 meeting, the proposed Guidelines were revised. The Guidelines were approved in final form at the CSCA January 2023 Board meeting.

With the adoption of these Guidelines, the work of the TPC is complete. Members of that committee have agreed to serve on the Tree Committee which will undertake the enforcement of these Guidelines on behalf of the CSCA.

The Guidelines have the following sections:

- I. Guidelines and Procedures for Tree Committee (TC) Review of Requests to Remove Sound Hardwood Trees
- II. Guidelines and Procedures for ARC Review of Requests to Remove Trees, including Infrastructure for Relationship between ARC and TC
- III. Education of Homeowners about the Covenants’ Purposes, Requirements and Implementation Guidelines and Procedures
  - A. Content
  - B. Techniques– including:
    1. Newsletter articles
    2. List Serve or Chat

3. Brochure
4. Other publicity
5. Yard Signs
6. Mottoes
7. Education events, including tree walks
8. Contests and Celebrations
9. Other
- IV. Education of Prospective Homeowners and Realtors about the Covenants' Purposes, Requirements and Implementation Guidelines and Procedures
  - A. Arrangement for listing realtors to notify all buyers' realtors of the covenants for Carderock houses
  - B. CSCA direct notification to new homeowners
- V. Mitigation Where Sound Hardwoods Removed Without Approval

Appendix A - Charter for CSCA Committee on Tree Preservation Under the Covenants - Approved by CSCA Board May 2, 2022

Appendix B - Tree Facts: Personal and Community Benefits

## **I. Guidelines and Procedures for Tree Committee (TC) Review of Requests to Remove Sound Hardwood Trees**

Article VI (second paragraph) of the recorded covenants for Bennett homes located in Carderock Springs states the need for written approval of the removal of "sound hardwood" trees.

### **A. Definitions and Examples.**

'Hardwood' trees are mostly deciduous, but several evergreen trees, such as holly and boxwood, are also hardwoods. While the Tree Committee is able to identify many trees, not all of Carderock's trees are familiar, and an arborist may be needed to confirm an ID. While some "hardwood" trees, like oaks and maples, do in fact have very dense and strong wood— others, like tulip poplars and redbud, are less dense. The differentiation between hardwood and softwood has to do with the cellular structure, not necessarily whether a tree is deciduous or evergreen (although many evergreens are softwoods). The terminology was derived from the timber industry.

Examples of 'hardwood' trees in Carderock include:

Oak	Beech	Sweetgum	Linden	Redbud
Maple	American Holly	Tulip Poplar	Walnut	Cherry
Birch	Cherry	Chestnut	Dogwood	Hickory

Examples of 'softwood' or non-hardwood trees in Carderock include

White Pine Hemlock Spruce Redwood

- The term 'sound', when describing a tree for purposes of this covenant, refers to a tree that is generally in good/fair condition and not an imminent danger. A sound tree may nonetheless have a treatable disease and/or require other treatment, for example, pruning or spraying. The Tree Committee and/or a certified arborist will make a determination of whether a tree is 'sound' or unsound. Generally speaking, a diseased/unsound tree is one where 50% or more of the tree exhibits obvious sign of disease, or which an arborist determines cannot be saved.

- If a tree seems sick or weak, a certified arborist or the Tree Committee may be able to recommend solutions other than cutting the tree down. An arborist is a trained expert in tree care, maintenance and diagnosis. This is a higher level of expertise than a Maryland Licensed Tree Expert (MLTE), which primarily requires adequate insurance and safety training. MLTE's can remove or trim trees, but most are not trained to diagnose tree health or treat diseases.

#### **B. Criteria for Removal of Hardwood Trees, including Replacement Tree**

While, as noted above, the Covenants explicitly provide that the approval requirement applies to removal of all sound hardwood trees - "No sound hardwood trees shall be removed ... without written approval" – this requirement has previously only been applied to trees whose trunk diameter was 12 inches or more, measured 4 feet from the ground. In developing new guidelines to more effectively preserve and protect our hardwood trees, the TPC noted that many Carderock Springs hardwood trees that are even 9 inches in diameter are already very substantial trees, sometimes 30 -40 feet tall. By adopting a 9" standard, the community would significantly increase the preservation of sound hardwood trees that will provide our future canopy, while still allowing owners discretion to remove smaller hardwoods without approval.

1. Contact the Tree Committee at [CSCATree@gmail.com](mailto:CSCATree@gmail.com) to request removal of any hardwood tree that is 9" or more in diameter, measured 4 feet from the ground. In most cases a written response will be provided within 5-10 days.

2. Provide the following information (we will create a standard form that can be filled out by homeowner):

- Tree species (if known).
- Approximate height and diameter of tree, and location on the property.
- Photos of lot and trees
- Reason(s) for requested removal (more detail is better)
- Whether an arborist has examined the tree; if so, who and when, and what were conclusions (homeowners are encouraged to consult with a licensed arborist prior to contacting the Tree Committee; please provide written report from the arborist, if possible)
- Have other alternatives been considered (e.g., if the removal is requested for an addition, etc., has a different configuration for the addition been explored, or if the tree has a disease, can the disease be effectively treated?)
- Any other pertinent information
- Note: if an emergency situation occurs – severe storm damage, substantial uprooting, tree falling on/near house, lightning strike, etc., the tree is likely unsound and can be removed immediately. Notice to the Tree Committee should be provided as soon as possible thereafter.

3. Except in an emergency situation (above), the Committee will arrange a site visit to determine if the tree is sound or unsound, including suggesting and/or arranging an arborist's visit if deemed necessary. If the Tree Committee determines that a hardwood tree is unsound, you may remove it. If

sound, the committee will consider your removal request in-light-of the following factors and the particular situation:

- Pursuant to the relevant purpose of the Covenants, sound hardwood trees are to be preserved “so far as practicable”

- Whether there are any practicable alternatives to removing the tree

- Safety and prevention of damage to people or property

- Tree canopy conservation (including whether the tree is an especially valuable species for Carderock or a common one) and the canopy condition of your property, surrounding neighbors and portions of the street nearby

- Reason for requested removal (e.g., substantial risk to safety of people or property, ARC-approved addition, trees are too crowded, etc.)

- Screening or privacy

- Effect of removal on neighbors

- Tree health/crowding

- Costs of removal

4. Where diagnosis and/or treatment is particularly difficult, the Tree Committee would be authorized to retain an experienced consulting arborist on behalf of CSCA to advise the Tree Committee. Only arborists who do not do tree **removal** work in Carderock Springs would be eligible to be hired as a consulting arborist by the TC. The Tree Committee is authorized to spend up to \$500/yr. for a consulting arborist or other purposes it determines needed. Any additional funding for the TC beyond \$500/yr. would have to be approved by the Board.

5. Replacement Trees on Private Property, excluding the Right-of-Way. If the Tree Committee approves removal of a sound hardwood tree, in most cases it will be with conditions, including the planting of a replacement hardwood canopy tree(s) in order to preserve Carderock’s tree canopy. As your neighbors, Tree Committee members may be able to suggest species, provide potential sources for free- or reduced-price trees, or mention area nurseries that offer a substantial variety of hardwood trees.

## **II. Guidelines and Procedures for ARC Review of Requests to Remove Trees, including Working Relationship between ARC and Tree Committee**

The Tree Preservation Committee believes that to minimize the potential for unnecessary removal of sound hardwood trees, it is essential that preservation of such trees be given top *priority* from the beginning of the architectural design process. This includes that – before submitting any design to the ARC – architects or other designers need to have identified and evaluated all professionally viable options for achieving owners’ basic objectives without cutting down sound hardwood trees. **The “Carderock Springs Architectural Review Committee Design Guidelines, October 2007,” p.2, already provides that: “The ARC strongly recommends that homeowners share these guidelines with their architect or design-builder *prior to start of design*. ”(Emphasis added)**

To perform its responsibility under Article VI of the Covenants to determine whether or not to approve removal of a hardwood tree as part of a proposed design, the ARC needs to determine whether the design would require removal of any sound hardwood, and, if so, whether there are any **practicable** design alternatives that would not require cutting down such a tree. **The 2007 Design Guidelines already specify that: “The design and location of the addition must minimize the removal of significant trees or alterations to other significant landscaping.”** (Emphasis added).

For the ARC to be able to carry out those functions according to their own published guidelines, the 2007 Design Guidelines should be revised to require owners and their architects to submit, as part of their initial submissions to the ARC, drawings of the location and size of all trees of nine inches or greater diameter measured four feet from the ground that would need to be removed as a result of the proposed design, or whose root or branch systems are likely to be negatively impacted or damaged by construction soil compaction or addition, or other disturbance. If there is uncertainty as to whether such a tree would be damaged or need to be removed, an arborist should be consulted regarding potential negative impact. If there are any such trees, the designer also should need to submit an explanation and drawing of all other options the designer and owners considered before proposing the tree removal and what reasons, including specific costs, they decided not to adopt any of those other options. Revised Guidelines should provide that the ARC will only approve removal of a sound hardwood tree as part of a design if it determines that the owner and designer have considered the professionally viable options and no other option is practicable, including factors of the lot topography and tree cover in addition to the cost and aesthetic design of the proposed improvements.

To provide for an effective, collaborative infrastructure between the ARC and the Tree Committee, the Tree Preservation Committee recommends that the CSCA Board appoint a member of the Tree Committee as the TC’s official liaison to the ARC.

### **III. Education of Homeowners about the Covenants’ Purposes, Requirements, and Implementation Guidelines and Procedures**

#### **A. Content**

The education content to be provided to homeowners as part of the Plan would be the same content already described above in the: Introduction, as to the purpose and scope of the Plan and the Covenants’ requirements; Section I, as to the need for, and the guidelines and procedures regarding, owners’ requests to the TC to remove hardwood trees; and Section II, as to the guidelines and procedures for owners’ requests to the ARC to approve tree removal as part of architectural design review, as well as establishing the infrastructure for permanent TC participation in the ARC. In addition, homeowner education would involve presenting basic tree facts and information, including benefits trees provide and harms caused by removing sound trees -for example, as described in the “Tree Facts: Personal and Community Benefits”, Appendix B, below - and history, news reports and other information that the Tree Committee or other community members may learn about related to preserving and restoring the wooded nature of Carderock Springs.

#### **B. Techniques for Providing Education to Homeowners**

To achieve the Guidelines's two overall objectives of rectifying "the problem of non-compliance with the covenants' requirements of prior approvals and to most effectively promote the preservation of hardwood trees and their replacement where removal is needed," education of the community would be central. CSCA would use all available and effective education techniques. These would include, but are not limited to: Newsletter articles, preparing and distributing to owners a brochure describing requirements and procedures for ARC and TC approval of removal requests; CSCA newsletter; CS listserve or Chat; yard signs; education events, including opportunities to view valuable trees via walks or open gardens in Carderock Springs or outside the community; development of one or more mottoes for Carderock Springs that emphasize that it is a neighborhood of trees; and holding contests and celebrations for the whole community to promote hardwood tree preservation and restoration.

#### **IV. Education of Realtors, Prospective Owners and New Owners about the Covenants' Purposes, Requirements and Implementation Guidelines and Procedures**

##### **A. Realtors and Prospective Owners**

As recommended to the Tree Preservation Committee by an experienced local realtor, the existence of our architectural and tree approval covenants should be seen as an attraction. "Carderock is a rare and cohesive Montgomery County Maryland neighborhood and a beautiful treed one, due to the covenants and architectural guidelines."

To preserve and restore our community's hardwood trees, it is important that prospective Carderock Springs homebuyers understand that, if they buy a house here, they are subject to covenants, including needing community approval before they can make most external changes to their house and remove any sound hardwood trees. Because realtors engage with prospective buyers in our neighborhood, we believe it is important to enlist realtors' support in notifying prospective buyers about our community's tree and architectural approval requirements.

To arrange for effectively notifying prospective buyers of these requirements, the Tree Preservation Committee recommends that the CSCA Board accept the generous offer a community realtor made to notify the Tree Committee of the name and contact information for any listing agent as soon as she learns that a Carderock Springs, Bennett house is on the market for sale. Upon receiving such notice, the Tree Committee would forthwith contact the listing agent, on behalf of the Board, to offer recommendations for describing Carderock's architectural and tree covenants in the seller's written "disclosures" to the buyer, as well as which covenants and guidelines should be attached to the disclosures. Because the prospective buyer must sign off on the seller's disclosures before submitting a bid, this is the critical stage for C.S. to notify prospective buyers about our approval requirements and procedures. (Note: In addition to the original Bennett homes, other houses in the Carderock Springs neighborhood may have similar covenants.)

The Committee has been offered expert assistance in preparing recommended model "disclosure" language for listing agents to use and to answer any questions from other agents about covenant-related disclosures. Once the Board has reviewed and approved model language for disclosures, the Committee would share the language with all realtors who most frequently list sales in Carderock Springs, and with all other listing agents whenever the Committee is notified that a new house is on the market.

In addition, the Committee would review the “Removing a Tree” and “Architectural Review” pages on the CSCA website to be sure that these pages incorporate all the relevant provisions of the Guidelines.

## **B. New Homebuyers**

The Committee would coordinate with the CSCA Board to include reference to the Covenants and the updated ARC and Tree Removal Guidelines and procedures with the Carderock Springs welcome kit.

## **V. Mitigation Where Sound Hardwoods are Removed Without Approval**

Sometimes, owners remove sound hardwood trees without approval of the TC or the ARC and there is evidence that this has occurred. Such evidence may consist of: 1) tree stumps and/or photographs of tree stumps or cut logs on or adjacent to the property determined by an arborist to have been sound hardwood trees; 2) observation of the trees by community members prior to, or at the time of, their removal; 3) written records by knowledgeable observers; or 4) other reliable evidence.

Where the Tree Committee has strong reason to believe that an owner has, without approval, removed sound hardwood trees after the adoption of these Guidelines, it would contact the owner. The Committee would explain its concerns that the Covenants have not been followed and the bases for its concerns. Unless the owner is able to demonstrate that the trees removed were not sound hardwood trees or that removal had been approved, the Committee would ask the owner to mitigate the harm to the community caused by the unauthorized removal.

Where there are large open spaces without hardwood trees in front of the house, the Committee would ask the owner to plant and care for two hardwood trees in front of the house for each tree removed without approval. Replacement trees should, if possible, be at least 2” in diameter measured 4’ above the ground and would be planted in locations mutually agreed to by the owner and the Committee. Where there are already hardwood trees substantially screening the front of the house, the Committee would ask the owner to plant the replacement trees elsewhere where they would provide maximum screening for their neighbors in locations mutually agreed to by the owner and the Committee. This section would apply to all sound hardwood trees that appear to have been at least 9” in diameter as measured 4’ above the ground at the time that they were removed.

Owners would normally pay for the cost of buying and planting the replacement trees. However owners must apply to the County’s Department of Transportation program for planting hardwood trees (without cost to the owners). Watering such trees would be the owners’ responsibility.

## **Conclusion**

As fellow neighbors in the Carderock Springs community, we all enjoy the benefits of living in a still largely wooded, beautiful, natural environment, protected by covenants running with the land. We hope you will see these Guidelines as a way to preserve this environment for us and future generations of Carderock homeowners. We welcome your questions and comments.

Respectfully submitted,

Gershon (Gary) Ratner, Chair     Nancy Everett     Sue Eastman  
CSCA Committee on Tree Preservation Under the Covenants



## **APPENDIX A**

### **Charter for CSCA Committee on Tree Preservation Under the Covenants - Approved by CSCA Board May 2, 2022**

When award-winning developer Edmund Bennett created Carderock Springs in the early 1960s, he had an extraordinary vision: to preserve the natural beauty of this hilly, wooded area while designing and placing each house so as to maximize its owners' views of nature and their privacy from other neighbors. To preserve its mid-century modern architecture and wooded nature, residents are subject to certain covenants and restrictions on the lots located in their community. Specifically, certain of those covenants legally obligate all Carderock Springs homeowners to receive community approval before being allowed to make most exterior changes to their houses, even cosmetic, and before cutting down sound hardwood trees.

Unfortunately, in recent years, some owners have made exterior renovations without obtaining prior approval from the Architectural Review Committee. Moreover, some owners have removed sound hardwood trees, including large ones, without obtaining approval from the Tree Committee. These actions have detrimentally impacted the beautiful, wooded character and privacy of the neighborhood.

To address the problem of non-compliance with the covenants' requirements of prior approvals, and to most effectively promote the preservation of hardwood trees and their replacement where removal is needed, we recommend the creation of a special Covenants Committee of the CSCA Board. (The Committee also could/would include non-Board members.) The Committee would be charged to prepare and present to the Board for review and approval a plan to accomplish the two above objectives.

The plan would include, but not be limited to: developing concrete guidelines for the Tree Committee to approve or disapprove requests for tree removal; establishing an infrastructure and working relationship between the ARC and the Tree Committee to preserve hardwood trees; developing concrete guidelines for the Tree Committee's process of interacting with owners, including, where the Tree Committee approves removal, arranging with owners to provide replacement trees; educating existing and prospective C.S. homeowners about the covenants' purposes, requirements and implementation guidelines and procedures; arranging for all realtors who sell houses in C.S. to notify all their clients considering buying a house in C.S. of the covenants' purposes, requirements and implementation guidelines and procedures; developing appropriate procedures for engaging homeowners who have already removed hardwood trees without approval to mitigate the harm caused by such removals; and conceiving mottoes, contests, celebrations, and other educational and engaging activities to heighten the community's appreciation of the importance of preserving our hardwood trees.

We recommend that the Covenants Committee submit its Plan to the Board by email no later than June 10, 2022. That would enable Board members to provide input and for any revisions to be made before the June Board meeting. We are eager to have a Plan adopted no later than the June Board meeting, so that the Covenants Committee could notify all C.S. residents of the Plan, notify realtors, prepare articles for the Newsletter, plan fun tree-related activities, etc., during the summer.

Respectfully submitted,

Gershon (Gary) Ratner Nancy Everett Sue Eastman

## APPENDIX B

### Tree Facts: Personal and Community Benefits

- **Property Values:** “Healthy, mature trees add an average of 10% to a property’s value”. (<https://www.arboday.org/trees/benefits.cfm>). Unlike gray infrastructure, trees grow and thereby appreciate in value. And yet, CS, according to the county, is losing 1% of its canopy a year. ([https://www.montgomeryplanning.org/environment/documents/TreeCanopy\\_Report\\_MontgomeryCountyFinal.pdf](https://www.montgomeryplanning.org/environment/documents/TreeCanopy_Report_MontgomeryCountyFinal.pdf)). This Montgomery County Canopy Calculator is prepared by Jarlath O’Neil-Dunne, University of Vermont Spatial Analysis Laboratory, [joneildu@uvm.edu](mailto:joneildu@uvm.edu).
- **Energy Costs:** Mature trees, like those in CS, by providing a windbreak, decrease current high winter heating costs by up to 50% and their shade reduces residential air conditioning costs by up to 30 % (<https://www.arboday.org/trees/benefits.cfm>).
- **Sustainability:** This reduction in energy demand reduces dependence on dwindling natural resources, such as oil, gas, and water.
- **Climate Warming:** Mature trees, like those in CS, result in: 1) 4-6 F. degree temperature drop “between neighborhoods under mature tree canopies and newer areas with no trees” and 9 F. degree drop between forests and open terrain. ([https://www.aivc.org/sites/default/files/airbase\\_4708.pdf](https://www.aivc.org/sites/default/files/airbase_4708.pdf), p. 1405) and 2) “The more mature a tree is, the more carbon it stores in its woody biomass (Schwab, 2009). Although trees are not the single answer, healthy and mature trees have the potential to make significant carbon mitigation returns.” (<https://nph.onlinelibrary.wiley.com/doi/full/10.1002/ppp3.39>, Section 2.4 Economy and resources). Trees with more leaves store more carbon.
- **Noise Reduction:** Trees reduce or buffer sound pollution from the Beltway and will reduce sound from its planned expansion, as well as buffer present and future air traffic noise.
- **Street Safety:** Trees calm traffic, reducing neighborhood car speeds up to 8 mph. (<https://www.deepproot.com/blog/blog-entries/trees-are-a-tool-for-safer-streets-2/>)
- **Natural Habitat:** Trees provide critical habitat for birds, squirrels and other local wildlife.
- **Soil Erosion/Flooding:** “One study showed that 100 mature trees catch about 139,000 gallons of rainwater per year”, reducing surface water runoff and soil erosion and store stormwater in the soil. (<https://stormwater.allianceforthebay.org/take-action/installations/tree-planting>).
- **Mental Health:** Research has shown that phytoncides, wood oils released by trees into the air, often make us happier by reducing anxiety and depression. (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2793341/>). JAMA Network Open research found that neighborhoods with leafy trees tend to have higher levels of psychological health than where the green space consists of grass. (<https://www.minnpost.com/second-opinion/2019/07/more-trees-not-more-grass-are-associated-with-wellness-and-well-being-study-suggests/>)
- **Physical Health:** Phytoncides reduce blood pressure and stress, “increase[] energy level”, and “improve[] sleep,” (<https://www.dec.ny.gov/lands/90720.html>), while increasing levels of anti-cancer proteins to fight tumors and improving immunity. (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2793341/> Paragraph 3, Effect of Phytoncides...), and tree shade reduces UV exposure by 40-60%, which reduces skin cancer risk. (<https://www.purdue.edu/uns/html4ever/020422.Grant.shade.html>). Greener neighborhoods may save \$374 per person or \$1,122 per family of three (3) in annual medical costs, which according to research by Professor Kuo may “grossly underestimate tree-related medical costs savings”. (<https://aces.illinois.edu/news/neighborhood-trees-may-protect-against-high-medical-costs-poor-health>).

