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**Arboricultural Report**  
on the  
**Five Selected Trees**  
for  
**Health, Safety, and Tolerance to**  
**Construction Damage**

*Prepared for:*

**John J. DiBenedetto Associates, Inc.**

**Architects**

**201 Old York Road**

**Suite 3B**

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*In Reference to:*

**Kerlin Farm Subdivision Project**

**1050 Asbourne Road**

**Cheltenham, PA**

*Date of Report:*

**29 June 2011**

## **Background**

A subdivision of Kerlin Farms (once called Heidelberg) is now in the planning stage. The house located on the property is a crumbling relic of nearly 6,000 square feet built on almost 8 acres. The earliest part of the house dates to 1694 on land sold by William Penn to a venerable Quaker and named Everard Bolton.

The remnants of the garden include many large trees of which one is the largest of its kind in southeastern Pennsylvania. Four trees on the site were specifically mentioned in a report by Jason Lubar of the Morris Arboretum dated 25 August 2004. At that time, I was Mr. Lubar's supervisor at the Morris Arboretum and had assisted him with measuring some of the site trees. Mr. Lubar mentions specifically the Pennsylvania state co-champion sweet gum tree, two bur oaks, a ginkgo, and a Franklin tree. Although large for its kind, the Franklin tree in 2004 was not in very good health or form in 2004 and has declined further with neglect. Mr. Lubar opines that, "If the property is to be developed, the developer should work closely with an arborist to plan and implement proper tree protection before, during, and after construction."

It is the desire of the planners and developer to preserve some of these old trees to become part of the residential landscapes of this new community. Before proceeding with planning around these trees, it is desired to know the condition of some of the old trees including their health and structural safety. Five trees were selected by Ritter and Plante that include the four trees specifically mentioned in the Morris Arboretum report.

## **Assignment**

I was asked by John J. DiBenedetto, Project Architect, to make a survey of these five selected trees and report on their condition. The size of the tree protection zone for each tree is to be provided.

## **General Approach**

The five trees of interest for my survey were identified by Cesira Ruggiero, Landscape Architect with Ritter and Plante Associates, on a survey plan that included a tree survey. The inventory numbers are those used in this tree survey. The five selected trees does not include the declining Franklin Tree nor the Bur Oak located closest to the decaying house ruin.

Preservation of trees during construction must focus on the protection of tree roots and the sustaining soil where they grow. It is estimated that if provided with adequate good soil and space, that tree roots can explore soil equal to its height used as a radius from the trunk. However, trees are tolerant of much less rooting space. To provide a guideline for setting aside a tree protection zone around trees to be saved, I use methods described in *Trees and Development: A Technical Guide to the Preservation of Trees During Land Development* written by Matheny and Clark and published by the International Society of Arboriculture (1998). These methods take into consideration the age, and relative tolerance to root disturbances to select a multiplier whose product provides a tree



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protection distance when multiplied by the trunk diameter in inches. If this area can be preserved without disturbance, protecting this circular area guarantees that the tree will survive barring unrelated catastrophe, pre-existing condition, or disease. This tree protection area is also useful to alert planners that it may be possible that special techniques and care can be provided to insure tree survival when construction must occur within this area.

**Ginkgo #277**

**Description:** This tree was specifically mentioned in the Morris Arboretum report. It is a very healthy and beautiful tree that has the potential to be the feature landscape tree of the planned community and would give an elegant established appearance to the development.

Two large branches originate just above the ground level giving it a distinctive asymmetrical, but becoming character. The main trunk divides at about 10 feet above the ground into four leaders. Two of these four leaders subdivide again at about 30 feet above the ground.

**Size:**

- 16 feet 6 inches in circumference (63 inches in diameter) measured 5 feet above the ground.
  - An upright sprout originating at the ground level measures 26 inches in circumference (8 inches in diameter).
  - A very large branch originates one foot above the soil level and measures 8 feet 3 inches (31.5 inches in diameter) measured 4.5 feet from its origin on the main trunk. Note that I estimate there is 14 feet of clearance 12 feet from the tree trunk.
  - Another large branch originates 18 inches above the soil on the same side as the very large branch. It measures 45 inches in circumference (14 inches in diameter) at 4.5 feet from its origin on the main trunk. Note that I estimate there is 18 feet of clearance from existing grade 23 feet from the tree trunk.
- I estimate that the height of the tree is 95 feet tall.
- The branch spread is about 82 feet in diameter.
- I estimate that the number of size points to be 314. Although not this tree is not the largest in Pennsylvania. Two nearby Ginkgo trees are currently listed as notable in Philadelphia. There are currently no Ginkgo Trees listed for Montgomery County. The Philadelphia University tree has 357 points and the tree at the Philadelphia Zoo has 288 points. There is no doubt that the Kerlin Farm tree is notable and would be a landmark tree if preserved.

**Biological Health:** The foliage is normal size and dark green. Its new shoot growth is normal or above average for a tree of its age. Ginkgo trees have few pests or diseases and I witness none. There were only a few dead branches that I judge to be normal as they are mostly found in the lower portion of the crown where they have been shaded by it upper branches and by competing nearby trees.

I have reason to believe that this Ginkgo Tree is a male. I did not observe any fruit on the tree at the time of my site visit nor did I witness any on the ground from last season.

**Structural Fitness:** I did not observe any bark defects, decay pockets, or cavities from my ground level inspection. The junctures of the four leaders at about 10 feet above the

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ground are acute with embedded bark. At about 30 feet, two of the four leaders also acutely bifurcate with embedded bark. I recommend that a supplementary support system be installed using flexible wire cables and permanent metal anchor hardware to strengthen these forks. Acute forks have been demonstrated to be weak and are often the point of structural failure during storms. Approximately 6 cables will be required. Installation should strictly follow the ANSI A300 Standards.

**Tree Protection Recommendations:** Using the *Trees and Development* methods, I recommend that a circular area be protected that uses the center of the trunk as its center and 49 feet as its radius.

**Summary of Recommendations:**

1. This tree should be preserved as a feature landscape tree.
2. Deadwood pruning is required for safety and aesthetic considerations. Remove the 8 inch diameter upright sprout that originates near the ground level.
3. A supplemental cable support system should be designed and installed to reduce risks of fork failure.
4. I recommend that a sturdy fence be installed approximately 49 feet from the trunk before any demolition or other physical work is begun. Shrubs, vines, and other tree should be cleared from this area by hand.
5. Uniformly spread 2.5 to 3 inches of organic mulch over the tree protection zone to reduce weed competition and to replenish organic matter.

<b>Fern Leaf European Beech #116</b>
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**Description:** This tree was not called out as significant in the Morris Arboretum report. Although Fern Leaf European Beech trees are uncommon, they are not rare. With some diligence, they can be found offered for sale from nurseries in our area and are commonly found growing at Arboreta in our area. This tree is large but has been seriously compromised by severe pruning from the electric utility company. The severe pruning has caused the form to be misshapen with its interesting foliage mostly out of reach. The severe pruning has also opened large pruning wounds along the trunk. There are now several cavity openings that are visible along the lower tree trunk and many other suspect ones further up. Older European Beech trees in our area increasingly are susceptible to a serious fatal bark disease, especially ones that have endured stresses such as this tree. Given this tree's poor form and its questionable health, I am not recommending that this tree be retained.

**Size:**

- 12 feet in circumference (46 inches in diameter) at 3 feet above the ground.
- Estimated to be 60 feet tall
- Measured branch spread is 59 feet.

**Biological Health:** The crown appears thin and annual shoot extension is very short indicating generally poor health and vigor.

**Structural Fitness:** There are two 10 inch diameter cavities on the first 7 feet of the trunk. These do not appear to be extensive, but there are many other pruning wounds and suspect defects further up the trunk. Some relatively small pieces of deadwood appear in the lower parts of the crown. In general, I did not see many warning signs of serious structural defects that would make it currently a safety concern.

**Tree Protection Recommendations:** European Beech trees are very sensitive to any kind of root disturbance that might accompany construction. Using the *Trees and Development* methods, if this tree were desired to be retained, I recommend that a circular area be protected that uses the center of the trunk as its center and 69 feet as its radius.

**Summary of Recommendations:**

1. I do NOT recommend that this tree be retained or preserved as its health is questionable and its beauty has been compromised by the severe utility pruning.

**Red Oak (indicated as a Sugar Maple) #105**

**Discussion:** This tree was not specifically called out in the Morris Arboretum report. Although there are Sugar Maple trees located on site, most Sugar Maples I found are small and appear to have been self seeded. At the location where the Sugar Maple is indicated on the existing conditions plan, I found a very large Red Oak tree (40 inch diameter). Red Oaks are a common forest species on our area. Although it is a large old red oak tree, it is not a candidate for largest in Montgomery County.

**Size:**

- 10 feet 6 inches (40 inches in diameter) at 4.5 feet above the ground

**Tree Protection Recommendations:** Using the *Trees and Development* methods, if this tree were desired to be retained, I recommend that a circular area be protected that uses the center of the trunk as its center and 40 feet as its radius.

**Summary of Recommendations:**

1. Consider retaining this tree
2. Remove climbing vines on the trunk
3. Deadwood pruning is required for safety and aesthetic considerations.
4. I recommend that a sturdy fence be installed approximately 40 feet from the trunk before any demolition or other physical work is begun. Using hand methods, shrubs, vines, and other tree should be cleared from this area.
5. Uniformly spread 2.5 to 3 inches of organic mulch over the tree protection zone to reduce weed competition and to replenish organic matter.

### **Swamp White Oak #117**

**Discussion:** This tree was not specifically called out on the Morris Arboretum report. It is a very nice large tree in proximity to the Red Oak #105 and the Fern Leaf Beech #116. It appears in relatively good health and is structurally sound. I recommend that it be considered for preservation.

**Size:**

- 10 feet 5 inches in circumference (40 inches in diameter) measured at 4.5 feet above the soil
- Estimated to be 65 feet tall
- 65 feet diameter of branch spread

**Biological Health:** Good leaf color and size. Crown density is normal for its species and age.

**Structural Fitness:** I did not see any cavity openings or other signs of defects. There are several large pieces of deadwood. I judge that the deadwood is normal and expected and that they probably died from being shaded by the upper canopy and nearby competing trees.

**Tree Protection Recommendations:** Using the *Trees and Development* methods, if this tree were desired to be retained, I recommend that a circular area be protected that uses the center of the trunk as its center and 40 feet as its radius.

**Summary of Recommendations:**

1. Consider retaining this tree
2. Remove climbing vines
3. Deadwood pruning is required for safety and aesthetic considerations.
4. I recommend that a sturdy fence be installed approximately 40 feet from the trunk before any demolition or other physical work is begun. By hand, shrubs, vines, and other tree should be cleared from this area.
5. Uniformly spread 2.5 to 3 inches of organic mulch over the tree protection zone to reduce weed competition and to replenish organic matter.

### **Bur Oak #27**

**Description:** This tree was identified in the Morris Arboretum report. Although not a Pennsylvania or County champion Bur Oak, it is a very large and imposing tree. Unfortunately, there are some health questions regarding a number of large branches that have died all on one side of the canopy.

**Size:**

- 13 feet 9 inches in circumference (52 inch diameter) measured at 4.5 feet above the ground
- Estimated 100 feet tall

- 96 feet diameter of branch spread

**Biological Health:** Almost one quarter of this tree's crown has died on one side. Although the remaining crown appears healthy at this time, the amount and pattern of the dead branches is troubling. Generally, when large branches die on one side of the crown it is caused by the loss of a root or damage to roots often on the same side of the tree as where the branches die. I was unable to discover any probable cause at the time I made my inspection. In general, the amount and this pattern of limb death indicate some serious underlying causes.

**Structural Fitness:** I did not see any cavity openings or other signs of internal structural defects at the time of my site visit that might indicate a major structural problem. However, the large pieces of deadwood now impose a safety threat and should be removed in the first phase of the project.

Although the removal of the dead limbs will remedy any immediate safety hazard, the size of the dead limbs can be expected to have long range structural implications. Many of the dead limbs bifurcate or branch, but the final cut on the main trunk will involve three large cuts of 12, 13, and 14 inches in diameter. From my experience and observation, when branches of this size are removed there is generally an associated bark die-back on the trunk below the branch attachment. Without close inspection, the bark die-back often goes undetected for many years until the bark cracks and falls away. This bark die-back is caused by starvation of the bark tissue when the sugar manufacturing sites (leaves where photosynthesis takes place) on these large branches is suddenly lost. Without a supply of sugar, the tissue eventually dies. This can be expected to be the first domino in a chain reaction that results in serious structural defects.

Bark is a very effective barrier that prevents disease and decay from entering the tree trunk. Once the bark is disrupted from any cause, the tree trunk becomes vulnerable. Large wounds are prime sites for the start of decay that structurally weakens the tree. Although this may take many years, the tree's structural strength will degrade until it becomes hazardous and the risk too great, especially where nearby there is people and valuable property.

**Tree Protection Recommendations:** Using the *Trees and Development* methods, if this tree is desired to be retained, I recommend that a circular area be protected that uses the center of the trunk as its center and 65 feet as its radius.

**Summary of Recommendations:**

1. I do not recommend the retention of this tree because of the high probability that it will continue to decline both biologically and structurally. In my opinion, it would be better to provide more space to other large trees on the site and to look at other opportunities to retain trees especially in the setback buffer area.
2. Deadwood pruning is required immediately for safety and aesthetic considerations unless it is removed immediately.

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3. If it is to be retained, I recommend that a sturdy fence be installed approximately 65 feet from the trunk before any demolition or other physical work is begun. By hand, shrubs, vines, and other tree should be cleared from this area.
4. Uniformly spread 2.5 to 3 inches of organic mulch over the tree protection zone to reduce weed competition and to replenish organic matter.

**Sweetgum #42**

**Description:** This tree was recognized in the Morris Arboretum report and was nominated and recognized on Pennsylvania's Big Tree List in 2004. Undoubtedly, the tree has grown since it was nominated. My measurement of its circumference was 176 inches and the nomination measurement was 173. This tree should be preserved if at all possible.

**Size:**

- 14 feet 8 inches in circumference (56 inch diameter) measured at 4.5 feet above the ground
- Estimated 100 feet tall
- 98 feet diameter of branch spread

**Biological Health:** The leaves were normal color and size. The crown density appeared normal. There was very little deadwood and the deadwood observed was in the lower shaded portion of the tree.

**Structural Fitness:** I observed a cavity opening/bark defect about 35 feet above the ground. From the ground, it appeared to be of minor significance.

**Tree Protection Recommendations:** Using the *Trees and Development* methods, if this tree is desired to be retained, I recommend that a circular area be protected that uses the center of the trunk as its center and 60 feet as its radius.

**Summary of Recommendations:**

1. This tree should be preserved as a feature landscape tree.
2. Deadwood pruning is recommended for safety and aesthetic considerations.
3. I recommend that a sturdy fence be installed approximately 60 feet from the trunk before any demolition or other physical work is begun.
4. By hand, remove competing young trees, shrubs, and vines..
5. Uniformly spread 2.5 to 3 inches of organic mulch over the tree protection zone to reduce weed competition and to replenish organic matter.

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**Overall Recommendations**

1. Retain the Ginkgo and Sweetgum
2. Reconsider attempts to save the large Bur Oak
3. Consider retaining the Red Oak, and smaller Swamp White Oak.
4. Do not retain the Fern Leaf Beech
5. Look at opportunities to retain other mature trees in or near the buffer zone
6. Redistribute housing unit locations to meet the tree protection zone setbacks distances. With fewer trees, saving the remaining healthy feature trees will be easier and the result more successful.
7. Consult a qualified Arborist for techniques to minimize tree impacts if construction must be done within the tree protection zones specified in this report.

**Certification:**

I certify that I am an ISA Certified Arborist (PD-006) and an ASCA Registered Consulting Arborist. The opinions expressed in this report are my own in accordance with current arboriculture industry knowledge and standards.

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Andrew William Graham, Jr.  
ASCA Registered Consultant Arborist

Date: