

**REPORT ON
PROPERTY CONDITION ASSESSMENT AND
CAPITAL NEEDS PLAN
WOLF TRAP WOODS HOME ASSOCIATION
VIENNA, VIRGINIA**

by

**Pons & Associates, LLC
Herndon, Virginia**

for

**Wolf Trap Woods Home Association
Vienna, Virginia**

**Project No. 16076-001
13 April 2017**



13 April 2017
File No. 16076-001

Wolf Trap Woods Home Association
Vienna, VA 22182

Attention: Mr. Tom Manteuffel
President

Subject: Report on Property Condition Assessment and Capital Needs Plan
Wolf Trap Woods Home Association
Vienna, VA 22182

Ladies and Gentlemen:

This report presents the results of a Property Condition Assessment (PCA) conducted at the above referenced property. This work was performed by Pons & Associates, LLC in accordance with our proposal to Wolf Trap Woods Home Association dated 28 February 2017 ("Agreement") as authorized on 9 March 2017. As indicated in our proposal, this PCA was conducted using practices consistent with the ASTM E 2018-15 Standard Guide for Property Condition Assessment: Baseline Condition Assessment Process.

The subject facilities are in generally fair condition for facilities their age. Our findings and conclusions regarding the condition of the property systems are summarized in the Executive Summary. This Executive Summary is intended to be only for convenience; we recommend that this report be read in its entirety.

The goal of this PCA is to assess the general physical condition of the property, and to recommend repair/maintenance items we consider significant for the property to continue in its current operation and/or to be restored to a condition consistent with comparable projects of similar age.

Sincerely yours,
PONS & ASSOCIATES, LLC



Charles Mends-Cole
Senior Engineer



Fernando Pons, P.E., LEED AP
Principal



Enclosures

EXECUTIVE SUMMARY

Wolf Trap Woods Home Association (WTWHA) includes 225 single-family homes, including a trail system and site amenities. Site amenities and physical assets are located generally along trails and the subject site, and along Old Courthouse Spring Branch. The Site is understood to have been built in the late 1970s. The assets consist of selected facilities of Wolf Trap Woods and Wolf Den subdivisions in Vienna, Virginia (the Site or Property). The Property assessed, consists of the following facilities:

- Pedestrian Trail – Approximately 7,600 feet (1.44 miles) of mostly gravel-covered trails, located predominantly along Old Courthouse Spring Branch.
- Benches – A total of eight benches are located along the trail system and at the all-purpose court. Two benches are located at the tennis courts.
- Wood Bridges – A total of four pedestrian wood bridges cross Old Courthouse Spring Branch. Three of the bridges feature steel girder supports.
- All-Purpose Court – An asphalt-paved all-purpose court (lined and equipped for basketball) is accessed via a trail from Trapline Court.
- Landscape Steps (4) – Concrete steps are located on a trail between Cricklewood Court and Trap Road. A set of wood steps is located proximate to a bridge between Wolf Den and Wood Trap Woods subdivisions. Steps consisting of wood sleepers access the tennis courts proximate to Laurel Hill Road, and Glenridge Court.
- Tennis Courts – Two tennis courts on painted concrete pavement are located proximate to Laurel Hill Road. An asphalt-paved parking area (which includes a single basketball board) is located north of the courts and accessed from Laurel Hill Road.
- Signage – Two lighted masonry monument signs are located at the main entrance roads to the subdivisions. One stone masonry monument sign labeled “Wolf Den” is located at the intersection of Wolf Trap Run Road and Route 7. The other monument sign labeled “Wolf Trap Woods” is brick masonry, and is located at the intersection of Laurel Hill Road and Route 7.

For the purposes of this report, the facilities under assessment fall into the category of Civil and Site Systems, Pavements, and Bridges. No other Property systems are applicable to this Project.

GENERAL CONDITIONS

Civil and Site Systems

Landscape and hardscape systems at the Site were observed to be in generally fair condition for their age. Property fencing consists of chain link fencing surrounding the all-purpose and tennis courts. Painted metal pipe railings were observed along the sides of concrete steps located between Cricklewood Court and Trap Road. Recommendations are to replace the fencing and railings over the 30-year term of this study (the Term). Approximately 7,600 feet (1.44 miles) of mostly gravel-covered trails, are located predominantly along Old Courthouse Spring Branch. Concrete and wood steps are at various locations at the site. Recommendations are to replace two of the steps over the Term. Recreational facilities include an asphalt-paved all-purpose court, two tennis courts on painted concrete pavement, and eight resin/metal benches. Recommendations are to replace the recreational facilities over the term. Signage includes two lighted masonry monument signs located at the main entrance roads to the subdivisions, noted to be in good to fair condition. Recommendations are to replace the signage over the Term.

Parking

At the tennis courts, parking is provided by asphalt pavement at grade at the north side of the courts and accessed from Laurel Hill Road. The asphalt pavement was noted in overall fair condition, with longitudinal cracking observed at several locations. We recommend that the asphalt pavement be milled and overlaid during the 30-year study term. The asphalt pavement should also be seal coated and striped during the Term.

Bridges

A total of four wood pedestrian bridges cross Old Courthouse Spring Branch. Three of the bridges feature steel girder supports; and all bridges feature wood beams, stringers, decking, and hand railings. The wood superstructures of the bridges were noted to be in overall fair condition for their age; however, we noted surface corrosion forming on all steel girder supports. We recommend that the wood structures of the bridges be rebuilt, and at the same time to refurbish (scrape, prep, and paint) the steel girders during the Term.

ESTIMATED COSTS

Based on our interviews, our observations on-Site and our experience with similar properties in this area, we have projected **\$0** as Immediate Work, and **\$296,225 (uninflated)** over the 30-year evaluation period we considered for this property.

Table I, Capital Reserve and Replacement Analysis, outlines our preliminary cost estimates for Immediate Work, and Capital Reserve and Replacement Analysis items (items requiring work over the next 30 years).

EXCEPTIONS AND DEVIATIONS

Pons & Associates has completed this assessment in substantial conformance with ASTM E 2018-15. The following additions to the ASTM E 2018-15 Standard were completed during our assessment:

- Formulated a 30-year Capital Reserve and Replacement Analysis, or Future Work, we expect to be required over a 30-year evaluation period.
- Excluded Future Work items that do not exceed \$5,000 per year unless, at the discretion of the field observer, omitting such Future Work item could cause material physical deficiencies to the property.

This executive summary is presented for convenience only, and should not be used in lieu of reading the entire report.

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1. PURPOSE AND SCOPE

1.1 Purpose

This Property Condition Assessment was performed to document the Site systems and to determine their general condition. Our emphasis was on current physical deficiencies and items that are expected to require repair or replacement within the next 30 years. The definition of physical deficiencies excludes deficiencies that may be remedied with routine maintenance, miscellaneous minor repairs, and normal operating maintenance, and excludes *de minimis* conditions that generally present no material physical deficiencies of the property. The work was performed to assist WTWHA in making decisions about maintaining the Property.

1.2 Scope

This work was performed by Pons & Associates, LLC in accordance with our proposal to Wolf Trap Woods Home Association dated 28 February 2017 (“Agreement”) as authorized on 9 March 2017. As indicated in our proposal, this PCA was conducted using practices consistent with the ASTM E 2018-15 Standard Guide for Property Condition Assessment: Baseline Condition Assessment Process. Our services included reviewing available and supplied documents relating to the property, interviewing property owner representatives, performing a visual survey of the facility, and preparing of this report.

Our scope of work did not include evaluation of building components, dams/stormwater structures, nor safety and code compliance building/site issues that may require coordination with public agencies. Accessibility to disabled persons for the facilities was not assessed by Pons & Associates as part of the scope of work.

Our field services were performed on 25 March 2017 by Mr. Charles Mends-Cole, Senior Engineer with Pons & Associates. The scope of work did not include use of other specialty sub-consultants.

1.3 Non-scope Considerations

The ASTM E 2018-15 Standard includes the following list of “additional issues” that are non-scope considerations outside of the ASTM PCA practice: Seismic Considerations, Design Considerations for Natural Disasters (Hurricanes, Tornadoes, High Winds, Floods, Snow, etc.), Insect/Rodent Infestation, Environmental Considerations, ADA Requirements, FFHA Requirements, Indoor Air Quality, and Property Security Systems. Assessment of these items is not included in our PCA proposed scope of work. Similarly, an assessment for the presence of mold is not included. A visual review of accessibility to disabled persons was not performed as part of our PCA.

1.4 Exceptions and Deviations

Pons & Associates has completed this assessment in substantial conformance with ASTM E 2018-15.

The following additions to the ASTM E 2018-15 Standard were completed during our assessment:

- Formulated a 30-year Capital Reserve and Replacement Analysis, or Future Work, we expect to be required over a 30-year evaluation period.
- Excluded Future Work items that do not exceed \$5,000 per year unless, at the discretion of the field observer, omitting such Future Work item could cause material physical deficiencies to the property.

1.5 Limitations

Our work for this project was performed generally consistent with the ASTM E 2018-15 Standard Guide for Property Condition Assessment: Baseline Condition Assessment Process. Several organizations other than ASTM, such as lending institutions have also developed “guidelines” or “standards” for property condition assessments. The Property Condition Assessment presented herein is consistent with the ASTM E 2018-15 Standard, which may vary from the specific “guidelines” or “standards” required by other organizations.

This Report was prepared pursuant to an Agreement dated 9 May 2013 between Wolf Trap Woods Home Association and Pons & Associates. All uses of this Report are subject to the conditions and restrictions contained in the Agreement. The observations and conclusions described in this Report are based solely on the Scope of Services provided pursuant to the Agreement. Pons & Associates has not performed any additional observations, investigations, studies or other testing not specified in the Agreement. Pons & Associates shall not be liable for the existence of any condition the discovery of which would have required the performance of services not authorized under the Agreement.

This Report is prepared for the exclusive use of Wolf Trap Woods Home Association in connection with budgeting for replacement and maintenance activities of certain site assets. Our work was contingent upon having one single authorized point-of-contact at Wolf Trap Woods Home Association, Mr. Tom Manteuffel, related to the Agreement. There are no intended beneficiaries other than Wolf Trap Woods Home Association. Pons & Associates shall owe no duty whatsoever to any other person or entity on account of the Agreement or the Report. Use of this Report by any person or entity other than Wolf Trap Woods Home Association for any purpose whatsoever is expressly forbidden unless such other person or entity obtains written authorization from Wolf Trap Woods Home Association and from Pons & Associates. Use of this Report by such other person or entity without the written authorization of Pons & Associates and Wolf Trap Woods Home Association shall be at such other person’s or entity’s sole risk, and shall be without legal exposure or liability to Pons & Associates.

Use of this Report by any person or entity, including Wolf Trap Woods Home Association, for a purpose other than replacement and maintenance of certain site assets at the Site property is expressly prohibited unless such person or entity obtains written authorization from Pons & Associates indicating that the Report is adequate for such other use. Use of this Report by any person or entity for such other purpose without written authorization by Pons & Associates shall be at such person’s or entity’s sole risk and shall be without legal exposure or liability to Pons & Associates.

The findings and recommendations contained herein are based on observations and information obtained during our Site investigation and our experience on similar projects. The discovery of any additional information concerning the conditions at the Site should be reported to us. Based on our review of this information, we can reassess potential impacts and if necessary, modify our recommendations.

1.6 Condition Evaluation Definitions

Definitions of the terms used in this report to describe average or overall conditions are presented below:

Good: Average to above-average condition for the site system or materials assessed, with consideration of its age, design, and geographical location. Generally, other than normal maintenance, no remedial work is recommended or required.

Fair: Average condition for the site system evaluated. System is aging and some work is required or recommended, primarily due to normal aging and wear of the building system, to return the system to a good condition.

Poor: Below average condition for the site system evaluated. Significant work (prompt repair, replacement, or significant maintenance) should be anticipated to restore the site system or material to an acceptable condition.

Where it seemed more appropriate, Pons & Associates assigned combination assessments such as “fair to good” in evaluating various construction components.

1.7 Opinions of Costs

The conclusions, recommendations and opinions of cost presented in this report are based on our field observations and our experience on similar projects. No materials testing of site components was performed and no structural capacity calculations were performed to determine the adequacy of the facility's original design. It was not the intent of this assessment to perform an exhaustive study to locate every possible or existing defect. Observations were made by trained professionals but it is possible that there may be defects at the facility, which were not readily accessible, not visible or otherwise inadvertently overlooked. Other problems not evident when this survey was conducted may develop with time.

The opinions of costs listed are estimated dollar values based on the current costs of similar repairs and allow for three percent inflation. The actual costs may vary depending on the quality of contractors used, the quality of materials used, the extent of work performed at one time, the season of the year the work is performed, if the items are purchased individually or under master purchase contracts, if union or non-union contractors are used and other items. If any cost items listed are considered critical in making decisions about this facility, we recommend that contractor or supplier quotations be obtained for those items before making final decisions about this property.

2. DOCUMENT REVIEW AND INTERVIEWS

2.1 Document Review

The scope of services includes review of construction and maintenance documents if made available to Pons & Associates at our office or at the subject property. During the present assessment, Pons & Associates reviewed limited documents including available construction/design drawings, and maintenance and inspection records.

Pertinent discussions, if appropriate, of documents reviewed by the field assessment team are included in Section 3, Descriptions and Conditions, of this report. A partial list of documents reviewed is included under the Reference section at the end of this Report.

2.2 Interviews

On 25 March 2017, Charles Mends-Cole interviewed Mr. Tom Manteuffel, President, and Mr. Bill Doole, Chair of Wolf Den Maintenance Committee; both with Wolf Trap Woods Home Association. Mrs. Manteuffel and Doole have been familiar with the facility for approximately twenty-five years, and escorted Mr. Mends-Cole during the site visit.

3. DESCRIPTIONS AND CONDITIONS

The following sections present a summary of the building and Site systems observed, our opinion of the general condition of each of the systems and our recommendations for Immediate Work (or Immediate Repair Needs), and Future Work we expect to be required over the 30 year evaluation period (the Term) considered for this assessment (or Capital Reserve and Replacement Analysis). Work that we consider as normal maintenance such as landscaping or routine maintenance is not included in our evaluation. Future Work items that do not exceed \$5,000 per year are not considered in our evaluation unless, at the discretion of the field observer, omitting such Future Work item could cause material physical deficiencies to the property. Recommending and identifying major upgrades is not part of this assessment.

Immediate Work generally includes items considered significant building or fire code violations; life safety concerns; “one time” repairs and deferred maintenance items that, in our opinion, may cause deterioration of the existing site systems by being delayed, and repairs that in our opinion, should already have been made. All other recommended maintenance or repair items would be considered Future Work.

3.1 Site

3.1.1 Civil and Site Development

The Property is a trail system and site amenities owned and maintained by the Wolf Trap Woods Home Association (WTWHA). Site amenities and physical assets are located generally along trails and the subject site, and along Old Courthouse Spring Branch. The Site is understood to have been built in the late 1970s. The assets consist of selected facilities of Wolf Trap Woods and Wolf Den subdivisions in Vienna, Virginia (the Site or Property).

Site development features include:

Topography: Topographically, the subject Site generally slopes down north to south and east to west. No abnormal features such as ground fractures, settlement areas, or areas of ponding water were identified or reported during our site visit.

Drainage: The site is located in the Difficult Run watershed; and the physical assets are located generally along trails and along Old Courthouse Spring Branch. A Resource Protection Area (RPA) is located on both sides of Old Courthouse Spring Branch, throughout the site. “Wolf Pond”, a stormwater retention pond is located between Wolf Trap Woods and Wolf Den subdivisions; this pond reportedly was originally designed for recreation, and later deemed a hazard and was never used for recreation. The site contacts reported that periodically, the creek banks have eroded and impinged on the trails. Previous remedial work has included the addition of rip-rap at affected areas. The rip-rap is approximately 20 years old at various locations. Pons & Associates recommends funds be provided for remedial work to creek banks every 10 years beginning in Year 5.

Minor erosion was noted along several locations of the trails; reportedly due to surface runoff from banks and residents’ storm drainage. The site contacts reported that previous remedial installation of pipes under trails have been ineffective due to clogging. Pons Associates noted a location for potentially standing water on the trail that would require correction. Overall, property site drainage appears fair and the drainage infrastructure components were reported to be in fair condition. In general, storm water collection system components can be expected to provide 50 or more years

of useful life. Pons Associates recommends the installation of storm drainage culverts under trails at strategic locations to alleviate muddy areas at low points. Pons Associates has included an allowance for this work in Year 4.

Landscaping:

The site is generally a wooded area. Landscaping features are located at the tennis court area and main Property signage, and consists primarily of ground cover, grass turf, shrubs, hedges, and trees. The landscaping components were noted in good condition with no significant deficiencies, and are maintained by a contracted service.

Fencing / railings:

Painted chain link fencing approximately 10 and 12 feet high were observed surrounding the all-purpose court, and tennis courts respectively. The fencing at the all-purpose court was noted in fair condition; with bowing of the fabric and isolated damage to fence posts noted at isolated locations. The fencing at the tennis courts ranged from good to aged. Fencing at portions of the northern and western perimeters of the tennis court were noted aged and corroding. It was reported that approximately five years ago, the tennis courts were reconfigured from three to two courts; and additional chain link fencing was installed. At the all-purpose court, the site contacts reported that the fence was repaired and painted in mid-2011. In general, metal fencing can be expected to provide approximately 40 years of useful life. Pons Associates recommends that the fencing at the all-purpose court and at the north and west sides of the tennis courts be replaced in Year 12 of the Term. The remaining chain link fencing at the tennis courts should be replaced in Year 20 of the Term. Repairs and painting to the fencing are considered to be minor maintenance.

Painted metal pipe railings were observed along the sides of concrete steps located between Cricklewood Court and Trap Road. The railings were noted in overall fair condition; with corrosion noted at railing joints and bases. The site contacts reported that repairs to rusted and unsafe railings were performed in October 2012. In general, metal railings can be expected to provide approximately 40 to 50 years of useful life. Pons & Associates recommends the step railings be replaced in Year 12 of the Term. Repairs and painting to the railings are considered to be minor maintenance. A wood and concrete crib retaining wall approximately four feet in height was noted proximate to a section of the southwestern boundary of the property. The retaining wall appeared to be in fair condition with no deficiencies noted. The walls and railings can be expected to last through the Term with repairs and painting considered to be minor maintenance.

Lighting:

Exterior lighting consists of grade-mounted high intensity discharge (HID) lighting fixtures illuminating the fronts of the monument signs to each subdivision. The light fixtures were noted in good to fair condition. In general, signage light fixtures can be expected to provide approximately 25 years of useful life. Due to the small number of HID light fixtures (four), with periodic repairs and replacements as part of maintenance, they can be expected to last through the term.

Trails / Sidewalks:

Approximately 7,600 feet (1.44 miles) of mostly gravel-covered trails, are located predominantly along Old Courthouse Spring Branch. The site contacts reported that approximately 90 percent of the trails are gravel-covered. The trails were observed to be overall well maintained; however, a portion of the trail at the east end of the bridge towards Old Ash Grove (Bridge #3 on Figure 1), was noted eroded with gullies and in poor condition. The site contacts reported that new gravel has been placed over the trails at various locations over the past two years. Pons & Associates recommends the continued preventive maintenance of the trails during the Term.

Concrete steps are located on a trail between Cricklewood Court and Trap Road. The steps were noted in fair condition for their age; with cracks and surface deteriorations noted at isolated locations. Several wood bridges feature concrete approaches, observed in overall fair condition for their age. In general, concrete pedestrian walkways can be expected to provide approximately 30 years of useful life. Pons & Associates recommends all concrete flatwork be replaced in Year 8 of the term.

A set of wood steps is located proximate to a bridge (Bridge #1 on Figure 1) between Wolf Den and Wood Trap Woods subdivisions. The steps were noted to be aged and deteriorating at several locations. The site contacts reported the steps are approximately 15 years old. Pons & Associates recommends that the wood steps be replaced in Year 3 of the term. Steps consisting of wood sleepers and asphalt landings access the tennis courts proximate to Laurel Hill Road. The sleepers and asphalt were noted aged. Pons & Associates recommends the access steps to the tennis courts be replaced in Year 4 of the Term. Steps consisting of wood sleepers and gravel-surfaced landings were noted at the end of the trail to Glenridge Court. The wood sleepers were noted in fair condition, and can be expected to last through the Term with individual replacements on an as-needed basis as a part of maintenance.

Recreational:

An asphalt-paved all-purpose court (lined and equipped for basketball) is accessed via a trail from Trapline Court. The asphalt surface was noted in fair condition; although heaving of the asphalt was noted at isolated edge locations. A significant amount of moss vegetation was noted on the surface at the south end of the court. Significant erosion at the asphalt edge and post bases was observed at the east side of the court. Pons & Associates recommends the court edge erosion be remediated within the next year as a part of the maintenance budget. The court striping and basketball equipment was noted in fair condition. The site contacts reported that the court surface was repaved in August 2011 (six years old). In general, basketball courts can be expected to provide approximately 15 years of useful life. Pons & Associates recommends the all-purpose court be resurfaced in Year 10 of the term.

Two tennis courts (including a narrow recreation open court) on painted concrete pavement are located proximate to Laurel Hill Road. The concrete deck was observed to be in fair condition, with isolated cracks noted. The site contacts reported that approximately five years ago, the tennis courts were reconfigured from three to two courts; with painting and striping performed. The tennis net equipment was observed in good to fair condition. In general, tennis courts can be expected to provide

approximately 15 years of useful life. Pons & Associates recommends the tennis courts be resurfaced in Year 10 of the term. Striping and replacement of equipment are considered a part of maintenance.

A total of eight resin/metal benches are located along the trail system and at the all-purpose court; reported to have been installed in November 1998 (17 years old). These benches were noted in fair condition for their age. Two benches are located at the tennis courts, approximately five years old, and were noted to be in good to fair condition. In general, site furniture can be expected to provide approximately 20 years of useful life. Pons & Associates recommends the benches be replaced in Year 5 of the Term.

Signage:

Two lighted masonry monument signs are located at the main entrance roads to the subdivisions. One stone masonry monument sign labeled “Wolf Den” is located at the intersection of Wolf Trap Run Road and Route 7. The other monument sign labeled “Wolf Trap Woods” is brick masonry, and is located at the intersection of Laurel Hill Road and Route 7. The signage was noted in good to fair condition for its age. The site contacts reported that the signage was built in 1978 (39 years old), and repointed in 2016. In general, stone and brick masonry walls can be expected to provide approximately 40 years of useful life, with filling of cracks and repointing performed every 15 years. Based on observed condition and EUL, Pons & Associates recommends the monument signs be replaced in Year 10 of the Term.

Flood Zone:

According to the Flood Insurance Rate Map (FIRM) for Fairfax County, Virginia, Unincorporated Areas, community panel number 5155250135E, dated September 17, 2010: The site is located in Zone X (an area determined to be outside the 0.2% annual chance floodplain), and Zone A (a special flood hazard area subject to inundation by the 1% annual chance flood event).

Seismic Zone:

According to Figure No. 16-2, the “Seismic Zone Map of the United States”, in the 1997 Uniform Building Code, the Property is located within Zone 1, defined as an area of low probability of damaging ground motion.

Projected work relating to civil/site development includes:

Item No.	Description	Opinion of Cost
IMMEDIATE WORK		
N/A	None projected	N/A
FUTURE WORK		
1	Provide allowance for remedial work to creek banks in Year 5, 15, and 25	\$22,500
2	Provide allowance for installation of storm drainage culverts under trails in Year 4	\$8,000
3	Replace chain link fencing at the all-purpose court in Year 12	\$8,400
4	Replace chain link fencing on two sides of the tennis courts in Year 12	\$7,800
5	Replace the remaining chain link fencing on other sides of the tennis courts in Year 20	\$14,550
6	Replace the step railings along the sides of concrete steps located between Cricklewood Court and Trap Road in Year 12	\$7,000
7	Replace all concrete flatwork, concrete steps and bridge approaches in Year 8	\$11,050
8	Replace wood steps in Year 3	\$5,000
9	Replace access steps to the tennis courts in Year 4	\$7,000
10	Resurface all-purpose court in Year 10	\$13,600
11	Resurface tennis courts in Year 10	\$50,400
12	Replace benches in Year 5	\$6,800
13	Replace monument signs in Year 10	\$20,000

3.1.2 Pavements/Parking

At the tennis courts, parking is provided by asphalt pavement at grade at the north side of the courts and accessed from Laurel Hill Road. The asphalt pavement was noted in overall fair condition, with longitudinal cracking observed at several locations. Seal coating and striping is not present. The parking area is bordered by asphalt curbing, which appeared to be in fair condition. Pons & Associates was not provided information as to when the asphalt was last resurfaced, seal coated, and restriped. In general, asphalt pavement can be expected to provide approximately 25 years of useful life and seal coating and restriping of the pavement should be conducted every five years. Based on the observed condition, and EUL of the asphalt pavement, we recommend that the asphalt pavement be milled and overlaid in Year 10 of the Term. The asphalt pavement should also be seal coated and striped during the Term.

Projected work relating to pavements includes:

Item No.	Description	Opinion of Cost
IMMEDIATE WORK		
N/A	None projected	N/A
FUTURE WORK		
14	Mill/overlay asphalt pavement in Year 10	\$3,300
15	Seal/re-stripe asphalt pavement in Years 1, 5, 10, 15, 20, 25, 30	\$5,775

3.2 Substructure and Superstructure

3.2.1 Bridges

A total of four wood pedestrian bridges cross Old Courthouse Spring Branch. These bridges are located as shown on Figure 1, Site Location Plan. Three of the bridges feature steel girder supports; and all bridges feature wood beams, stringers, decking, and hand railings. We estimate that the bridges have a deck width of five to six feet, and spanning between 20 and 26 feet. The site contacts reported that the bridges were rebuilt in late 1998 (18 years old); and in September 2013, repairs to the girder footings and concrete approach aprons were made, and additional rip-rap installed proximate to the supports. The wood superstructures of the bridges were noted to be in overall fair condition for their age; however, we noted surface corrosion forming on all steel girder supports. In general, wood bridge decks can be expected to provide approximately 20 years of useful life with adequate maintenance. As the age of the Property is about 40 years, and the bridges were rebuilt 18 years ago, we surmise that the bridges are in the latter stages of their useful life. Based on age, observed condition and EUL, Pons & Associates recommends that the wood structures of the bridges be rebuilt in Years 6 and 30 of the term; and at the same time to refurbish (scrape, prep, and paint) the steel girders.

Projected work relating to foundations includes:

Item No.	Description	Opinion of Cost
IMMEDIATE WORK		
N/A	None projected	N/A
FUTURE WORK		
16	Rebuild pedestrian bridges in Years 6 and 30	\$50,600

4. RECOMMENDATIONS AND PRELIMINARY COST ESTIMATES

4.1 Opinions of Cost

The conclusions, recommendations and opinions of cost presented in this report are based on our field observations and our experience on similar projects. No materials testing of building components was performed and no structural or capacity calculations were performed to determine the adequacy of the facility's original design. It was not the intent of this assessment to perform an exhaustive study to locate every possible or existing defect. Observations were made by trained professionals but it is possible that there may be defects at the facility, which were not readily accessible, not visible or otherwise inadvertently overlooked. Other problems may develop with time, which were not evident at the time of this survey.

The opinions of costs listed are estimated dollar values based on the current costs of similar repairs and allow for three percent inflation. The actual costs may vary depending on the quality of contractors used, the quality of materials used, the extent of work performed at one time, the season of the year the work is performed, if the items are purchased individually or under master purchase contracts, if union or non-union contractors are used and other items. If any cost items listed are considered critical in making decisions about this facility, we recommend that contractor or supplied quotations be obtained for those items before making final decision about this property.

4.2 Immediate Work

Immediate Work generally includes items considered significant building or fire code violations; life safety concerns; “one time” repairs and deferred maintenance items that, in our opinion, may cause deterioration of the existing site systems by being delayed, and repairs that in our opinion, should already have been made. All other recommended maintenance or repair items would be considered Future Work.

Based on our interviews, our observations on-Site and our experience with similar properties in this area, we have projected \$0 in recommended Immediate Work.

Table I, Capital Reserve and Replacement Analysis, outlines our preliminary cost estimates for Immediate Work over the 30-year evaluation period.

4.3 Future Work

Future Work items include work we expect to be required over the 30-year evaluation period considered for this assessment (or Capital Reserve and Replacement Analysis). Future Work includes replacement and/or repair of Site and building components that typically are not conducted as part of routine maintenance, but may be necessary to maintain the overall condition of the property. Future Work may include components or systems that have an indeterminable life, but nonetheless have a potential liability for failure within the estimated evaluation period.

Work that we consider as normal maintenance such as landscaping or routine maintenance is not included in our evaluation. Future Work items that do not exceed \$5,000 per year are not considered in our evaluation unless, at the discretion of the field observer, omitting such Future Work item could cause material physical deficiencies to the property. Recommending and identifying major upgrades is not part of this assessment.

Based on our interviews, our observations on-Site and our experience with similar properties in this area, we have projected **\$296,225 (uninflated)** over the 30-year evaluation period we considered for this property.

Table I outlines our preliminary cost estimates for this Future Work over the 30-year evaluation period.

CREDENTIALS

This report was prepared and assembled by Charles Mends-Cole, and reviewed by Fernando Pons, P.E., all of Pons & Associates. Qualification information for the project personnel is provided below.

- **Charles K. Mends-Cole – Lead Assessor**

In the last 13 years Charles has gained particular expertise in engineering, assessment, construction, and maintenance of physical assets and site systems associated with recreational and park facilities (as a Fairfax County Park Authority project manager), including trail systems, storm water systems, sports facilities, and building assets. He possesses extensive experience in the design, planning, coordination, direction and execution of large, diversified, and logistically difficult engineering projects (over 30 years of experience). For the past 17 years, Mr. Mends-Cole has performed various engineering and due diligence engagements including property condition, physical needs assessments of commercial and residential properties, and capital needs studies. He has performed examination and analysis of existing properties for site, structural, enclosure, mechanical, electrical, and ADA systems' deficiencies. He has successfully performed site assessments and produced more than 150 Property Condition Assessment reports for properties located in over 20 US States. Other recent engagements have included water intrusion studies into buildings; structural distress evaluations; and post hurricane damage evaluations in Maryland, Pennsylvania, Delaware, and Florida. He holds B.S. and M.S. in civil engineering from Michigan Institute of Technology. Mr. Coles was previously employed by Law Engineering, ATC Associates, and Haley & Aldrich.

- **Fernando Pons, P.E., LEED AP – Office-in-Charge**

Since 1991 Mr. Pons has managed and conducted hundreds of facilities, environmental, and engineered construction engagements. His experience includes due diligence projects for commercial and residential properties and performing baseline property condition assessments (PCAs), repair/rehabilitation design services, and formulating capital reserve and replacement analysis assessments. His experience with facility studies includes performing and managing in-depth building and site distress/failure studies, water intrusion investigations, soil-related distress studies, structural condition assessments, façade investigations, roofing studies, and comprehensive repair design services for pavement and civil systems (including development of contract documents, construction management services, and construction quality assurance monitoring and testing). Mr. Pons has managed several multi-site and multi-state due-diligence portfolio projects throughout his career for building assets ranging from warehouses to mid- to high-rise buildings, and all associated landscape and hardscape systems. He holds a B.S. and M.S. in civil engineering with structural and geotechnical concentrations, from Fla. Int'l University and Georgia Institute of Technology, respectively; and an MBA from George Mason University. Mr. Pons is registered as a Professional Engineer in VA, MD, PA, and DC, and is a LEED Accredited Professional. Mr. Pons was previously employed by Law Engineering/MACTEC as Principal, by ATC Associates as Director of Facility Engineering Services – North Region, and by Haley & Aldrich as Vice President.

REFERENCES (NOT ALL INCLUSIVE)

DESIGN/CONSTRUCTION DOCUMENTS

1. Wolf Trap Woods and Wolf Den – History of Selected Facilities 1996-date, prepared by Wolf Trap Woods Homes Association, dated 25 March 2017.
2. Fairfax County Tax Map 28-2, revised to 15 March 2017. Location of trails and certain facilities are marked-up on the map received.

INTERVIEWS AND SITE VISIT

3. Mr. Tom Manteuffel, President, and Mr. Bill Doole, Chair of Wolf Den Maintenance Committee; both with Wolf Trap Woods Home Association, interviews with Charles Mends-Cole, 25 March 2017.

TABLE I

Capital Reserve & Replacement Analysis
Property Condition Assessment
Wolf Trap Woods Home Association, Vienna, VA
12 April 2017

Capital Replacement Reserve Analysis

Item No.	Property Component	Immediate Work															
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
	CIVIL/SITE																
1	Provide allowance for remedial work to creek banks (3ea. @\$7,500)						\$7,500										\$7,500
2	Provide allowance for installation of storm drainage culverts under trails (4ea. @\$2,000)					\$8,000											
3	Replace chain link fencing at the all-purpose court (280LF @\$30)													\$8,400			
4	Replace chain link fencing on two sides of the tennis courts (260LF @\$30)													\$7,800			
5	Replace the remaining chain link fencing on other sides of the tennis courts (485LF @\$30)																
6	Replace the step railings along the sides of concrete steps between Cricklewood Court and Trap Road (140LF @\$50)													\$7,000			
7	Replace all concrete flatwork, concrete steps and bridge approaches (1,700SF @\$6.50)									\$11,050							
8	Replace wood steps (LS@\$5,000)				\$5,000												
9	Replace access steps to the tennis courts (LS@\$7,000)					\$7,000											
10	Resurface all-purpose court (4,000SF @\$3.40)											\$13,600					
11	Resurface tennis courts (16,800SF @\$3.00)											\$50,400					
12	Replace benches (8ea. @\$850)						\$6,800										
13	Replace monument signs (2ea. @\$10,000)											\$20,000					
	PARKING																
14	Mill/overlay asphalt pavement (38,500SF @\$0.60)											\$23,100					
15	Seal/re-stripe asphalt pavement (38,500SF @\$0.15)		\$5,775				\$5,775					\$5,775					\$5,775
	FOUNDATIONS AND STRUCTURE																
16	Rebuild pedestrian bridges (920SF @\$55)							\$25,300									
	TOTALS		\$5,775		\$5,000	\$15,000	\$20,075	\$25,300		\$11,050		\$112,875		\$23,200			\$13,275
	3% Inflation Factor	0.030	1.000	1.030	1.061	1.093	1.126	1.159	1.194	1.230	1.267	1.305	1.344	1.384	1.426	1.469	1.513
	Inflated Totals		\$5,775		\$5,305	\$16,391	\$22,595	\$29,330		\$13,590		\$147,276		\$32,114			\$20,080

Total Length of Trails (FT)	7,600
Number of Facilities	Various
Year Built	1978
Age	39

TABLE I

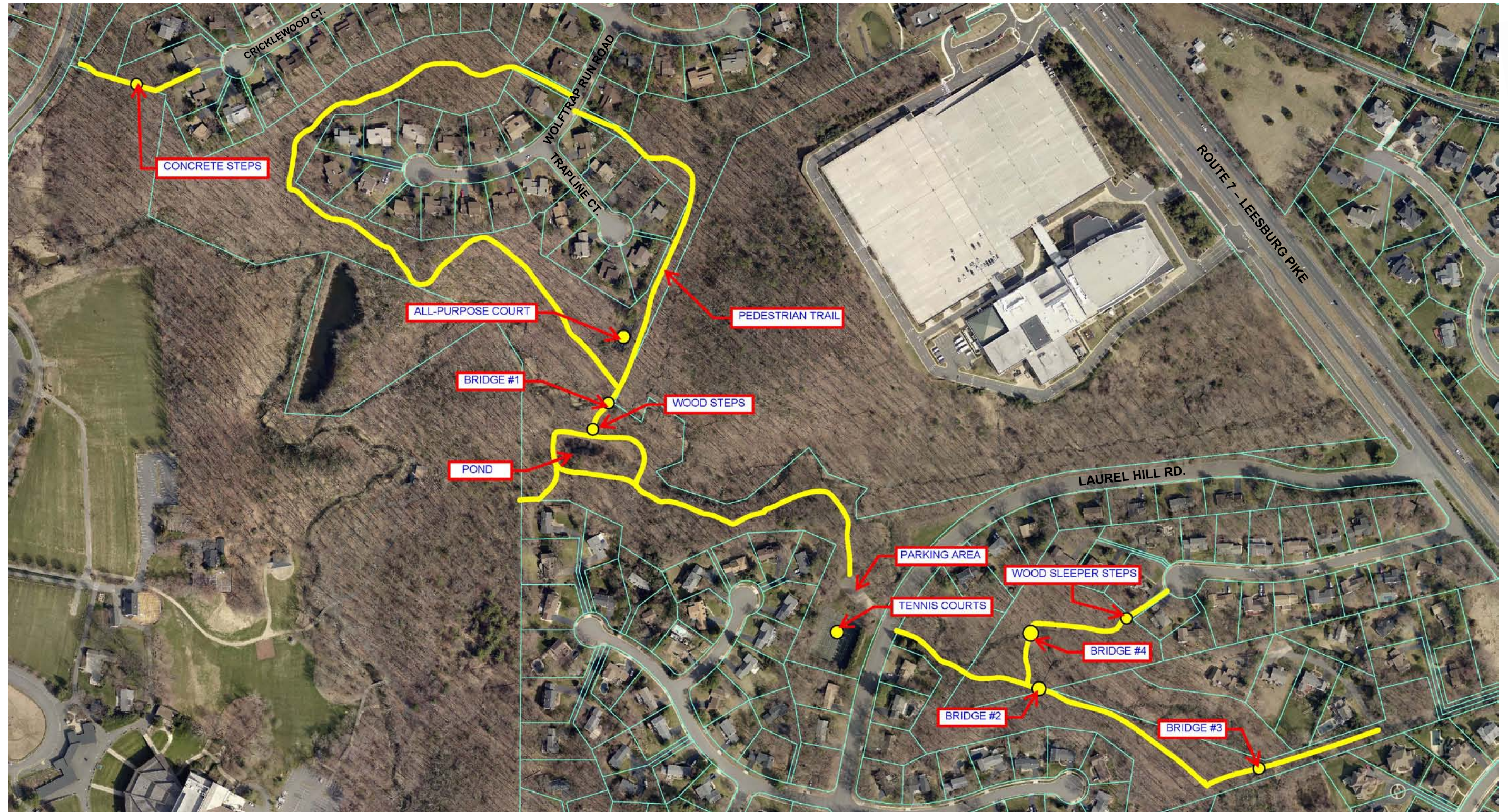
Capital Reserve & Replacement Analysis
 Property Condition Assessment
 Wolf Trap Woods Home Association, Vienna, VA
 12 April 2017

Capital Replacement Reserve Analysis (Con't)

Item No.	Property Component	Immediate Work																	
			Year 16	Year 17	Year 18	Year 19	Year 20	Year 21	Year 22	Year 23	Year 24	Year 25	Year 26	Year 27	Year 28	Year 29	Year 30	30 Year Total	
	CIVIL/SITE																		
1	Provide allowance for remedial work to creek banks (3ea. @\$7,500)											\$7,500						\$22,500	
2	Provide allowance for installation of storm drainage culverts under trails (4ea. @\$2,000)																	\$8,000	
3	Replace chain link fencing at the all-purpose court (280LF @\$30)																	\$8,400	
4	Replace chain link fencing on two sides of the tennis courts (260LF @\$30)																	\$7,800	
5	Replace the remaining chain link fencing on other sides of the tennis courts (485LF @\$30)						\$14,550											\$14,550	
6	Replace the step railings along the sides of concrete steps between Cricklewood Court and Trap Road (140LF @\$50)																	\$7,000	
7	Replace all concrete flatwork, concrete steps and bridge approaches (1,700SF @\$6.50)																	\$11,050	
8	Replace wood steps (LS @\$5,000)																	\$5,000	
9	Replace access steps to the tennis courts (LS @\$7,000)																	\$7,000	
10	Resurface all-purpose court (4,000SF @\$3.40)																	\$13,600	
11	Resurface tennis courts (16,800SF @\$3.00)																	\$50,400	
12	Replace benches (8ea. @\$850)																	\$6,800	
13	Replace monument signs (2ea. @\$10,000)																	\$20,000	
	PARKING																		
14	Mill/overlay asphalt pavement (38,500SF @\$0.60)																	\$23,100	
15	Seal/re-stripe asphalt pavement (38,500SF @\$0.15)						\$5,775					\$5,775					\$5,775	\$40,425	
	FOUNDATIONS AND STRUCTURE																		
16	Rebuild pedestrian bridges (920SF @\$55)																\$25,300	\$50,600	
	TOTALS						\$20,325					\$13,275					\$31,075	\$296,225	
	3% Inflation Factor	0.030	1.558	1.605	1.653	1.702	1.754	1.806	1.860	1.916	1.974	2.033	2.094	2.157	2.221	2.288	2.357		
	Inflated Totals						\$35,640					\$26,985					\$73,230	\$428,310	

Total Length of Trails (FT)	7,600
Number of Facilities	Various
Year Built	1978
Age	39

Ave\$/lf/Yr (uninflated) Years 1 through 30:	\$1.30
Ave\$/lf/Yr (inflated) Years 1 through 30:	\$1.88



NOT TO SCALE

PONS&ASSOCIATES

Environmental, Geotechnical
Engineering and Facilities Consulting

WOLF TRAP WOODS HOME ASSOCIATION
VIENNA, VA 22182

SITE LOCATION PLAN

APRIL 2017

FIGURE 1

APPENDIX A

Site Photographs



Photograph No. 1: Trail access to concrete steps from Cricklewood Court.



Photograph No. 2: Aerial view of concrete steps.



Photograph No. 3: View of concrete steps looking down towards Trap Road.



Photograph No. 4: View of concrete steps looking up towards Cricklewood Court.



Photograph No. 5: Typical corrosion at step railings.



Photograph No. 6: Step crack.



Photograph No. 7: Trail access from Wolf Trap Run Road.



Photograph No. 8: View of trail towards All-Purpose Court.



Photograph No. 9: Trail approach to All-Purpose Court.



Photograph No. 10: All-Purpose Court.



Photograph No. 11: Southeast corner of All-Purpose Court.



Photograph No. 12: West side of All-Purpose Court.



Photograph No. 13: Post footing erosion at All-Purpose Court.



Photograph No. 14: Surface edge erosion at All-Purpose Court.



Photograph No. 15: Trail approach to Bridge #1.



Photograph No. 16: Aerial view of Bridge #1.



Photograph No. 17: Bridge #1.



Photograph No. 18: Underside of Bridge #1.



Photograph No. 19: Crack in concrete approach to Bridge #1.



Photograph No. 20: Wood steps proximate to Bridge #1.



Photograph No. 21: Deterioration at wood steps.



Photograph No. 22: Deterioration at wood steps.



Photograph No. 23: Trail around pond looking east.



Photograph No. 24: Typical resin/metal bench.



Photograph No. 25: Trail towards tennis court parking area.



Photograph No. 26: Tennis court parking area.



Photograph No. 27: Aerial view of tennis courts and parking area.



Photograph No. 28: Access to tennis courts from parking area.



Photograph No. 29: Tennis courts.



Photograph No. 30: Tennis courts.



Photograph No. 31: Typical bench at tennis courts.



Photograph No. 32: Crack in tennis court deck.



Photograph No. 33: Typical fence deterioration (corrosion) at tennis courts.



Photograph No. 34: Trail access to Wolf Trap Woods subdivision from Laurel Hill Road.



Photograph No. 35: View of trail towards Bridge #2.



Photograph No. 36: Bridge #2.



Photograph No. 37: Bridge #2.



Photograph No. 38: Underside of Bridge #2.



Photograph No. 39: View of trail towards Bridge #3.



Photograph No. 40: Access to Bridge #3 looking east.



Photograph No. 41: Aerial view of Bridge #3.



Photograph No. 42: Bridge #3.



Photograph No. 43: Underside of Bridge #3.



Photograph No. 44: Deteriorated trail at east end of Bridge #3.



Photograph No. 45: Trail approach to Bridge #4.



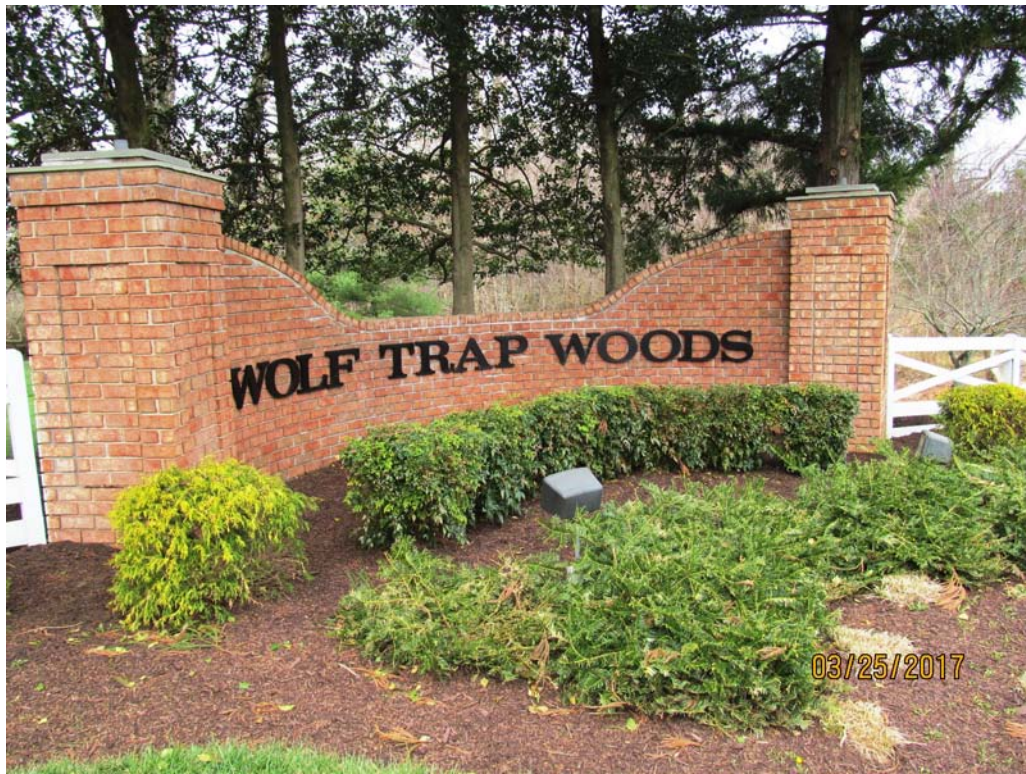
Photograph No. 46: Bridge #4.



Photograph No. 47: Underside of Bridge #4.



Photograph No. 48: Wood sleeper steps to Glenridge Court.



Photograph No. 49: Wolf Trap Woods monument sign.



Photograph No. 50: Rear of Wolf Trap Woods monument sign.



Photograph No. 51: Wolf Den monument sign.



Photograph No. 52: Rear of Wolf Den monument sign.