

**Sligo Creek Golf Course
Capital Project Needs
October 23, 2009**

As per the charge of the new task force, the MCRA has reviewed the capital needs of Sligo Creek for the next 5 years. The following is a summary of the critical needs of the Sligo Creek Golf Course. The numbers in this report are assumptions. The projects have not been fully specified and therefore have not been priced except as otherwise noted. It is impossible to predict when actual projects will be needed and the following summarizes the current status of each area.

Irrigation System – This is the oldest irrigation system in Montgomery County Golf courses. This is the top priority for capital improvements at this property. Currently the Superintendent can only run two sprinkler heads at a time from each of 3 controllers. Thus, it is not possible to irrigate the whole course in one night, making summer turf management very difficult. It is common for turf loss to occur on primary playing surfaces in the summer at this property because of the inadequacy of the system. Furthermore, the age of the system is beyond its useful life, and it is more often under repair than fully functional. The replacement of the existing system with a more modern watering system equipped with central computer control and booster pumps to increase irrigation capabilities is approximately **\$550,000**. The estimate was given by an irrigation consultant who reviewed the system in 2006.

Bunkers – The 17 bunkers at Sligo Creek are fully contaminated with soil and do not drain, making them unplayable for days after a rain storm. To install drainage and rebuild the bunkers as they are will cost approximately **\$120,000**.

Tees – Teeing surfaces are not level and are inadequately sized to allow for turf recovery from all the divots from the 25,000 or so golfers that play Sligo each year. Modern tee construction with the requisite drainage and increased teeing area on par 3s will allow this course to provide every customer with a consistent experience. Estimated cost: **\$175,000**

Cart paths – Asphalt cart paths around the entire course are well beyond their life expectancy. Paths are affected by settling, cracking, heaving from tree roots, etc. Estimated replacement cost of the 7,000 feet of paths: **\$175,000**. This estimate is for the replacement of the current cart paths on the course and does not include the installation of any new paths. Additionally, we estimate about 50% of the cart paths are in immediate need of repair but considering the scope of work and location of bad areas it may be less cost effective in the long run to split the project up. Immediate needs 3,500 feet: **\$80,000**

Tree Work – There a large number of trees on this property that pose potential safety hazards to our customers. White and Austrian pines dominate the landscape here. According to our arborist, “many of these trees have buried or insufficient root flares, leans of greater than 15 degrees, previous snow and ice damage, poor taper, unbalanced canopies, and yellowing due to nutrient deficiencies and insects. Both of these trees as a species have a higher incident of failure due to winds and upheaval usually due to the above, often genetic

traits.” Furthermore, trees that provide significant amounts of shade on greens and tees challenge our ability to grow healthy turf, as it alters the microclimate where we grow and manage turf. Shaded areas have increased relative humidity, reduced air movement, and produce thin, spindly leaf tissue on turf. Shade affects light quality, quantity, and duration. Trees around greens and tees must be removed as well for the long-term benefit and vitality of those areas. Most of these trees are dangerous, old pines as mentioned above. Estimated cost of tree work: **\$150,000**.

Parking Lot – The parking lot at Sligo is in disrepair. The surface is filled with cracks and potholes, and much of it needs a new layer of asphalt. The estimated cost to repair, resurface or sealcoat and stripe (as necessary) is **\$100,000**.

Maintenance Facility & Clubhouse – There have been numerous discussions regarding the condition of the clubhouse and maintenance facilities at this property. Park and Planning has had projects regarding these areas in their capital plans since 1994. Over the years the projects and scope of work has increased but to date there has been no significant work completed in either area. According to the Park and Planning files, the clubhouse does not meet ADA regulations or health department or Fire code requirements in the kitchen. Additionally, the maintenance does not meet ADA, OSHA, or NPDES requirements and improvements are needed for safety. The maintenance building has been settling which has produced cracks as big as one inch in exterior walls. The roof needs to be replaced, and the building is beyond its useful life. It is also undersized, and does not adequately house all the maintenance equipment. Machines stored outside deteriorate more rapidly. Maintenance staff also have no place to safely wash equipment. A new building with an environmentally sensitive recycled water wash station is needed. Storage bins for materials need to be constructed. The house at the maintenance area is used for storage, locker room, break room, and can be used as office space or intern housing. The roof, windows, and siding need replacement, as they are severely weathered and near failure. Park and planning’s information contains the most up to date data for the potential costs of maintenance and clubhouse repairs and renovations.

February 7, 2007

Sligo Creek Golf Course, Silver Spring, Maryland **Irrigation System Assessment**

Summary Statement

The irrigation system at Sligo Creek Golf Course is practically worthless. Some of the sprinklers and the irrigation controllers are of recent vintage, and retain some value, but the system that is installed should not be improved; it should be replaced.

Introduction

The irrigation system presently in use at Sligo Creek Golf Course is reported to include the original piping dating back to the construction of the golf course. A number of improvements have been made in the last few decades resulting in automation and improved irrigation coverage of the golf course.

There are essentially no reliable documents available that describe the irrigation system. There are no maps, drawings, material lists, designs, etc., which means that this report is based on observation of the function of the system and anecdotal reports of present and past operators.

Existing Hardware

The following description of the existing irrigation system at Sligo Creek is based upon visual inspection of the system in December 2006, interviews with the present and past golf course superintendents, and review of an irrigation system map dating from 1975.

Greens Irrigation

Greens are typically irrigated with four Toro 630 or 730 series valve-in-head sprinklers, spaced between 60 and 70 feet apart depending on green size. Sprinklers are activated in pairs on a controller station. There is one quick coupler per green.

It is thought that each green is fed with 1 ¼" galvanized steel piping from the original irrigation system. Some of the greens isolation valves have been located by the present maintenance staff. Some of the valves cannot be located.

Green irrigation application is limited to a single green at one time, due to pressure limitations.



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Tees Irrigation

Tees are typically irrigated with one or two valve-in-head sprinklers located in the middle of the tee surface. Some tees, e.g. #4, do not have functioning irrigation. Many tee sprinklers cannot be operated automatically by the irrigation controllers.

Fairway Irrigation

In most instances, fairways are irrigated with a double row of Toro 750 or 780 series valve-in-head sprinklers spaced 80 feet apart. Some fairways are irrigated with a single row of sprinklers.

Fairway sprinklers were installed within the last ten years. There is no available documentation of the fairway piping but it is thought that the fairway sprinklers were installed on a 2" pipe loop. Fairway sprinklers are typically activated in pairs from a controller station. Available pressure permits simultaneous operation of up to four fairway sprinklers.

The spacing between the front of the green and the first set of fairway sprinklers is inconsistent, but is often 100 feet or more.

Pipe and Valves

The irrigation system water comes from three municipal water taps around the golf course: a 2" tap off of an existing 6" main along Dallas Avenue that is located near #6 green, a 2.5" tap off of an existing 6" main from Sligo Creek Parkway that is located near the clubhouse (and provides water to the clubhouse), and a 2" tap off of that same 6" main that is located near #3 tee. The three taps likely date back to the construction of the golf course.

Based on a 1975 irrigation renovation map, the Dallas Avenue water tap originally provided water to #4G, #5T, #6G, #7T, #8G, and #9T. The clubhouse area tap provided potable water to the clubhouse and irrigation water to #1T, #7G, #8T, #9G, and the putting green. The 3T tap provided water to #1G, #2T, #2G, #3T, #3G, #4T, #5G, and #6T.

There are existing isolation valves at each of the water taps that allow the system to be shut down for winterization or service. No backflow prevention devices nor water meters were seen at any of the taps.

According to a former greens superintendent, a mainline pipe (3" or 4") was installed from the mainline on the left side of #6G to the area across the creek, connecting at least two of the water sources into one common piping network. It is unknown whether all three water taps are interconnected through the irrigation system.

The piping network feeding the greens and tees is at least thirty years old and possibly as old as the golf course. Pipe material is unknown. Pipe sizing based on the 1975 irrigation renovation map is 1.25" feeding most greens and tees. Piping around the greens and tees is 1" or 1.5" PVC. Pipe size feeding several greens are as large as 3" in some instances.



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Isolation valves were installed at each green and tee complex according to the 1975 plan, but not all of those valves have been located by the current staff.

Fairway pipe sizing is unverified, but it is thought to be 2" PVC loops. Fairway piping has been installed within the last ten years.

Control System

The control system consists of four Toro LTC Plus electronic satellite controllers that operate independently of each other. The system operator runs either preprogrammed or manual schedules from each controller that must take into account water availability and demands from each of the other three controllers.

The controllers are located at or near #1G, #7G, #7T, and #9F. There is a 120 volt AC power wire from the maintenance building to the controllers. Each controller sends a 24 volt AC signal to the sprinklers in its coverage area via #14 AWG sprinkler wire.

Controllers were installed by the maintenance staff within the last five or six years.

Evaluation of Existing Conditions

The existing irrigation system has been constructed as a series of improvements to the original irrigation system built in the late 1950's. No apparent consideration has been given to the existing water taps or piping network when improvements were made. Most problems with the irrigation system are a result of the undersized piping and water source infrastructure, which translates to inadequate flow and pressure.

In addition to flow and pressure problems, sprinkler coverage is poor, especially in the approach areas between fairway and green.

Specific problems are as follows:

1. Water Source – The water taps and piping immediately downstream of those taps were intended to provide irrigation water for greens and tees in the late 1950's. Neither the taps nor the piping are appropriate for supporting greens and tees irrigation today, mainly because of pipe sizing, but also because the incoming pressure of 60 psi is lower than recommended for most of the valve-in-head sprinklers on the market today. The pressure would be even lower (by about 10 psi) if appropriate backflow prevention equipment was installed.

The tap near the clubhouse provides potable water to the clubhouse in addition to irrigation water. There is no backflow prevention device on the irrigation system to prevent contaminants from entering the potable water system from the irrigation system. It was reported that soon after repairing an irrigation pipe break using PVC glue, the water obtained from drinking fountains possessed an off flavor and odor, clearly indicating a cross-connection. **This is a serious health hazard that must be corrected as soon as possible.**



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1 Piping Network – The feeds to the greens are either 1.25" or 1.5" pipe. The superintendent has reported significant loss of pressure if more than four greens sprinklers are activated simultaneously on the golf course. The lack of pressure is the result of low water pressure (60 psi) entering the system and high pressure losses resulting from operating too many sprinklers on the greens. The green feeds are sized to operate only one sprinkler at a time, but two sprinklers are in operation each time a controller station is activated.

2 Coverage – Coverage of all areas is limited by system pressure. Coverage of the greens is affected by limited pressure and the pairing of sprinklers on controller stations. The flow rate of a pair of sprinklers significantly exceeds the recommended flow rate for the green feed piping leading to poor pressure and poor sprinkler performance. Poor sprinkler performance could have the following implications: (1) Uneven uniformity leading to the need to hand water greens to maintain consistent application rates across the green surface; or (2) Uneven irrigation uniformity resulting in overwatering of some areas to compensate for underwatering of other areas. Overwatering can make greens more susceptible to disease and loss of turf.

Recommendations

It is our primary recommendation that the irrigation system be replaced. Our recommendations for replacement are valid whether the course is maintained in its present nine-hole configuration, or revised in accord with the conceptual site plan provided by Beidel Design Associates, as follows.

1 The system should be replaced with a new system that includes part circle in and out sprinklers at each green complex, double row coverage of most fairways, and complete coverage of the tees. The practice range and short game areas of the Conceptual Site Plan would also be fully covered. Relatively short radius sprinklers should be used, as well as liberal application of part circle sprinklers. This means that the quantity of sprinklers on the course will be proportionately higher than on courses with longer radius sprinklers. The advantage of short radius and part circle sprinklers is that water may be applied only where needed, with little overspray. This technique is recommended because the water source is municipal, potable water, which is a valuable and expensive resource that should not be wasted.

2 A computerized central control system should be installed with either decoders or satellite controllers to interface between the central control system and the valve-in-head sprinklers. A central control system is needed to effectively manage the irrigation system schedule, especially with a limited labor pool. The central control system should be designed to use some of the more advanced water conservation techniques, such as soil moisture sensing, evapotranspiration calculations, rainfall monitoring, and flow monitoring. A control station should be dedicated to each sprinkler (single head control) in order to further water conservation.

3 A completely new piping network needs to be developed to support the expanded irrigation system coverage. The piping network would involve the installation of



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mainline pipe in the rough areas between holes and lateral piping to sprinklers around greens, tees, and fairways. Isolation gate valves would be included to allow the system operator to shut off each green, tee, or fairway from the mainline piping network.

1 Water availability should be quantified and qualified. Proper design of the size(s) of the supply taps and of the booster pumping station(s) require a comprehensive understanding of the water source and the cooperation of the water purveyor. Our preliminary recommendations are to dedicate the clubhouse area tap to providing potable water to the site, and to use one additional supply for the irrigation system. The pressure must be increased by use of a booster pumping plant at this supply point from the municipal mains (which is one of the primary reasons for using only a single irrigation supply point).

2 Proper metering and backflow prevention should be installed on all water sources.

Approximate cost to install a new irrigation system is as follows:

Materials	\$250,000.00
Booster Pump Station	\$60,000.00
Labor	\$130,000.00
Total	\$440,000.00

In addition to these estimated fixed costs, we recommend budgeting approximately \$30,000.00 for design, engineering, and construction administration fees; and \$50,000.00 to \$80,000.00 for research, engineering, construction, and procurement of the water supply. The former services are typically provided by an irrigation consultant. The latter will probably require the participation of a civil engineering firm, and may involve significant development fees paid to the water purveyor.

The approximate system cost is based on today's dollars and should be adjusted for inflation if placed into a future budget.

Respectfully submitted, Hydro Designs, Inc.



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January 3, 2008

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Dear Sirs:

In respect to the trees at Sligo Creek Golf Course and our recent visit, we observed a large number of dead, dying, declining, leaning, and otherwise questionable trees on the course that are in danger of failing. These trees pose a threat to the public and the course. In conversations with the Superintendent, Mike Hawley, he had expressed his concerns as a few of these trees are falling yearly. Based on my experience, dead, dying, declining, leaning, and overly mature trees are more likely to fail than live, straight, single trunk trees. The majority of trees of concern are of the *Pinus* genus being *Pinus strobus* or *Pinus nigra*, the White pine and the Austrian pine respectively. Many of these trees have buried or insufficient root flares, leans of greater than 15 degrees, previous snow and ice damage, poor taper, unbalanced canopies, and yellowing due to nutrient deficiencies and insects. Both of these trees as a species have a higher incident of failure due to winds and upheaval usually due to the above, often genetic traits.

While as a company we tend to favor saving trees, we certainly want to help our clients make the best decisions by minimizing potential risks. We do this by having the forethought to evaluate and often take down trees that have a higher propensity or risk to fail.

I would say that about 3-5% of approximately 1000-1500 trees on the course fall into a category I would note as hazardous or as being a safety concern and would recommend that these trees be taken down.

Regards,

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