Mayor and City Council
Agenda Item Request

Meeting Date: 7/15/2013 **Type: Presentation**

Call to Podium:
Michele Potter, Director of Parks, Recreation and Culture

Agenda Item Title:
Follow-up to Synthetic Turf Field Discussion

Responsible Staff and Department:

Michele Potter, Parks, Recreation and Culture
Jim McGuire, Parks, Recreation and Culture
Rob Robinson, Planning & Code Administration
Mark Scafide, Public Works
Harold Belton, Finance and Administration

Desired Outcome from Council:
Hear Presentation and Provide Staff Guidance.

Public Hearing History	
Introduction Date:	
Advertisement Date :	
Public Hearing Date:	
Record Held Open Date:	
Policy Discussion Date:	
Anticipated Adoption Date:	

SUPPORTING BACKGROUND ON NEXT PAGE

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Supporting Background Information:

Staff will be addressing the questions posed since receipt of the July 3, 2012 memorandum, entitled "Supplemental Information pertaining to Synthetic Turf." In addition, David Goodwin of Harford County Parks and Recreation is present to answer questions regarding any aspect of project management associated with synthetic turf. Mr. Goodwin has designed and completed installation of twelve (12) synthetic turf fields through Baltimore and Harford Counties. Parks and Recreation staff throughout the State contacts Mr. Goodwin for expertise and experience. He has been shepherding City of Gaithersburg staff through the design and bid document process.

TO: Mayor and City Council

FROM: Michele R. Potter, Director of Parks, Recreation and Culture

DATE: July 3, 2013

SUBJECT: Supplemental Information pertaining to Synthetic Turf

During the June 10 Work Session on the synthetic turf field at Lakelands Park, staff was asked to follow up on several topics including recycling, environmental impacts, concussions, competitive bidding, equipment needed with costs and lifecycle, a schedule of depreciation, and a replacement schedule and cost.

Staff from Planning & Code Administration, Parks, Recreation and Culture, Finance & Administration, and Public Works have conducted additional research and has prepared this supplemental and comprehensive report.

Recycling

The synthetic turf industry has made the recycling and repurposing of their product a key goal, with the Synthetic Turf Council, a non-profit trade organization, serving as their active voice for environmental responsibility.

The latest generation of synthetic turf reflects the great strides made towards creating a durable and "green" product. In addition to providing a low maintenance, weed-free surface that does not require water, fertilizer or pesticide, many of the components that make up synthetic turf are natural, recycled and/or recyclable materials.

As sustainable practices are further developed and improved, each separate element of synthetic turf is considered.

At the base of the turf fiber, or "grass blades" is an infill, a mixture of sand and granulated rubber from recycled tires, shoes, or other similar sources. An example of recycled infill material is Nike Grind, a product of Nike's Reuse-A-Shoe program started in 1993. Made from recovered shoes, this infill is durable and environmentally sensitive, meeting the highest standards of the industry. The Nike Grind is also lighter in color, thereby reflecting more sunlight and reducing heat build-up on the turf field. One field per year can be constructed with the rubber shoe infill due to the large number of shoes required.

New sustainable practices used in field replacement include the recovery, cleaning and reuse of infill. This strategy also has the benefit of reducing the cost of replacing an existing field.

The turf fiber can also be recovered and converted/recycled into various products such as "rubber" mats used at driving ranges. A process is in development to convert the fiber backing that supports the "grass blades" into a low-grade fuel suitable for operating smelting plants and cement kilns.

Durability is another key element in promoting environmental stewardship as the longer the synthetic turf lasts, the less frequent the need for producing or recycling the materials. Lastly, the use of a "Shock Pad", a cushioning layer under the fiber and infill, reduces the amount of infill required, increases the life of the turf and extends the warranty on the field by approximately 40 percent.

In an effort to be as sustainable as possible, Arlington County, Virginia has made a commitment to recycling synthetic turf at the end of its lifespan. A "Special Procedures Waste Management" specification requires the manufacturer to a recycle a minimum of 90% of the turf surface. Turf removal must be done in a fast and expedient manner, with minimal disturbance to the existing sub base. The infill components of the system must be removed and separated from the turf and packaged for reuse and/or recycling. The turf must also be neatly packaged and transported to the recycling destination where it will be reprocessed into materials and/or products, not disposed of in landfills. The Gunston Community Center Synthetic Turf Replacement and Field Improvement Bid Specifications in October of 2010 listed the criteria. The County also seeks for businesses and partners who would be able to re-use old turf. They have worked with several local sports leagues for upgrades their batting cages and bullpens, and a paintball facility for their combat yard. Today, the County is being contacted by other venues looking for recycled turf.

Staff has also identified a sports industry company who is one of the largest carpet producers who offer recycling of turf fields. They have opened three state-of-the-art recycling facilities.

Environmental Impacts

In doing research, it was found that decision-making by municipalities on the addition of synthetic turf fields for recreational purposes has often centered on cost-savings in terms of maintenance and an expected increase in playing/usability time. Environmental concerns have been more of an ancillary concern, often raised only after the installation has occurred. There are of course immediate environmental benefits from synthetic turf: emissions are reduced from the lack of lawn mowing; water conservation occurs with the reduction or elimination of watering fields; and both human and stream health issues associated with pesticide/fertilizer use and runoff are abated. Synthetic turf, however, does still require some upkeep using emission producing machinery and applications of antimicrobial washes and fabric softener to keep the artificial grass blades fluffy. Further, the vast majority of synthetic turf products are composed of recycled tire materials.

Research has been done by multiple entities on the potential for environmental impacts from synthetic turf fields. Staff reviewed studies cited by the turf industry, 3rd party independent reviewers, and by parties opposed to synthetic turf fields. As should be expected, opinions run the gamut from no impact to severe. There is, however, consistency in the acknowledgement that these current and earlier generation synthetic materials do leach or off-gas a number heavy metals, amine aromatics, and polycyclic aromatic hydrocarbons (PAHs): All potentially toxic or known carcinogens if they are absorbed into the body at a high enough dosage.

The majority of current research focused on the presence of lead and other heavy metals (zinc, cadmium, arsenic, cobalt, etc.) in the "grass blades" and the rubber crumb (infill) components of the fields. While many of the studies have differing results, the majority of the current studies indicate that exposure levels to toxins from synthetic turf fields fall within current acceptable exposure levels established by the Environmental Protection Agency (EPA).

These exposure levels are in relation to typical healthy populations, the expected primary users of these fields, and not "at-risk" populations; elderly, very young, and immunosuppressed. Upon reviewing current available materials, staff believes that with sufficient drainage systems and stormwater management controls, runoff from synthetic turf fields should have a negligible impact on associated stream systems and groundwater. As to health impacts, questions do remain, but based upon the available studies, staff would have far greater concern if the

proposed fields were to used in an enclosed environment and/or programming included daily use by an individual, particularly a child, for multiple hours. It is reasonable to assume some may use these fields no more than one hour a week. Of note, the industry appears to be responding to the health concerns mentioned as one manufacturer of synthetic turf fields sells a product known as EcoFill, an infill product advertised to be free of heavy metals, amine aromatics and polycyclic aromatic hydrocarbons (PAHs). In a survey, no jurisdiction in the State of Maryland has the EcoFill product to date.

Today, staff was made aware that a field has been constructed with an organic infill north of Baltimore. The temperature on the field averages about 10 degrees above the ambient temperature. The organic infill costs approximately 10% higher than the crumb rubber infill. Staff will conduct a site visit and evaluate this option.

Concussions

The prevention and treatment of concussions has received considerable attention at the professional sports level in the last few years. As a result, youth coaches and parents have become more aware of the serious risks involved and the need to prevent concussions whenever possible. In 2011, the State of Maryland enacted guidelines for both high school and recreational athletics that mandate a protocol for removing players from the game when they have been hit in the head, and allowing them to return to play only after examination by a health professional certified in concussion management. The City of Gaithersburg followed suit by implementing the same guidelines and procedures. This growing concern has recently led to four (4) independent studies examining the risk of concussion on synthetic vs. natural playing surfaces. All four studies concluded that synthetic turf does not cause an increased risk of concussion. The reports even suggest that there may be a decreased risk of concussion due to better shock absorption properties in the synthetic turf.

The monitoring and measuring of shock absorbing properties in synthetic turf is called G-Max testing, and is required annually by the American Society for Testing and Materials (ASTM). To ensure the proper "G-Max" level (level of shock absorption), the monitoring of the turf base at the time of construction is critical.

An optional "Shock Pad System" is also available for synthetic turf that can further increase shock absorption. The cost of a shock pad system ranges from $0.75 to $1.50 a square foot or between $47,000 and $97,000 total for the current project.

However, the safety and longevity of a synthetic turf field requires the following:

1. Annual G-Max testing by an independent third party, (estimated at $750-$1000 per test)
2. A dedicated turf maintenance plan
3. Visual inspections of the field
4. 3,000 hours maximum use annually

The City will require proper "G-Max" testing and submission of a written report prior to final acceptance of any field, and will also request the cost of a "Shock Pad System" in the "Bid Documents."

Staff obtained this information from The Synthetic Turf Council, A report for Montgomery County Public Schools titled: "A Review of Benefits and Issues Associated with Natural Grass and

Artificial Turf Rectangular Stadium Fields", American Society for Testing Materials (ASTM), and *Athletic Business*.

Competitive Bidding

Section 57, *Purchasing and Contracts*, of the City Code requires the City's purchasing procedures to be adopted by the Mayor and City Council by means of resolution as provided:

> "*The city manager shall be required to advertise for sealed bids for all contracts or purchases in accordance with purchasing procedures adopted by resolution of the council. All contracts or purchases in excess of the minimum established by the purchasing procedures shall be approved by resolution of the council; provided, however, in any public emergency declared by the chief executive officer of the state, Montgomery County or the city to protect and preserve inhabitants or property within the city or the carrying out of obligations under any mutual assistance agreement between jurisdictions, the city manager is authorized to expend any appropriated and unencumbered funds for this purpose without approval by council resolution.*"

On January 5, 2009, the Mayor and City Council adopted Resolution R-4-09 that modified the purchasing thresholds to:

Current Thresholds	Threshold Requirements
$2,499 and below	▪ Purchase order not required.
$2,500 to $29,999	▪ Three (3) vendor quotes; and ▪ A purchase order.
$30,000 to $59,999	▪ Formal solicitation process; or ▪ Waiver of the process by the City Manager; and ▪ Mayor and City Council Resolution.
$60,000 and above	▪ Formal solicitation process required; and ▪ Mayor and City Council Resolution.

The cost of the Synthetic Turf Field project will require a formal Request for Proposals ("RFP") process. An RFP will be developed and issued for the purpose of obtaining proposals from contractors interested in the project. Following the due date for proposal submissions, all proposals will be evaluated by an evaluation committee that will make a recommendation of award to the City Manager. Once approved by the City Manager, said recommendation will be sent to the Mayor and City Council for adoption by resolution.

Equipment

The maintenance equipment needed to maintain the synthetic turf field at Lakelands Park would be a Synthetic Sports Turf Groomer. The sports field groomer uses a tine rake and brushes to evenly distribute the infill rubber into low spots on the field. This equipment also lifts the turf fibers in an upright position. The spring rake tines comb through the infill reducing compaction to assuring a safe playing surface.

The grooming of the synthetic turf varies between turf field manufactures, but through our research and the expected hours of use, the City would groom the field once per week. The expected amount of time to complete the grooming would be one to two hours per week. This piece of equipment is a tow behind unit that would use an existing gas powered tractor or ball field machine currently owned by the City. A synthetic turf groomer cost between $4,000 to $5,000 dollars and has a life expectancy of five (5) to eight (8) years. This unit would be included in the City's Vehicle and Equipment Replacement fund on a five (5) year replacement cycle; however, it would not be replaced until it is no longer serviceable.

Schedule of Depreciation/Replacement Schedule and Costs

The Department of Finance and Administration contacted various agencies and found that a ten year depreciation schedule is a reasonable and conservative approach. In many jurisdictions, synthetic turf fields are so new that historical data is not yet available. However, staff reviewed the IRS website for single purpose items and found a recommendation of 10 years for comparable items. Additionally, staff used The Federal Reserve Board's conservative economic outlook for inflation of 3% - 5% to set a 5% inflation rate to calculate a replacement value after a projected 10 year life cycle. From FY 2015 – FY 2025, we estimate the budgeted replacement would approximate $127,272 per year.

Below is a chart of various jurisdictions who participated in surveys related to synthetic turf.

JURISDICTION	ACTIVE TURF FIELDS	FUTURE TURF FIELDS
Anne Arundel County	13	0
Baltimore County	13	0
City of Bowie	2	0
Harford County	12	1
Howard County	12	15
*Montgomery County Public Schools and Maryland Parks	9	5

*MCPS and Maryland Parks:

Location	# of Active Turf Fields
Soccer Plex	3
Fairland Recreational Park	1
Blair High School	1
Richard Montgomery	1
Walter Johnson	1
Gaithersburg High	1
Wheaton Regional	1
Total:	9

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- Additional Information:
- 12 private schools (elementary and high) have artificial turf
- Paint Branch High School is scheduled for synthetic turf construction
- Wooten High School approved for synthetic turf June, 2013 (not under construction yet)