

City of Kenmore – St. Edward State Park Ballfields  
**Synthetic Turf vs. Natural Turf**

The current multi-use field at St. Edward State Park has served as ballfields, a soccer field that uses more or less the entire grass area, and a cricket pitch in the center of the field. The existing field is not under-drained and is, therefore, quite wet during the rainy season. This severely limits the amount of playtime. Because of this, the City of Kenmore is currently proposing converting the field to a fully under-drained synthetic turf field. Below is a comparison of synthetic turf to natural turf, categorized by usability, maintenance, environmental and health effects, water usage, and safety.

Usability

The primary reason for upgrading the field is to increase the availability of the field for sports activity and play.

**Synthetic Turf**

- the number of games per year is essentially unlimited (continuous, year-round use)
- no rest period required
- needs only minimal maintenance to withstand a wide variety of climates and weather conditions
- stays green year-round

**Natural Turf**

- natural turf field can only support limited seasonal use.
- rest period required to ensure continued quality of the field
- requires heavy maintenance in order to withstand various weather conditions (lack of proper maintenance may result in safety issues and severely impaired use of the field)
- high level maintenance including fertilizer and water are required to keep turf green

Synthetic turf has the clear advantage over natural turf when it comes to usability as it better accommodates the community's needs and proposed uses. It will extend the use and availability of the field. A well-used synthetic field will last approximately 10 years at which point only the turf needs to be replaced. The base and drainage system typically do not need to be replaced.

Maintenance

For the purposes of this discussion, it is assumed that both types of fields will have a high quality drainage system. Maintenance required to maintain high quality, sand-based natural grass fields is extensive. Suggested yearly maintenance levels for quality natural turf fields in western Washington include: 34 mowings, 21 days of irrigation, 6 applications of NPK fertilizer, 2 applications of calcium and magnesium fertilizer, 2 applications of micronutrient fertilizer, 4 core verifications, 5 applications of top dressing, and 2 instances of overseeding.

<b>Natural Turf Required Maintenance</b>	<b>Quantity Annually for Field Size</b>
• NPK Fertilizer	1,578 pounds
• Calcium and Magnesium Fertilizer	9,287 pounds
• Sulfur Fertilizer	279 pounds
<b>TOTAL</b>	<b>11,144 pounds</b>
• Micronutrient Fertilizer	47 gallons
• Irrigation Water	1,011,911 gallons

While not maintenance free, synthetic turf fields do require less maintenance than natural turf fields. Periodic grooming is required to ensure that infill levels remain constant throughout the field. This requires grooming the fields approximately 12 times per year (figure dependent upon level of use). Replacement of infill is required periodically; however, this is typically needed only when the field is groomed. For ballfield areas, periodic addition of infill is required at second base and home plate. The turf in the batter's box and pitcher's mound also needs replacement periodically; however, the turf is easy to cut out and replace. Turf pads for those areas are typically purchased with the original turf so that there is no issue matching colors.

Construction of a quality natural turf field would require stripping the existing sod, constructing sub-drain lines (typically 4" perforated lines in a pea gravel envelope at 15' centers) over the entire field, covering the entire field with 12" of clean sand, and seeding.

A synthetic turf field would be constructed in much the same way: stripping the existing sod, constructing a series of drain lines, constructing approximately 8" of permeable crushed rock base, and lastly placing the synthetic turf. A shock pad may or may not be necessary based upon the turf specified (typically a combination of sand and rubber).

#### Environmental and Health Impacts

Nutrient runoff from natural grass fields has the potential to enter wetlands as excess nutrients from the fertilizers filter through sand base into the drain lines and, ultimately, into the wetlands where they then disperse. Moreover, natural turf fields require frequent mowing which results in gas/fuel contaminants entering the atmosphere.

With synthetic turf, there is no nutrient runoff. Synthetic turf products are specified to be lead-free; therefore, there are no such contaminants within synthetic turf. Grooming for synthetic turf is less frequent than mowing of natural turf fields.

Because of recent concerns regarding crumb rubber and its effects, the proposed infill will be rounded silica sand with shock pad to assure a safe G-Max level (firmness level).

#### Water Usage

A natural turf field requires weekly irrigation, typically from mid-May through the end of September. The typical rate is 1" per week. Synthetic turf, on the other hand, requires only as-needed spot washings to clean up spills or blemishes.

### Safety

A natural turf field is quite safe if consistently maintained at a high quality. Improper or negligent maintenance, however, can cause the field to deteriorate quickly, causing it to become unsafe. Divots in a natural grass field, when not immediately filled, pose hazards to players. Therefore, continuous and vigilant maintenance on a natural grass field is required to protect the owner from liability as well as provide the maximum recreation potential.

### Other Considerations

Synthetic turf does not cause grass stains; however, infill material can accumulate in shoes and clothing. If the fields are rented to various sports groups, synthetic turf has a clear advantage as it dramatically increases revenue. King County replaced their natural turf fields at Marymoor Park with synthetic turf because of the additional revenue that could be generated and used to support other programs.

### Summary

Due to the high demand for recreational facilities, more fields are being constructed in or converted to synthetic turf. Synthetic turf is definitely the higher cost option for initial installation; however, replacement – which occurs every ten years or so – is of just the synthetic turf itself. The infill material can be cleaned and recycled for reuse. The sub-base material remains intact as it is not affected by surface use. Typically, replacement funds are set aside from the revenue generated by field use. Synthetic turf warranties are usually for eight years and experience shows that the turf lasts on average ten years (depending on usage levels). Old synthetic turf material can be recycled by companies that specialize in turf recycling.