

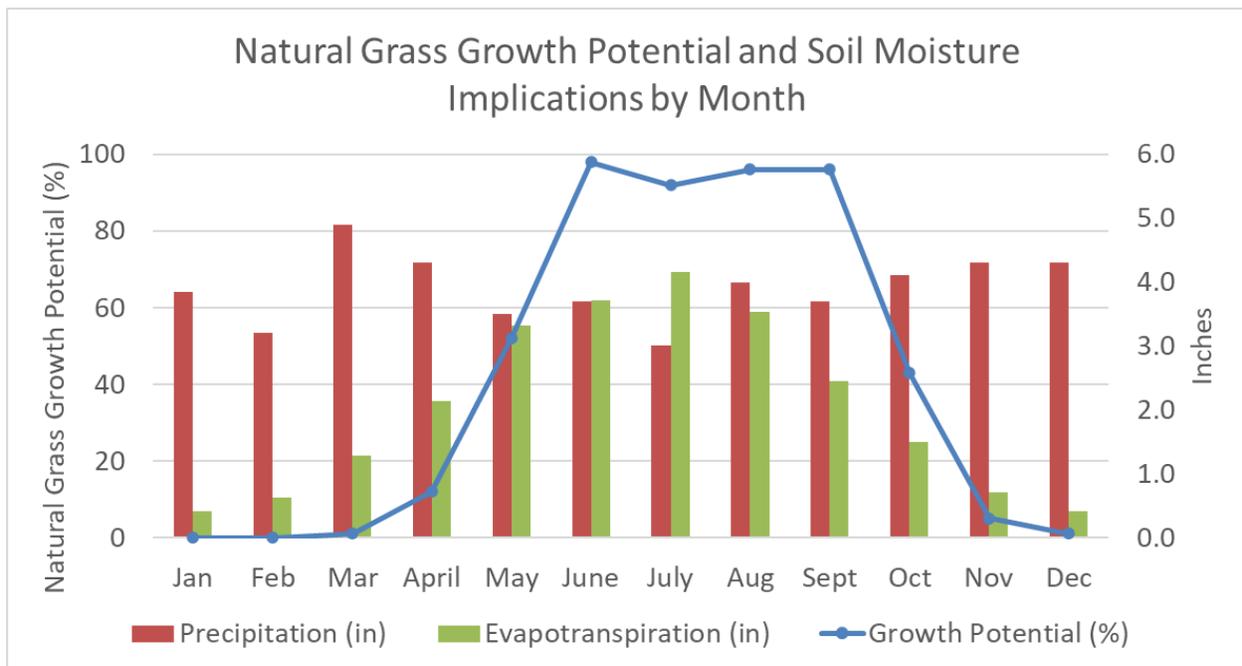
February 8, 2021

To whom it may concern,

The purpose of this letter is to raise awareness about concerns I have regarding the proposed athletic field project at Martha's Vineyard Regional High School. Since the current debate surrounds natural grass vs synthetic turf, this letter emphasizes considerations I believe pertinent to that discussion. However, I would like to note I have additional concerns regarding the proposed construction and maintenance specifications for the natural grass playing surfaces. I hope to provide additional information that decision makers and community stakeholders may find useful. I have undergraduate and graduate degrees in agronomy and horticulture, concentrating in amenity grassland management. I also have experience in the management of both natural grass and synthetic turf surfaces in the Northeast.

Field Use Hours

The estimated field use hours and events data is excellent. However, I think it needs to be examined more closely. Suggesting a well-maintained natural grass field can support 680-820 hours of use per year may be a fair assumption, however it does not consider how, when, or the condition of the field during those hours. Please consider the following figure depicting growth potential and soil moisture implications for a natural grass field on Martha's Vineyard.



Data acquired from Northeast Regional Climate Center and US Climate Data.

The growth potential equation was developed by PACE Turf to numerically describe the ability of grass to grow at a certain temperature. It is not perfect, nor is it reality. However, growth potential is useful for estimating how the grass may grow. On natural grass sports fields, growth is required for surfaces to recover from use. Therefore, we can consider the growth potential curve like the field's capacity to recover (100% is maximum potential growth). In a perfect world solely considering growth potential, all field use hours would occur between May and October when the grass has the capacity to grow and

recover. However, that is not realistic for spring and fall athletics that occur outside this window. Therefore, field use and maintenance resources must be adapted appropriately to preserve field quality and encourage adequate recovery during these periods of low growth potential.

The soil moisture influences, precipitation and evapotranspiration, could be useful for determining necessary drainage and irrigation capacities for a natural grass field. For example, if field use is required in months where precipitation exceeds evapotranspiration, fields should be constructed with adequate surface and internal drainage to remove excess moisture to return the surface to a safe, playable condition. Similarly, in summer months when evapotranspiration likely exceeds precipitation, an irrigation system must be capable of supplying sufficient moisture within an appropriate watering window.

Player Safety

All sports carry inherent risks, independent of field surface type. The goal of the MVRHS project must be to provide safe playing surfaces. Balancing field use, maintenance, and recovery (natural grass) are key ingredients to sustaining safe surfaces. Playing surfaces often pose safety hazards in two ways: hardness and shear resistance. On natural surfaces, maintaining dense grass coverage and adequate, but not excessive, soil moisture are crucial to providing safe playing conditions. On synthetic surfaces, monitoring infill depth, distribution, and fiber condition are key to safe conditions. References of excessive temperatures on synthetic surfaces are increasing in frequency and are very real. I've personally measured high temperatures and been involved in summer camps where field use was altered due to the high heat conditions. However, when reviewing surface heat data, be aware of where the data was collected and if those conditions are comparable to our local climate. Further, consider how many field use hours are expected during the hottest days of summer as $\text{hazard} = \text{risk} \times \text{exposure}$.

An emerging, and in my opinion overlooked, aspect of the player safety discussion is footwear. Footwear is the link between the athlete and surface. Too often are shoes selected solely on "looks".

Consideration should be given to proper fit and appropriate cleats for the type of surface. For additional information on footwear, I recommend Penn State's Center for Sports Surface Research.

To keep this letter to a reasonable length, I refrained from commenting on the possible environmental impact of different surface types. No playing surface is perfect. All playing surfaces require maintenance and perpetual investment. I hope your decision is data-driven and specific to the MVRHS site and community.

All my best,

Christopher Sitko

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