

Maryland Sierra Club Zero Waste Team
Inventory of synthetic turf fields in Maryland

Updated January 1, 2024

Over the summer and fall of 2021, Sierra Club volunteers resolved to inform pending state legislation on tracking the location and disposition of synthetic turf playing fields by conducting an inventory of synthetic turf playing fields in the state. The objective of the exercise was to document the number of fields, estimate the amount of waste that will be generated when the fields are retired, and demonstrate the degree of difficulty to the public of obtaining the information. The volunteers continued to update the inventory throughout 2023.

Methodology

The following information was sought on each synthetic turf playing field currently in place in all 23 counties and the City of Baltimore, both indoor and outdoor fields:

- Name of the field and address
- Sport played
- Ownership of the field (public schools and universities, public parks, private schools and universities, private sports clubs/venues)
- Year the field was installed
- Area of the field in square feet, or its dimensions
- The source of information

Most of the research was done on the internet, which involved accessing websites for: public schools; private schools; colleges and universities; local and major newspapers; athletic organizations and foundations; county departments for parks and recreation; general contractors; and turf installers.¹

These sources were sufficient to identify most fields or venues with fields. However, discovering the year each field was installed and its dimensions usually required follow-up with phone calls and emails. When the dimensions for outdoor fields were not available from a reliable source, the team used Google Earth's tool to measure the area of the field. They were located by their address and were easily distinguishable from natural turf fields. However, because many of the Google Earth photos were not recent, this method could not be used for some of the fields installed more recently. Furthermore, that method could not be used to estimate the dimensions of indoor fields, most of them privately owned. The dimensions of indoor fields were not easily obtained. Many calls and emails were sent; many were not returned.

¹ General contractors and turf installers consulted (website, email, or phone) included: AstroTurf; Athletic Field Consultants, Inc.; BrockUSA; Fields Inc.; Field Turf; JMT; Keystone Sports Construction; King Sports Construction; Playrite; Shaw Sports Turf; Sprinturf; and US GreenTech.

As of January 1, 2024, a total of 437 fields have been enumerated in Maryland. The installation date could not be obtained for 72 fields (16%) and field size could not be ascertained for 34 (8%).² Field size was obtained from a reliable source (the installer, owner, or news reports) or estimated from Google Earth.

To estimate the tonnage of turf and infill, the team used conversion factors from the Synthetic Turf Council's (STC) 2017 publication, *A Guideline to Recycle, Reuse, Repurpose, and Remove Synthetic Turf Systems*. According to this document (p. 3), a typical synthetic turf sports field is about 80,000 square feet (sf) and is comprised of 40,000 lb of turf and 400,000 lb of infill. The volume of infill for a typical sport field would amount to +/- 400 cubic yards. The formulas used for the calculations are:

Estimation of turf weight: $(\text{Field area} / 80,000) \times 40,000 \text{ lb}$

Estimation of infill weight: $(\text{Field area} / 80,000) \times 400,000 \text{ lb}$

Estimation of infill volume: $(\text{Field area} / 80,000) \times 400 \text{ cubic yards}$

The STC report notes that "The volume of the turf removed from the field depends on how it is collected (rolled, cut up, or shredded) and would be considerable in volume." However, the total coverage of the plastic turf carpet can be estimated.

Findings

Number and distribution of turf fields

A total of 437 synthetic turf fields have been identified in Maryland (see Annex Table). It was not a trivial exercise, nor is it likely a complete list. Some fields have surely been missed and more are being approved or installed every day.

The enumerated fields are located in 19 counties and the City of Baltimore; to date, none has been identified in Caroline, Dorchester, Somerset, or Talbot counties. The counties with the greatest number of synthetic turf fields in the inventory are: Baltimore County (69); Montgomery County (64); Howard County (47); Anne Arundel County (54); Baltimore City (41); Prince George's County (40); Harford County (36); Frederick County (24); Wicomico County (13); and St. Mary's County (11). Ten counties had fewer than 10 fields each.

Ownership

About half of the fields (51%) belong to public schools, parks, or universities. The remaining fields are at private schools (19%) or private clubs/sports venues (19%). Two percent were owned and/or operated by public-private partnerships, or by a public entity other than a school or park.

² Tonnage and volume could not be calculated for these fields.

Field size and type of venue

The 403 playing fields for which size could be estimated ranged from a minimum of 1,600 sf to a maximum of 156,800 sf. Seventy-five of the fields (17%) were at indoor sports venues, most of which were small, less than regulation size fields at private sports facilities.

Tonnage and volume of materials

The tonnage and volume of currently installed synthetic turf fields are a projection of the waste that will be generated from these fields over at least the next decade, before they must be replaced. According to the 2017 STC document, “Depending on its usage, exposure to intense sunlight, maintenance and other factors, a synthetic turf sports field will last 8-10 years before reaching the end of its useful life.”(p.3).

The 403 fields for which field size was available amount to:

- 79,277 tons of mixed plastic carpet and infill;
- 144,325 cubic yards of infill, the equivalent of 4,810 30-yard dumpsters; and
- 28.9 million square feet (663 acres) of mixed plastic carpet.

End of life and disposal

Among the 365 fields for which an installation date was available, 41 (11%) had been replaced, and 71 (19%) were installed before 2014 and likely have been replaced, since the lifetime of a synthetic turf playing field is 8-10 years. The inventory did not attempt to record the disposition of the components of discarded fields – whether they were reused, repurposed, recycled, stockpiled, landfilled, or incinerated. Owners of fields that had been replaced generally are only aware that a contractor removed the fields; they are unlikely to know the destination or processing of the removed materials. In a few cases, a contractor was asked about the disposal of a removed field, but in only one case was the team able to obtain information, because the parks department, at the request of a legislator, asked the vendor to account for the disposition.³

Conclusions

There are at least 437 synthetic turf fields installed in Maryland as of January 1, 2024. They represent a significant amount of waste over the next decade as they are replaced, and even more fields are planned. There are limited options for disposal of this waste, much of which cannot be recycled or incinerated, and it would take up significant space in the state’s landfills. In neighboring states (Pennsylvania, Virginia), synthetic turf waste has been stockpiled

³ The Heurich Park field in Hyattsville, owned by Maryland National Capital Park and Planning Commission and replaced in 2023. (Letter from King Sports Construction to MNCPPC, May 26, 2023).

or dumped. At present, there is no information available to the public on the disposition of Maryland synthetic turf fields that have been removed, nor is there any requirement to document their reuse, recycling, or disposal.

It required considerable effort to document the existence of these fields, and considerably more effort to obtain basic information like the year of installation and field dimensions, which are still incomplete. *In the absence of a mandated, publicly disclosed chain of custody it will be difficult for the public or for state authorities to track the existence of synthetic turf fields and their proper disposition at the end of life.* A chain of custody would ensure transparency on the disposition of synthetic turf and infill – whether recycled, reused, repurposed, or landfilled – and serve as a strong disincentive for improper disposal.

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Synthetic Turf Fields and Estimated Waste in Maryland, by County, as of January 1, 2024

County	Total Fields	Distribution by ownership					Total Tonnage (carpet & infill)	Area of carpet (square feet)	Volume of infill (cubic yards)
		Public schools	Public parks	Private schools	Private clubs	Other			
Allegany*	4	3	0	0	1	0	712.8	259,200	1,296
Anne Arundel*	54	33	6	8	7	0	11,782.4	4,284,500	21,423
Baltimore City*	41	10	6	19	5	1**	7,947.4	2,965,469	14,827
Baltimore County*	69	28	13	22	6	0	11,896.6	4,217,409	21,087
Calvert	1	0	0	1	0	0	22.8	81,000	405
Carroll	6	1	0	0	5	0	568.7	206,810	1,034
Cecil*	8	5	3	0	0	0	1,138.2	413,900	2,070
Charles*	4	2	2	0	0	0	299.5	108,924	545
Frederick*	24	13	4	4	3	0	4,489.5	1,632,532	8,163
Garrett*	3	3	0	0	0	0	n.a.	n.a.	n.a.
Harford*	36	12	3	3	18	0	6,401.0	2,324,935	11,625
Howard*	47	14	16	1	16	0	9,190.4	3,341,964	16,710
Kent	1	1	0	0	0	0	313.7	114,085	570
Montgomery*	64	18	7	20	19	0	10,770.4	3,916,497	19,582
Prince George's	40	17	6	4	6	7**	8,617.0	3,133,452	15,667
Queen Anne's*	4	2	2	0	0	0	367.5	133,650	668
St. Mary's*	11	4	6	1	0	0	2,058.9	748,707	3,744
Washington*	4	2	0	2	0	0	683.3	248,479	1,242
Wicomico	13	4	4	0	5	0	1226.1	445,837	2,229
Worcester	3	3	0	0	0	0	790.7	287,515	1,438
TOTAL	437	150	73	85	83	7	79,276.9	28,864,865	144,325

*The dimensions of 34 fields were not available: Allegany (1); Anne Arundel (5); Baltimore City (1); Baltimore County (9); Cecil (3); Charles (3);Frederick (2); Garrett (3); Harford (1); Howard (1); Montgomery (2), Queen Anne’s (2), St. Mary’s (1), and Washington (1). The tonnage, carpet area, and volume of infill could not be estimated for these fields and are not included in the table.

** Under Armour field, privately owned, public access.

***Six fields are a public-private partnership (county owns the land, private foundation owns & runs the fields, Parks & Recreation sports teams have access year round); one is owned by the Prince George’s County Police Department.

Source: Maryland Sierra Club Chapter, Zero Waste Team. .