

MEMORANDUM

TO: File
FROM: Troy Carmann
RE: City of Cherry Hills Village – Imperviousness Concepts
DATE: February 2, 2024

City of Cherry Hills Village (Village) municipal code governs stormwater treatment by way of Section 17-4-30.a.(2), referencing the Arapahoe County Stormwater Management Manual (ACSWMM). The criteria specifies pervious (or imperviousness) across a table of land uses (see Figure 1). However, there is no particular guidance for pools or other landscape water features. This memo is intended to guide applicants and staff to make an informed decision on a case-by-case basis.

For the purposes of this guidance, a pool is a landscape feature common for recreation and exercise that is a closed system. The pumps and filters move water within the pool structure, any shape or size, and treat that water as necessary for the particular uses. Landscape ponds and fountains may be considered ‘pools’ in the sense that they have their own closed system with pumps and filters moving water around a vessel, tank, pond, or other container.

A pool takes in water, does not release it and is therefore considered pervious.

The water hitting the pool surface does not runoff. The discussion can benefit from additional clarifications:

- Cover. The cover does not change the flow conditions. Most all covers are for safety and are porous or based on the perimeter straps sag in the middle to drain water in, not out.
- Overfilled pool. If a pool over fills, the water will spill out as if it is impervious. The amount of rainfall needed to overfill a pool requires freeboard volume in the pool as well as the volume filter system plumbing. Overflows from the filter system can be routed to a sanitary sewer or a perforated drain in the pool house. In any case, surcharges at that magnitude likely exceed the design storm. (i.e. the design storm is 2.6” of rain in 1 hour ... if a pool doesn’t have 3 inches between the water surface and the edge of the pool, there is additional detention analysis required.)
- Hot tub. Size of the pool or hot tub doesn’t matter – any open water surface ‘tank’ with more than 3” of freeboard is considered porous.
- Pool deck. Anything around the pool is treated as any other land cover – the pool deck, pool house roof, concrete patio, etc is typically 90 to 100% impervious and should be counted towards the stormwater criteria discussion.

Impervious surfaces move water to new places within a drainage basin. Pervious (porous) surfaces hold water, restrict movement in some manner.

On the same logic, a pool or landscape pond could be configured in a manner to serve as stormwater feature. A pool deck draining toward a pool can utilize the excess volume for detention. A filter system discharging dechlorinated or desalinated pool water may qualify as a water quality feature. Similarly, and maybe more likely, landscape ponds and fountains can serve dual purposes. In any case, detained, retained, or treated stormwater must be released within 72 hours to remain compliant with State water law.

Table 6-3. Recommended percentage imperviousness values

Land Use or Surface Characteristics	Percentage Imperviousness (%)
Business:	
Downtown Areas	95
Suburban Areas	75
Residential lots (lot area only):	
Single-family	
2.5 acres or larger	12
0.75 – 2.5 acres	20
0.25 – 0.75 acres	30
0.25 acres or less	45
Apartments	75
Industrial:	
Light areas	80
Heavy areas	90
Parks, cemeteries	10
Playgrounds	25
Schools	55
Railroad yard areas	50
Undeveloped Areas:	
Historic flow analysis	2
Greenbelts, agricultural	2
Off-site flow analysis (when land use not defined)	45
Streets:	
Paved	100
Gravel (packed)	40
Drive and walks	90
Roofs	90
Lawns, sandy soil	2
Lawns, clayey soil	2

Figure 1 - Mile High Flood District criteria

END OF MEMORANDUM