

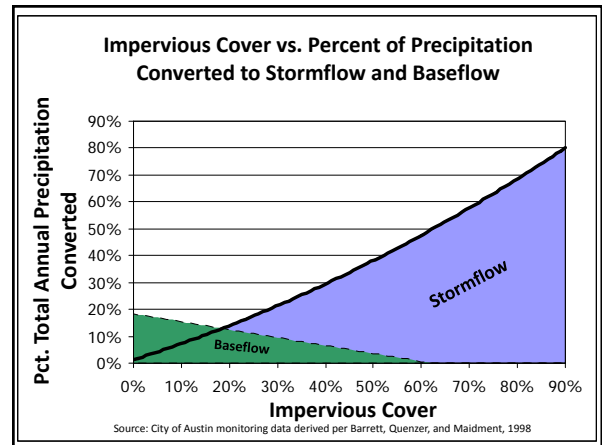


### Agenda

- Introduction
  - Brief recap of benefits of pervious surfaces
  - Brief recap of previous meeting's technical discussion
  - Summarize and review stakeholder feedback
- Discuss porous pavement
  - How is similar/differs from pervious surfaces
  - City staff proposal
- Discuss artificial turf
  - How is similar/differs from pervious surfaces
  - City staff proposal
- Preview next meetings

### Why Perviousness Matters

- Degree of imperviousness (and thus perviousness by extension) is the driver for health and safety issues relating to flood, erosion & water quality
- Increased imperviousness/urbanization drives:
  - Increased runoff volume
  - Increased peak discharge
  - Diminished baseflow
  - Stream channel enlargement
  - Decline in stream habitat quality
  - Increased stream temperature
  - And the list goes on (see Schueler, 2003, and many other sources)
- Other/Non-Watershed: Space for trees/vegetation, habitat, urban design, heat island mitigation, aesthetics, etc.



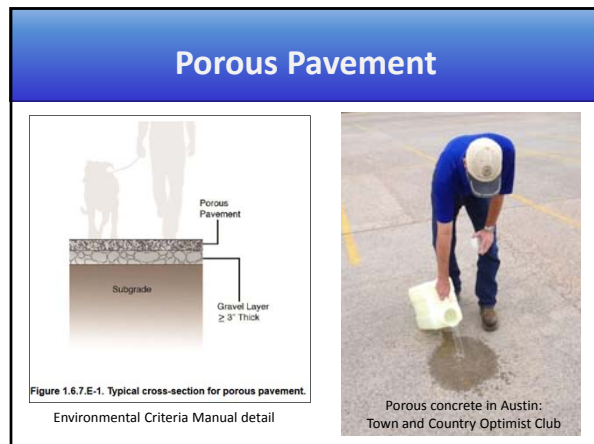
### Impervious Cover and Runoff: Avg. Annual Conversion of Total Rainfall to Runoff

Imperv. Cover Pct.	Avg. Annual Runoff	Ratio to Undeveloped (5% IC)	Typical Land Use
5%	4%	1.0	Open/Preserve
20%	14%	3.3	Low-Density SFR
40%	29%	7.1	Single-Family Res.
60%	48%	11.4	Multifamily Res.
80%	69%	16.4	Commercial/Office

Source: Derived from Barrett et al., CRWR, 1998. | SFR = Single-Family Residential

### Stakeholder Feedback on Pervious Cover Determination

- Keep policies clear, simple & practical, not Ph.D level
- Need a system that accounts for geographic variations
- Want partial credit rather than "all or nothing"
- Need space-efficient options for redevelopment (e.g., turf)
- Focus on goals of perviousness, rather than imperviousness; don't exclude green roofs and other creative solutions
- Include considerations of climate change (e.g., more intense storms, more need for pervious benefits)
- Want to know details of the technical process of determination



### Why Porous Pavement Delivers Stormwater Benefits

➤ Porous pavement differs from conventional, impervious pavement in fundamental ways, such as:

- Permits rainfall to pass through and into substrate and/or native soil below
  - Reduces runoff & augments baseflow and recharge
  - Removes pollutants (assuming proper soils, etc.)
  - Benefits adjacent trees and vegetation

➔ Thus rationale for giving water quality credit

Other non-stormwater benefits:

- Reduces surface temperature/heat island effect
- Reduces hydroplaning during storm events
- Is quieter/has less tire friction and noise

### Why Porous Pavement Does Not Address All Pervious Cover Functions

➤ Porous pavement does not perform well as actual pervious cover for other functions:

- Displaces vegetation and related benefits & functions
- Higher surface temperature than vegetation (heat island impacts)
- Does not address urban design, aesthetics, etc.
- Does not fully mitigate hydrologic impacts of impervious cover (i.e., volume and peak flows)

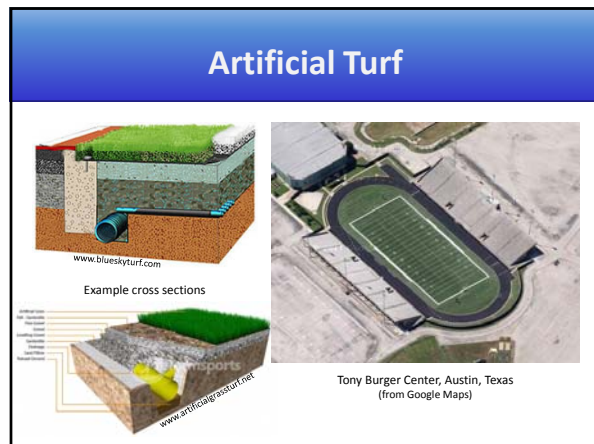
➔ Thus rationale for not giving impervious cover credit

### Porous Pavement Proposal

➤ Water quality credits now given for sidewalks and other pedestrian surfaces, but not for vehicular use areas.

Staff proposal:

- Expand ECM criteria to allow water quality credit for porous pavement for non-pedestrian surfaces
- Expected date: Fall 2014
- Limited to privately maintained facilities (e.g., private parking lots, driveways, streets and alleys; but not public roads)
- Cannot propose over karst/recharge zone or certain "hot spot" land uses (e.g., gas stations, etc.)
- Acceptable systems: interlocking concrete pavement and porous asphalt; porous concrete for pedestrian surfaces only



### Artificial Turf Benefits

- Artificial turf differs from a conventional, pervious athletic field in fundamental ways, such as:
  - Permits rainfall to pass through into substrate
  - Offers temporary storage for detention
- ➔ Thus rationale for potentially giving stormwater credit

Other non-stormwater benefits:

- Water conservation
- Higher durability/allows more frequent use
- No fertilizers, pesticides, herbicides needed (but runoff can still contain pollutants from components)

### Why Artificial Turf Does Not Address Many Pervious Cover Functions

- Artificial turf does not perform well as actual pervious cover for other functions:
  - Displaces vegetation and related benefits & functions
  - Higher surface temperature than vegetation (heat island impacts)
  - Does not address urban design, aesthetics, etc.
  - Does not fully mitigate hydrologic impacts of impervious cover (i.e., water quality and groundwater connectivity due to liners)
- ➔ Thus rationale for not giving impervious cover credit

### Artificial Turf Proposal

- Can artificial turf systems be counted as pervious cover? If so, under what conditions?

**Current code: Artificial turf = impervious**

Staff proposal:

- In considering artificial turf to count as pervious cover, the applicant has to show that pervious functions are retained.

### WPO Phase 2 Schedule, 2014

Phase 2 Kickoff	Jan. 22
Perviousness: Introduction	Feb. 21
Perviousness: Porous Pavement & Artificial Turf	Mar. 7
Beneficial Use of Stormwater: Proposed New Tools*	Mar. 21
<ul style="list-style-type: none"> <li>• Rain gardens for single-family residential</li> <li>• Rainwater harvesting options (conservation storage, green roofs, etc.)</li> </ul>	
Beneficial Use of Stormwater: Potential Policy Approaches	Apr. 4
Wrap-Up	TBD

\* May need second meeting to discuss. If so, will adjust schedule accordingly.

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<http://austintexas.gov/departments/watershed-protection-ordinance>