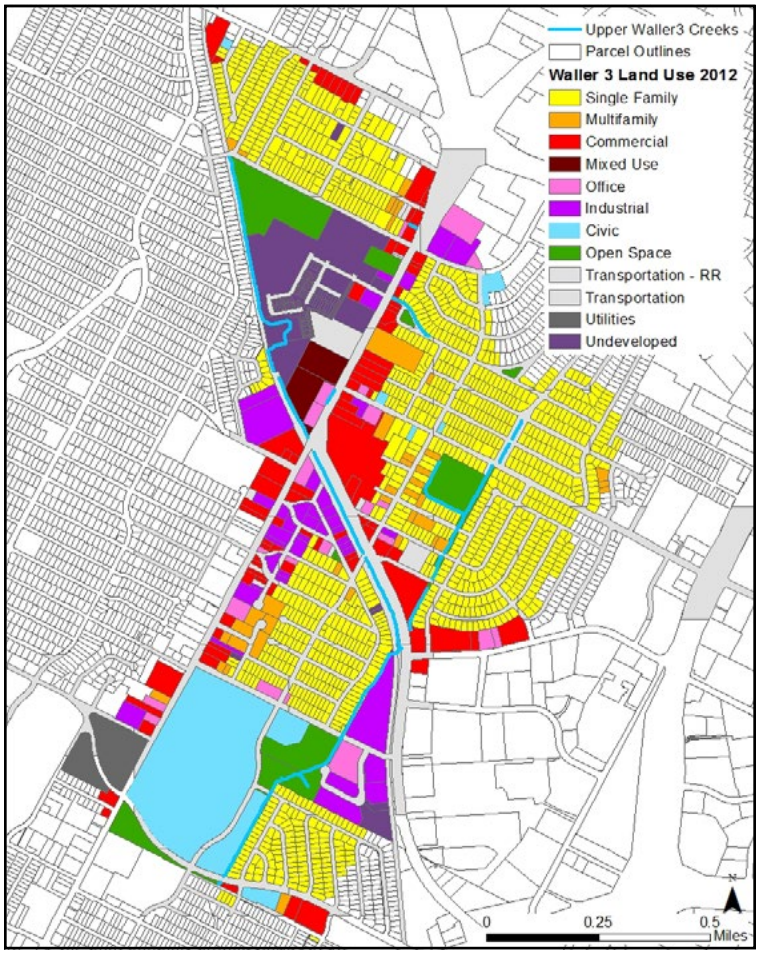
Rain Catchers Pilot in the Upper Waller Creek Watershed

Can catchment-scale distributed stormwater retention restore the hydrology and water quality of a degraded urban stream?

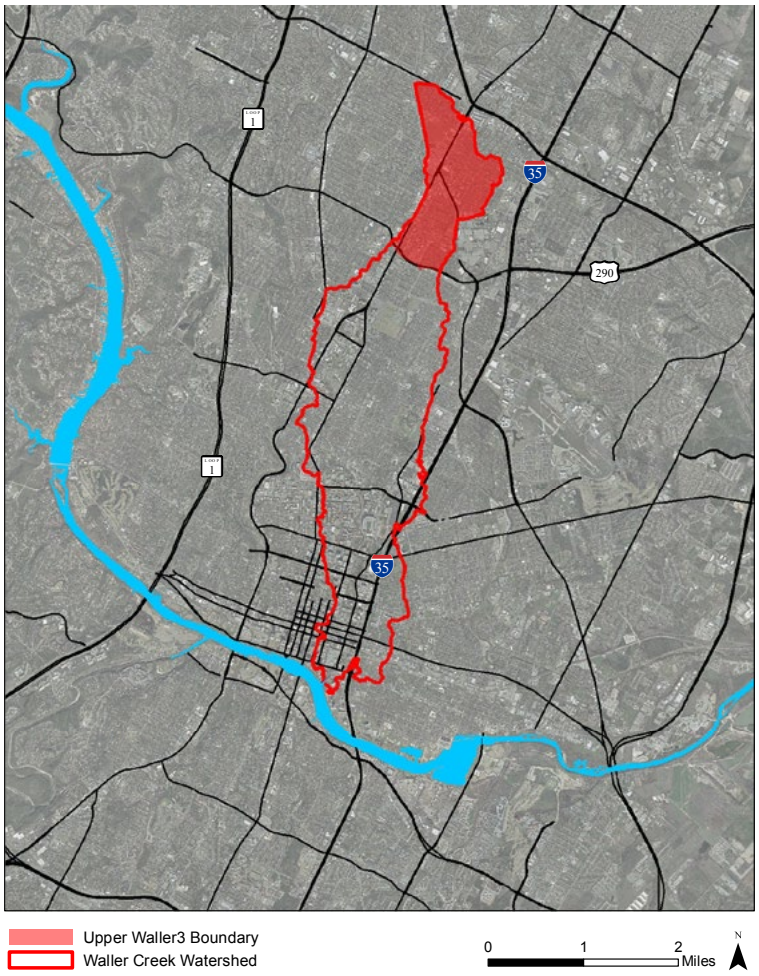
Urban development without the benefit of stormwater controls degrades streams. This is known as the urban stream syndrome: a messy mix of dirty water, erosion, flooding and loss of baseflow. Regulations that apply controls to development are in place in most cities, but there is often a large and costly legacy of dense, uncontrolled development, leading to broken streams and no room for restoration.

A wide body of research suggests that the current method of managing stormwater, moving water quickly and efficiently off the landscape and to the stream channel, is the root cause of the degradation that plagues urban streams.



UPPER WALLER FACTS

- 1 SQ. MILE DRAINAGE AREA
- 47% IMPERVIOUS COVER
- 1,250 HOMES
- DENSE TRANSIT CORRIDORS
- LARGE STATE OWNED PARCELS

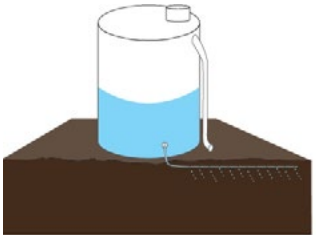


The Upper Waller Watershed, the headwaters of Waller Creek, eventually drains to Lady Bird Lake and the Lower Colorado River.

In Austin, Texas, building on the international movement toward small-scale distributed solutions to larger scale problems, a proof-of-concept project is taking form that will test the hypothesis that dense, distributed stormwater control measures, throughout an entire watershed, can reduce the negative effects of urban development on streams. By altering the hydrology of stormwater (storage, pathway, and delivery of stormwater), the flow patterns of our streams will be improved.

In addition to changing stream hydrology, which will increase water quality and reduce erosion and flooding impacts, there will be a new source of clean rainwater for a host of benefits including irrigation, cooling, wildlife and potentially indoor reuse (flushing toilets, drinking etc). A small, 2.8 sq km (1 sq mile) urban catchment with 47% impervious cover was selected to examine this hypothesis.

How do you fix a broken watershed?



- Connect cisterns to every residential roof.

- Build raingardens that capture cistern overflows and if possible, driveways.
- Reconnect the Waller creek channel and restore buffer areas to healthy riparian forests.
- Use healthy soil and robust plant communities to clean stormwater, decrease air and soil temperatures, increase biodiversity, and bring nature into our cities.
- Take stormwater waste, and turn it into the critical water resource that it is to make Austin resilient, green, and thriving.

- **95% OF STORMS CAPTURED**
- **2,500 GALLONS CAPTURED PER HOUSE**
- **1,250 CISTERN/RAINGARDEN COMBOS**

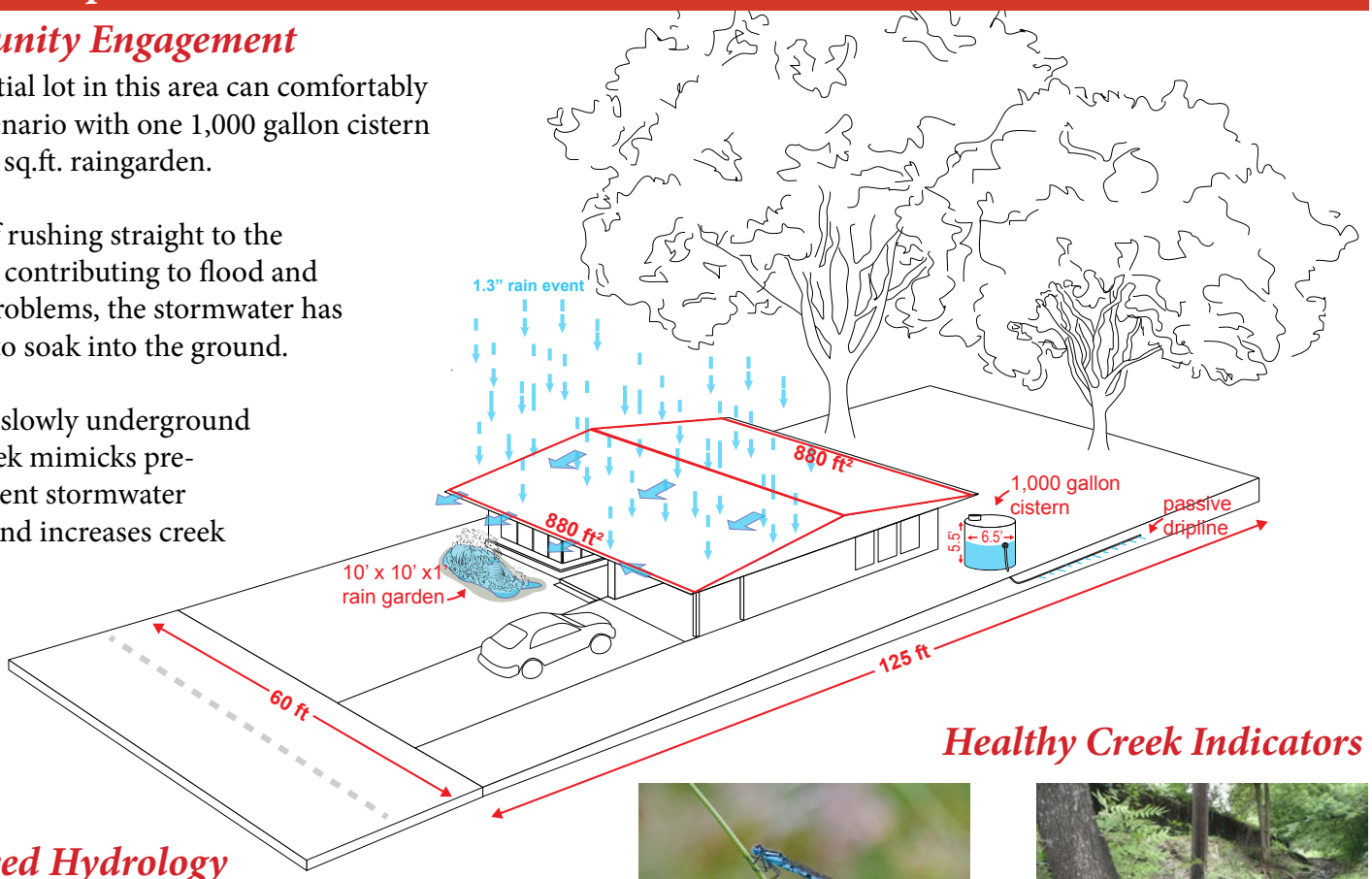
What we hope to see:

Community Engagement

A residential lot in this area can comfortably fit this scenario with one 1,000 gallon cistern and a 100 sq.ft. raingarden.

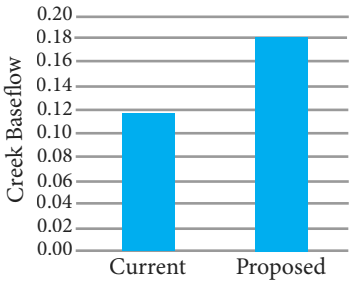
Instead of rushing straight to the creek and contributing to flood and erosion problems, the stormwater has a chance to soak into the ground.

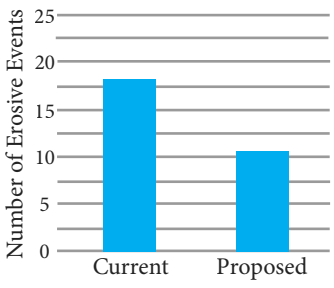
Traveling slowly underground to the creek mimicks pre-development stormwater patterns and increases creek baseflow.



Improved Hydrology

More baseflow and fewer erosive events on Waller Creek. The proposed example assumes 75% adoption of cisterns and raingardens in the study area.





Healthy Creek Indicators

Aquatic life

Stable streambanks

Clean water

Riparian forest vegetation

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