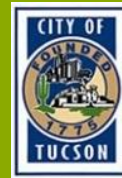


Innovations in Healthy Community Implementation:

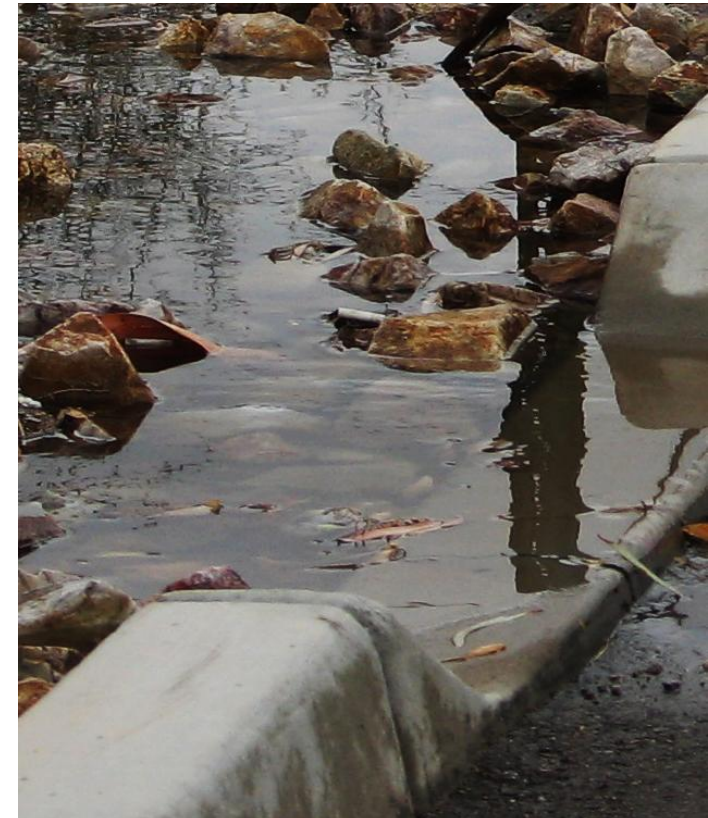
TUCSON GREEN STREETS

Irene Ogata, PLA, ASLA
Urban Landscape Manager
Planning & Development Services Dept.



3rd Annual ARIZONA HEALTHY COMMUNITIES CONFERENCE

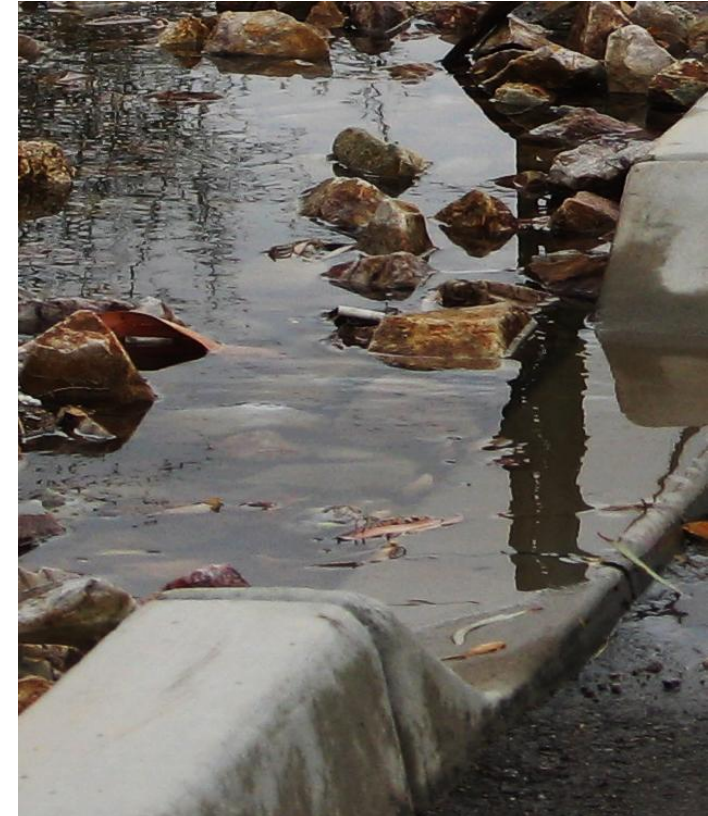
MARCH 23, 2016 / 8:30a – 4:00p
East Valley Institute of Technology | 1601 West Main Street | Mesa, Arizona



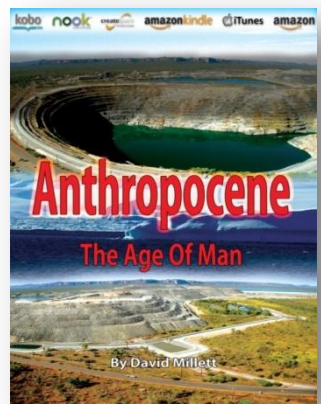
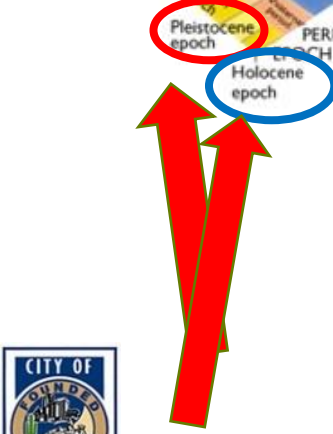
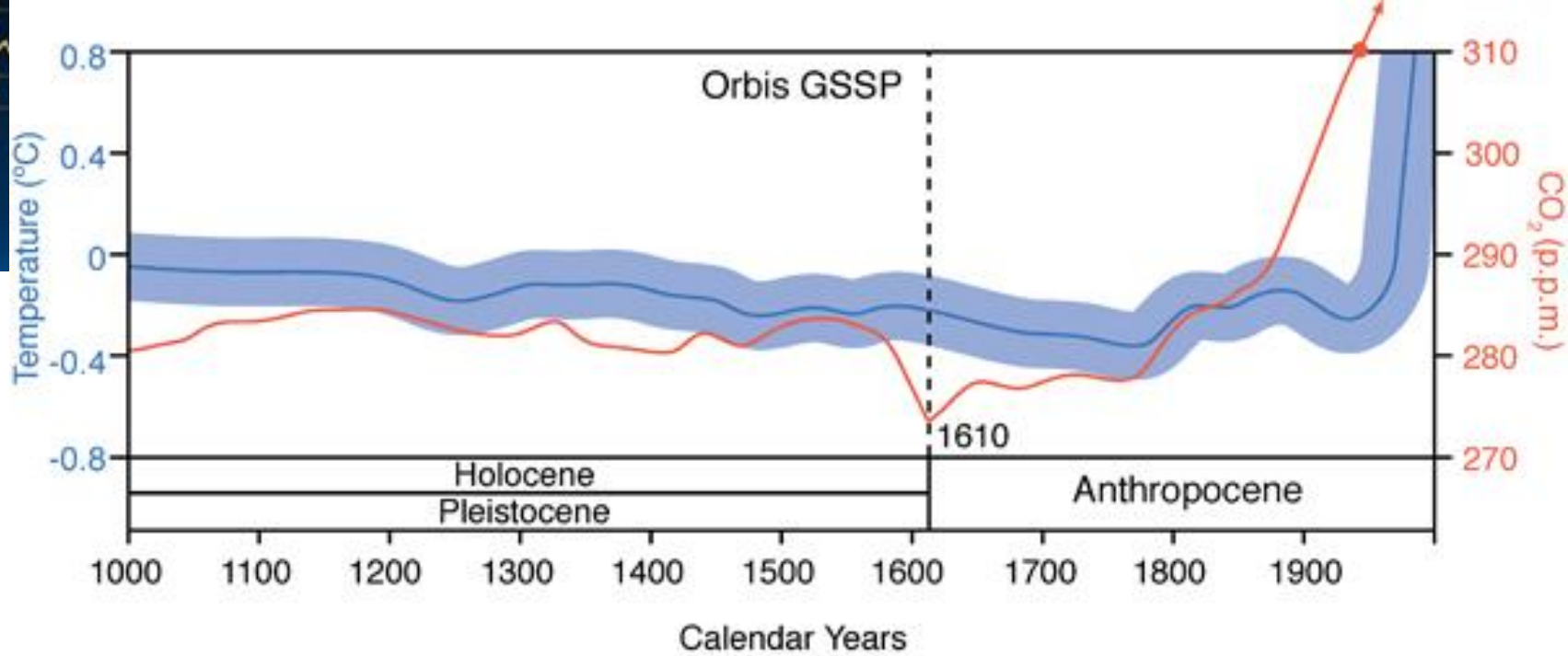
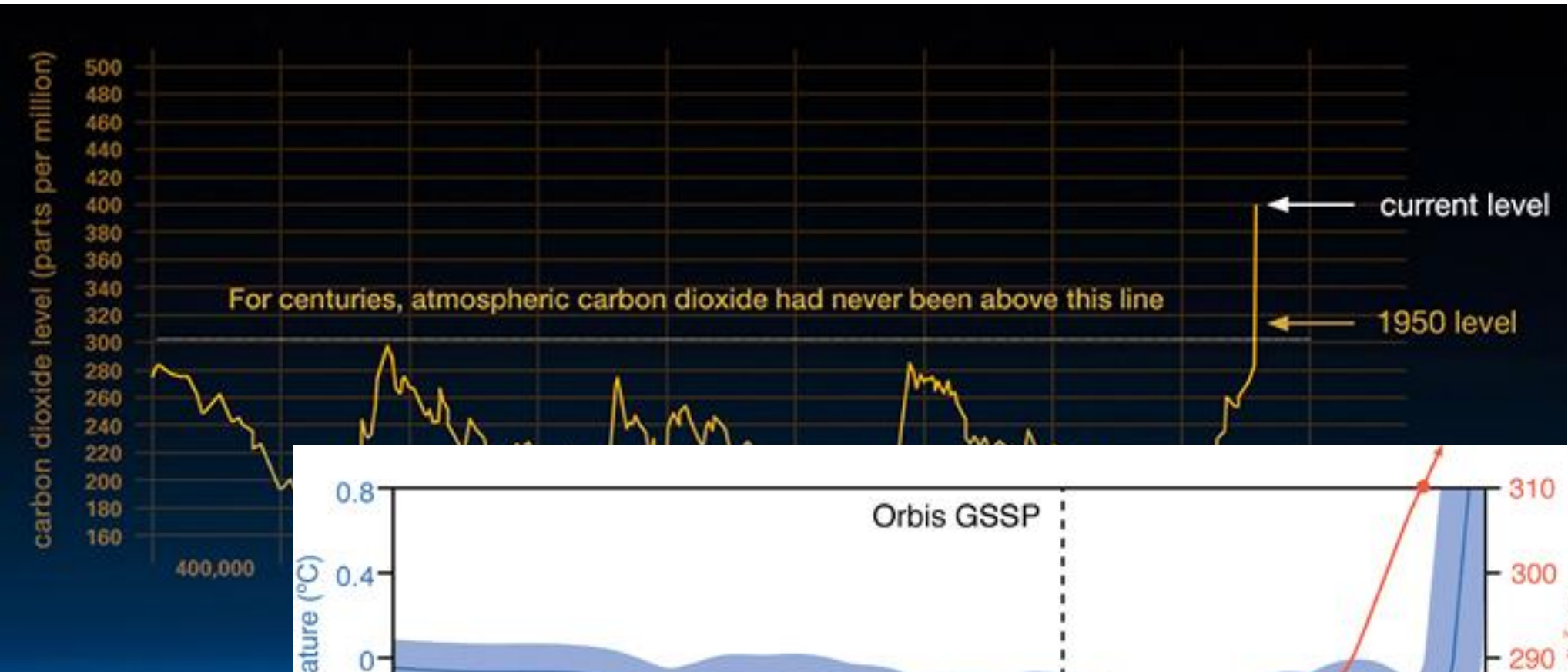
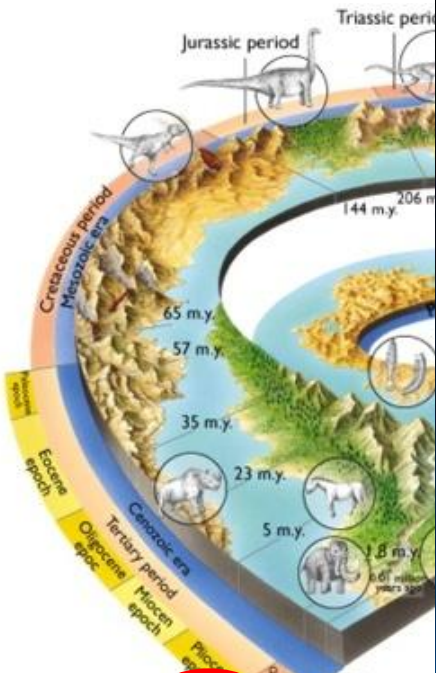
Innovations in Healthy Community Implementation:

TUCSON GREEN STREETS

- *Changes: Latest Normal*
- *Drivers: Building Resiliency*
- *Adapting: Messiness*



Geologic time



Source: <http://www.scientificamerican.com/article/mass-deaths-in-americas-start-new-co2-epoch/>

Graphic: <http://www.igbp.net/news/>

Source: http://climate.nasa.gov/climate_resources/24/

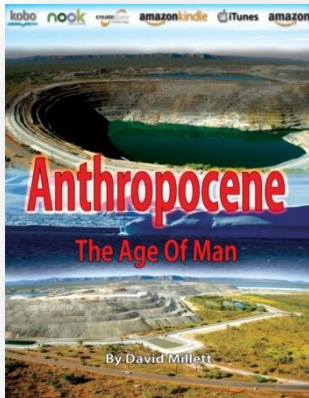
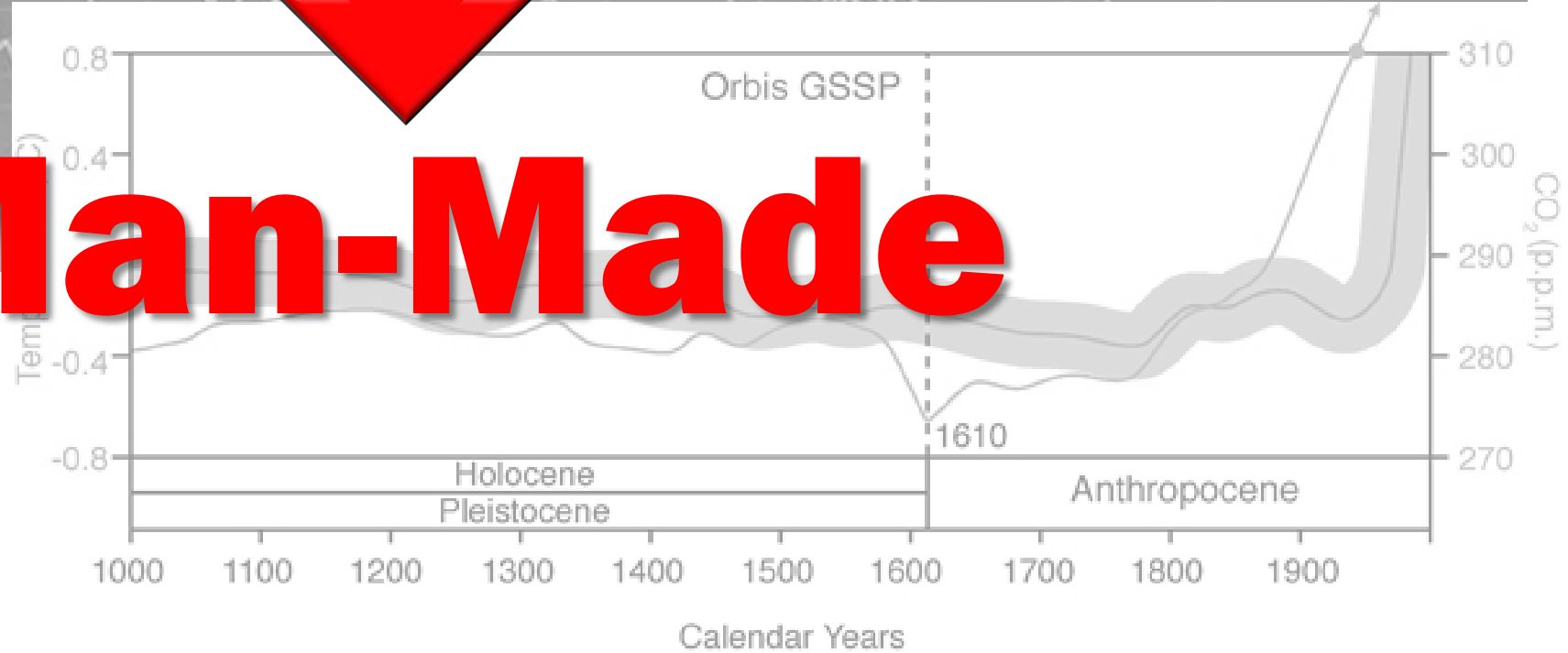
Geologic time

ANTHROPOGENIC

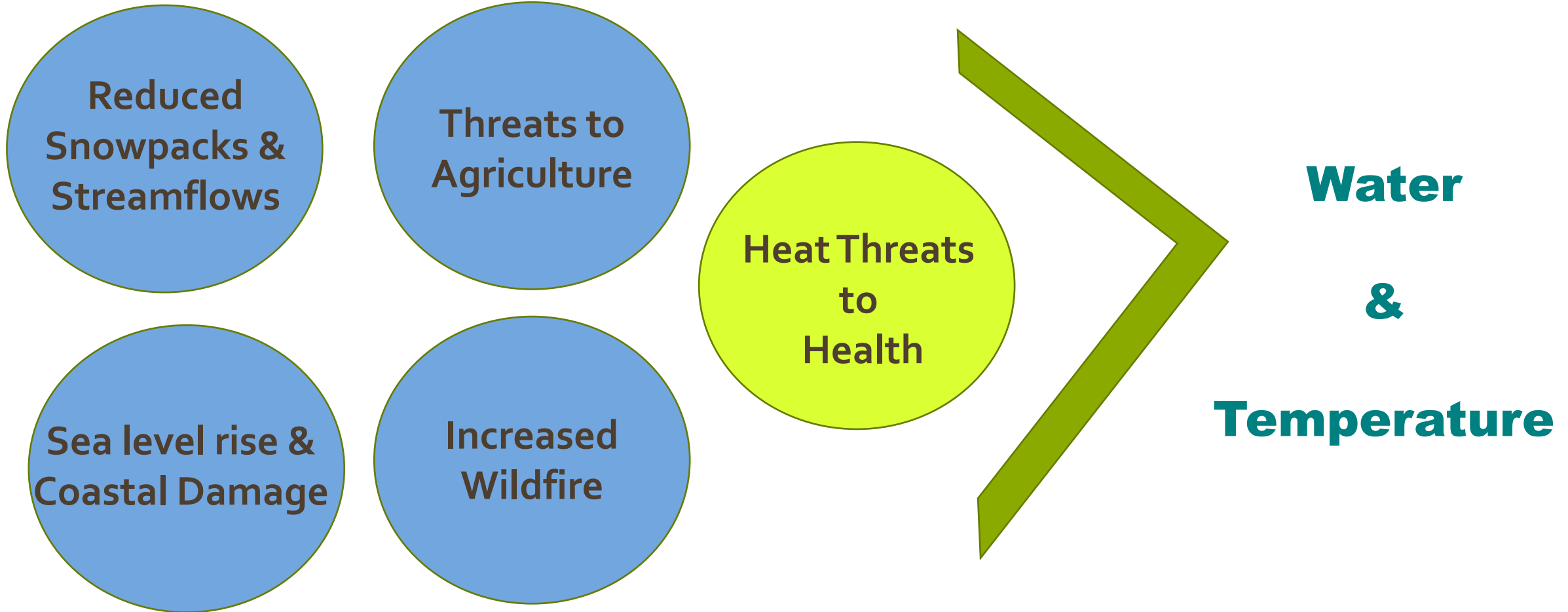
For centuries, atmospheric carbon dioxide had never been above this line

1950 level

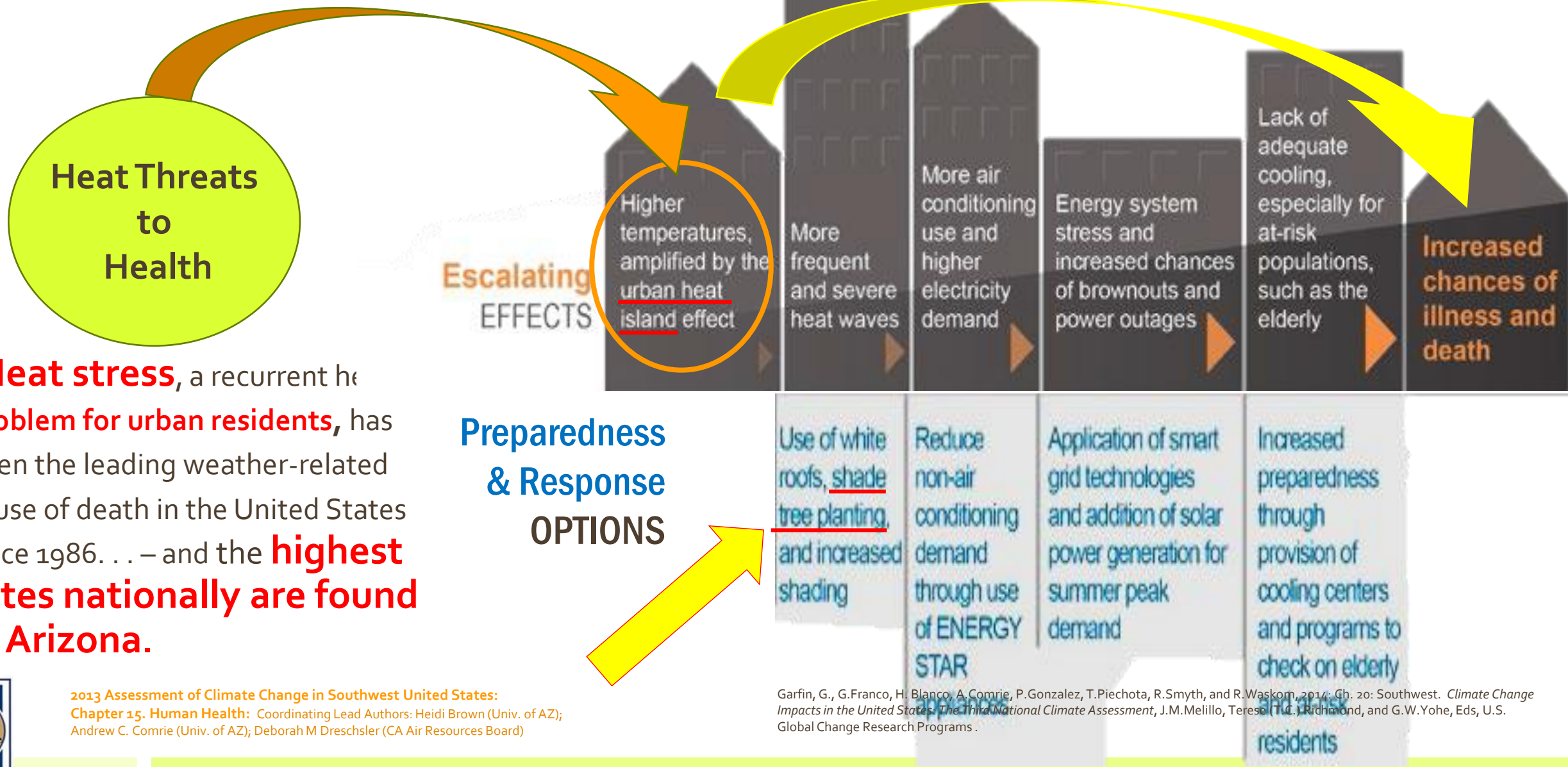
Man-Made



Climate Change Impacts: Southwest Region | 5 Sectors



Climate Change: Connecting the Urban Dot



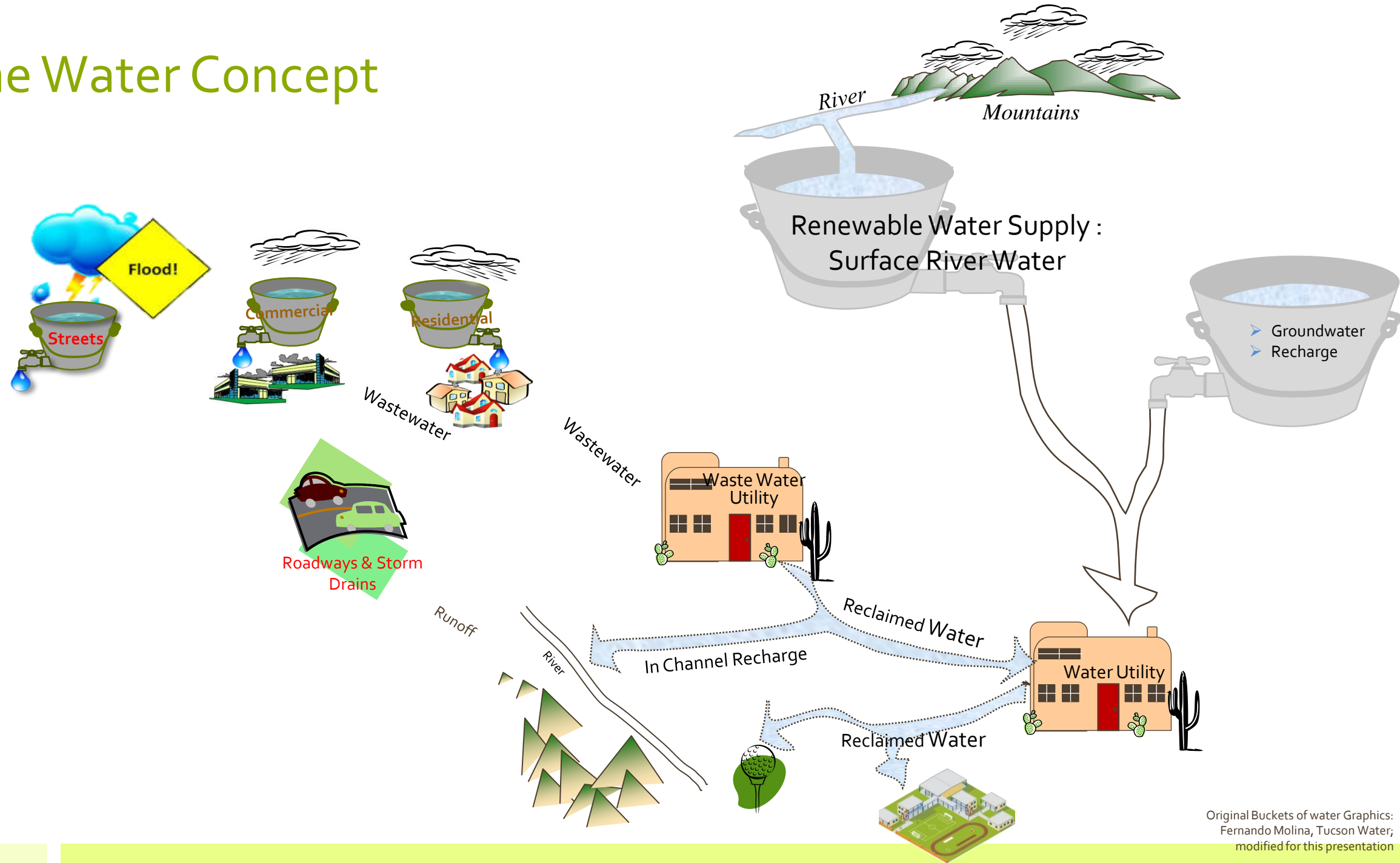
“**Heat stress**, a recurrent health problem for urban residents, has been the leading weather-related cause of death in the United States since 1986. . . – and the **highest rates nationally are found in Arizona.**”

2013 Assessment of Climate Change in Southwest United States:
Chapter 15. Human Health: Coordinating Lead Authors: Heidi Brown (Univ. of AZ);
Andrew C. Comrie (Univ. of AZ); Deborah M Dreschsler (CA Air Resources Board)

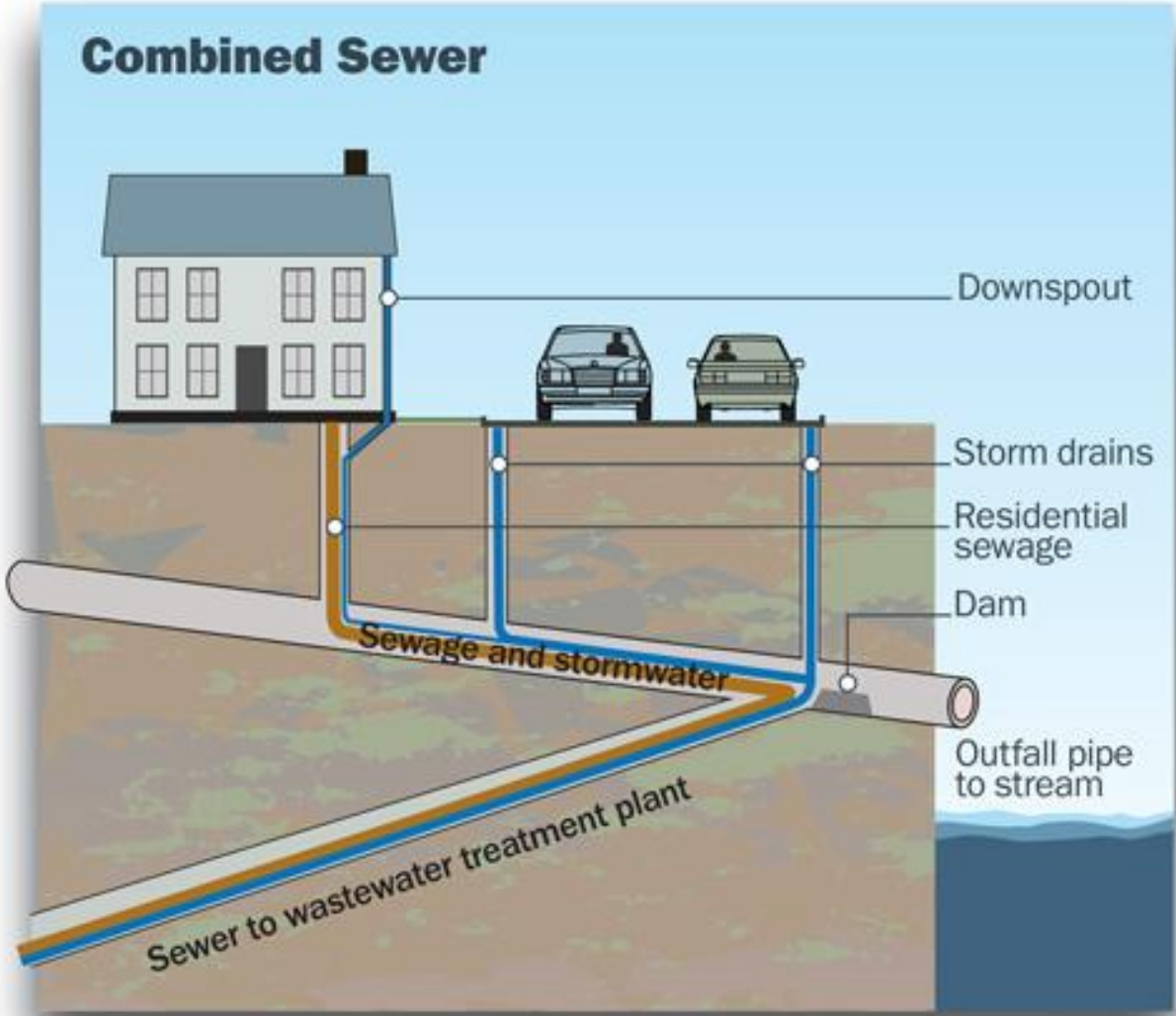
Garfin, G., G.Franco, H. Blanco, A. Comrie, P.Gonzalez, T.Piechota, R.Smyth, and R.Waskom, 2014: Ch. 20: Southwest. *Climate Change Impacts in the United States: The Third National Climate Assessment*, J.M.Melillo, Terese (T.C.) Richmond, and G.W.Yohe, Eds, U.S. Global Change Research Programs .



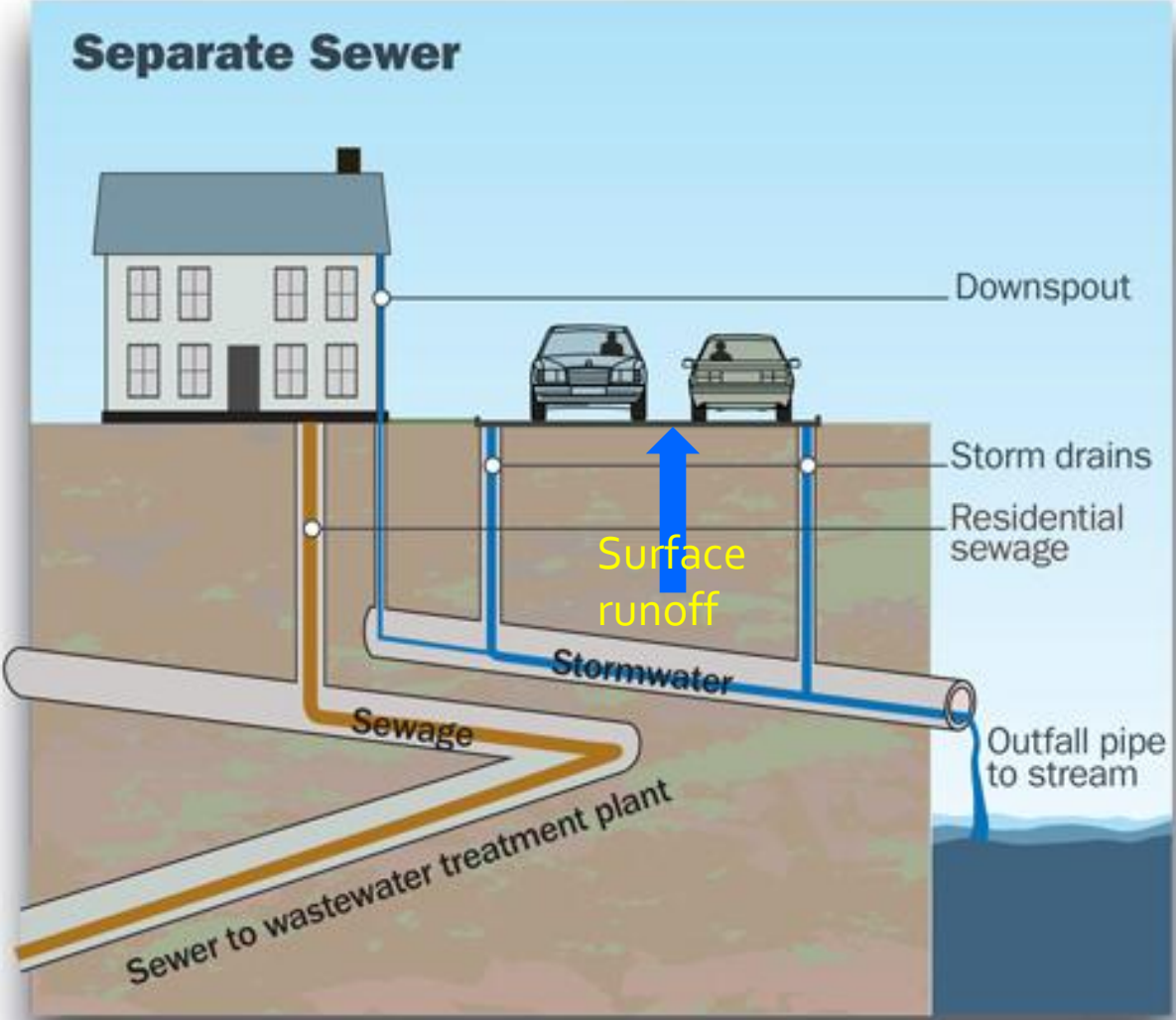
One Water Concept



Public Health = 2 Sewer Systems



Combined Sewer System



Separated Sewer System



Connecting Water, UHI and Shade Trees : Development of Standards



Connecting Water, UHI and Shade Trees : Involving community volunteers



Photo: basin & cistern; Watershed Management Group (WMG)

Connecting Water, UHI and Shade Trees : Involving community volunteers



City | County | University staff volunteers



City Parks assisting neighborhood volunteers



City Transportation assisting neighborhood volunteers

Connecting Water, UHI and Shade Trees : University of Arizona | Civano



Photo: <http://www.environment.arizona.edu/sites/default/files/styles/news-large/public/enr2-large.jpg?itok=pAKb4wyi/>



Photo: <http://tucsoncitizen.com/morgue/2009/01/12/107340-water-harvesting-a-tasty-deal-for-area/>

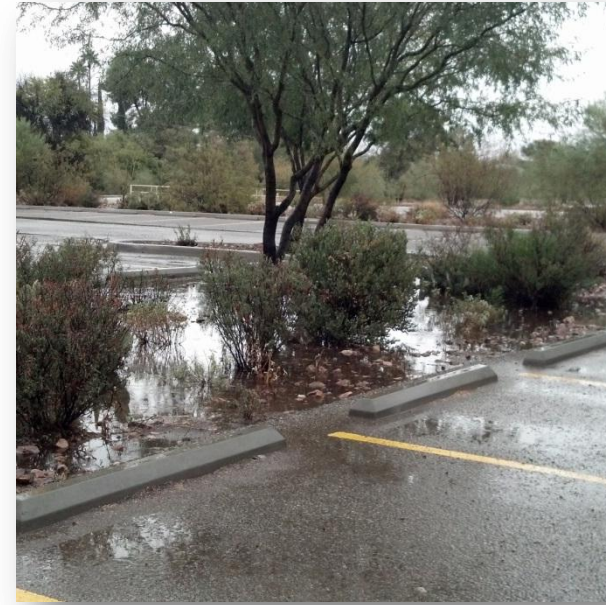
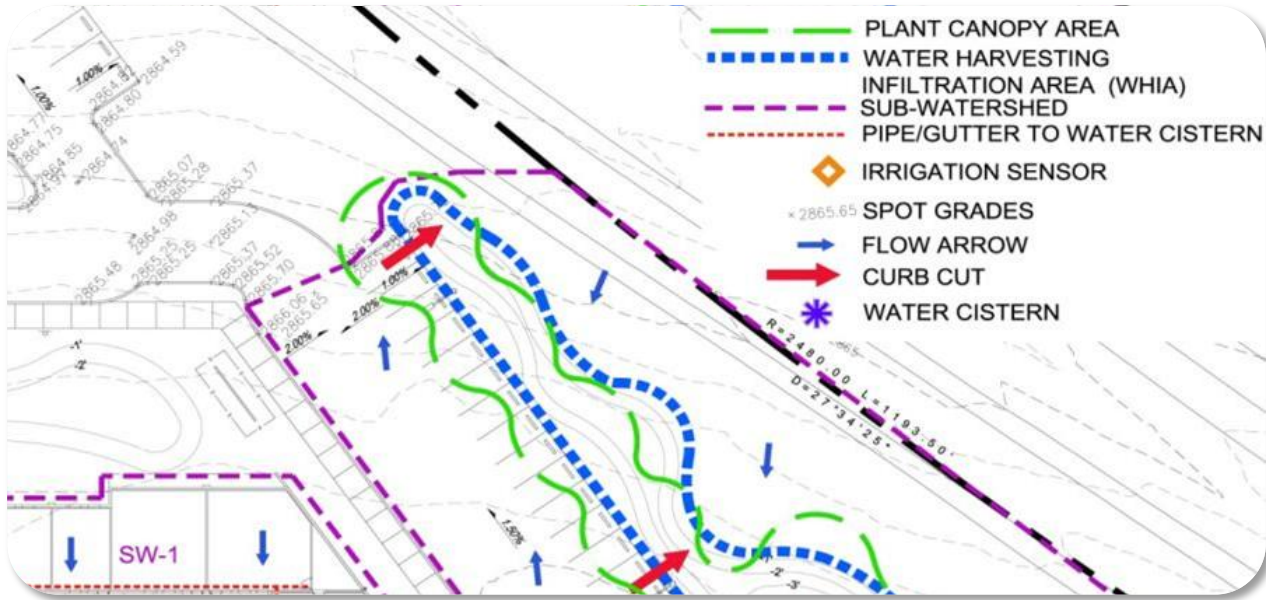


Photo: <https://www.asla.org/sustainablelandscapes/sonoran.html> : Bill Timmerman

Civano Neighborhood



Connecting Water, UHI and Shade Trees : Commercial RWH Ordinance



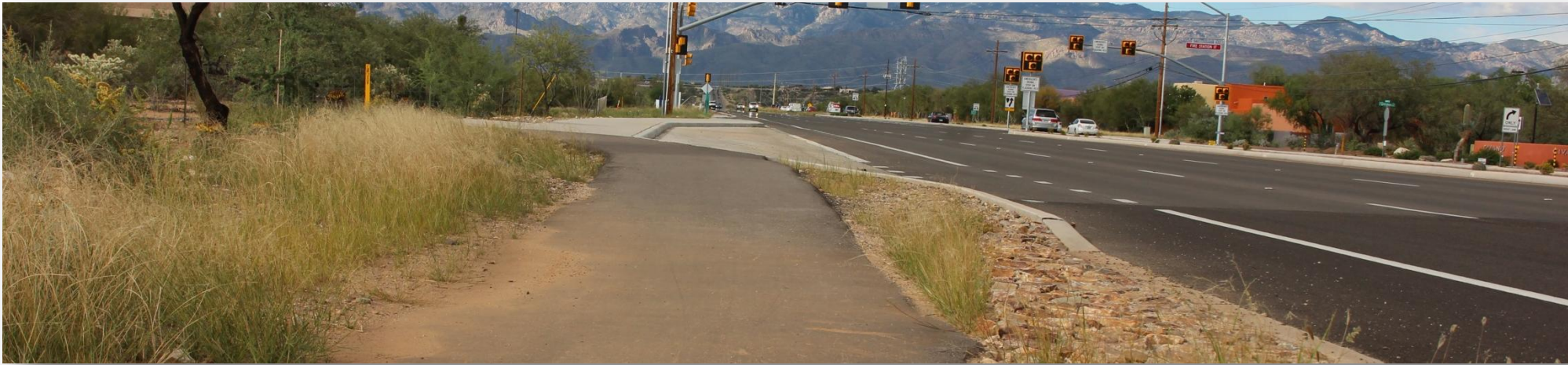
The Water Budget

Rainfall
+ Plant H₂O Need
+ Basin area needed
= Minimum Required H₂O Volume
for healthy plant survivability

Water Resources
Research Center



Connecting Water, UHI and Shade Trees: TDOT APG Green Streets

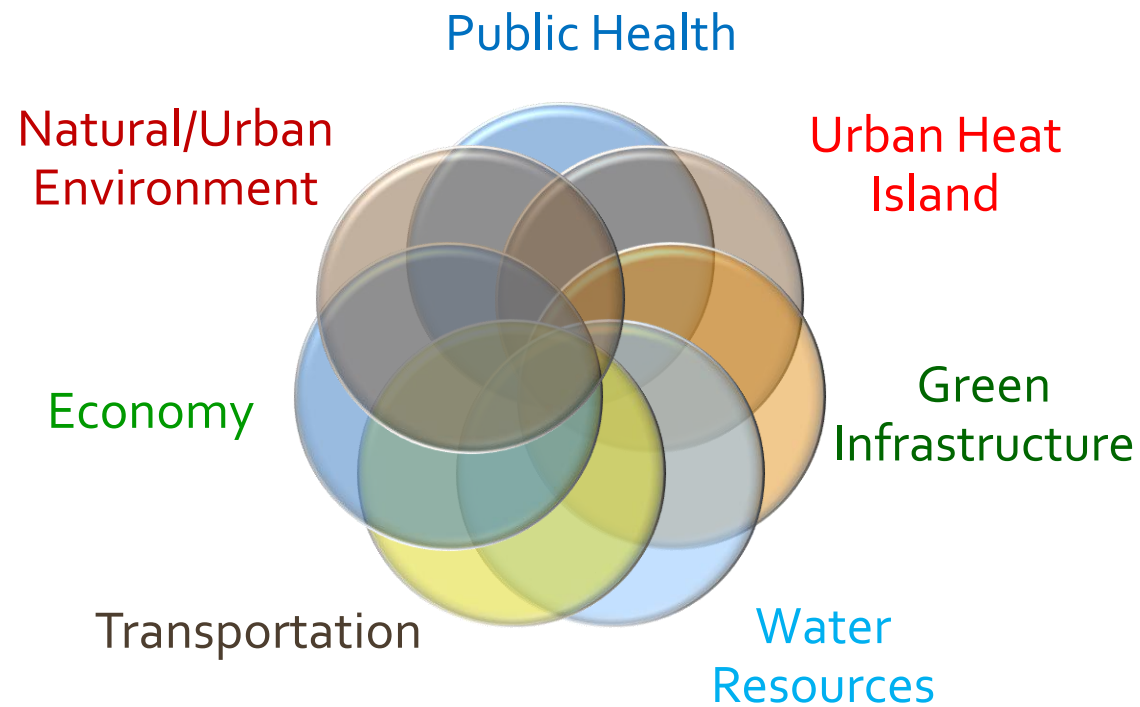


TDOT : Houghton Road

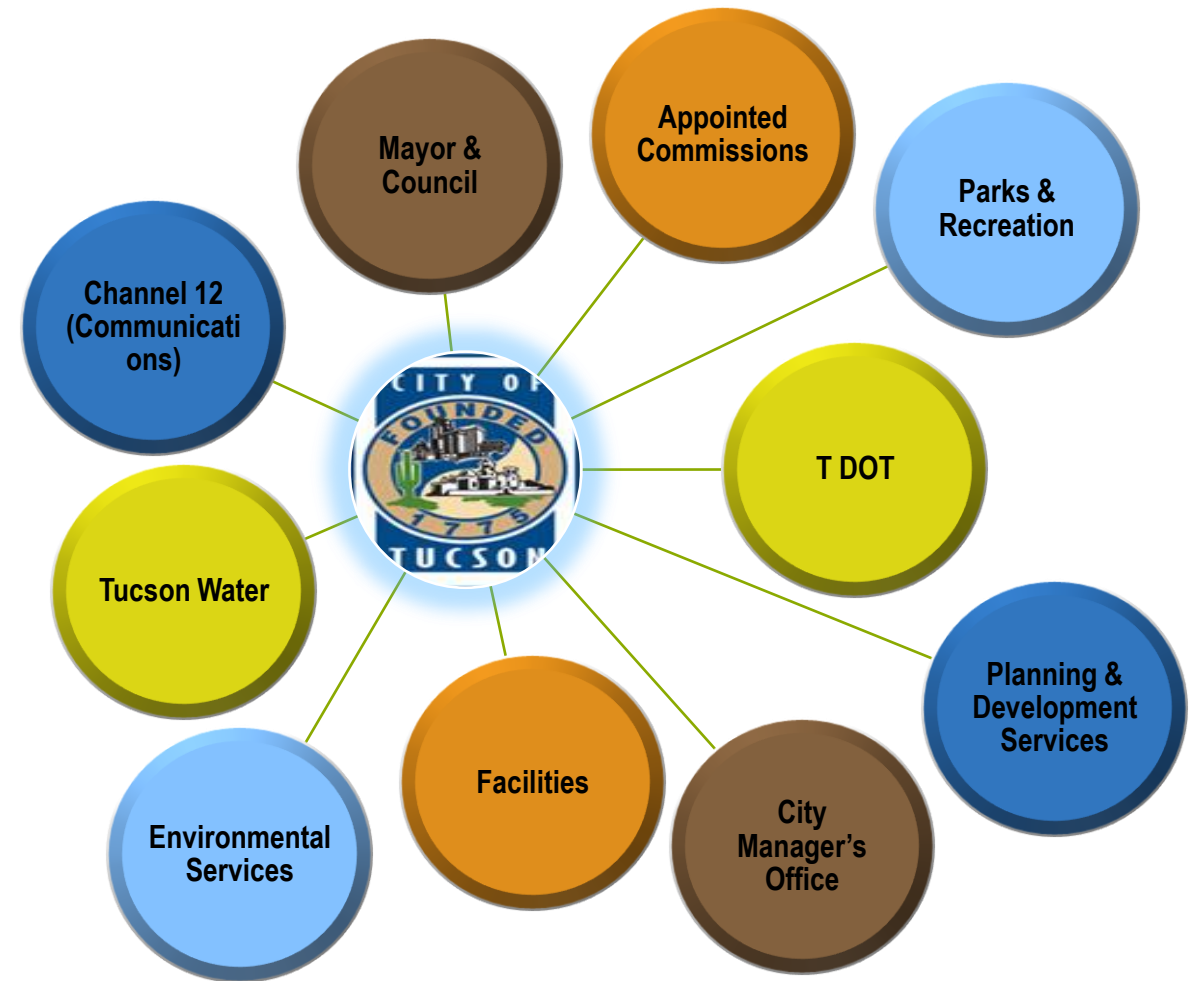


TDOT : St. Mary's Rd | Downtown Links

Integrative Practice of Green Infrastructure



Multiple Overlapping Elements



Multiple Interacting Players

[this illustrates Public Sector Depts]



RESOURCES

Univ. of Arizona Water Resource Research Center newsletter article:

<https://wrrc.arizona.edu/LID-green-infrastructure>

Rainwater Harvesting Ordinance:

<http://www.tucsonaz.gov/ocsd/sustainability/wter/rainwaterharvesting.php>

Tucson Department of Transportation Green Street Active Practice Guideline:

http://cms3.tucsonaz.gov/files/transportation/Green_Streets_APG_Signed_by_Director.pdf

City Transportation Landscape Details:

<http://tdot.tucsonaz.gov/tdot/landscape>

Rainwater Harvesting Guidance Manual:

<http://www.tucsonaz.gov/files/transportation/2006WaterHarvesting.pdf>

Green Infrastructure for Southwestern Neighborhoods:

<http://watershedmg.org/download-green-infrastructure-manual>

Single-family Rainwater Harvesting Incentive Rebates:

<http://www.tucsonaz.gov/water/rwh-rebate>



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City of Tucson