

Partnerships, Trees and Water Quality

A Riparian Restoration Project

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McINTNEY TEXAS
BEAUTIFUL
Restore the Canopy
WILSON CREEK TREE PLANTING EVENT
A BRANSH RESTORATION PARTNERSHIP PROJECT



Plant trees to protect water quality and restore Wilson Creek to its natural beauty.

SATURDAY, NOV. 6, 2021
8 A.M. – NOON

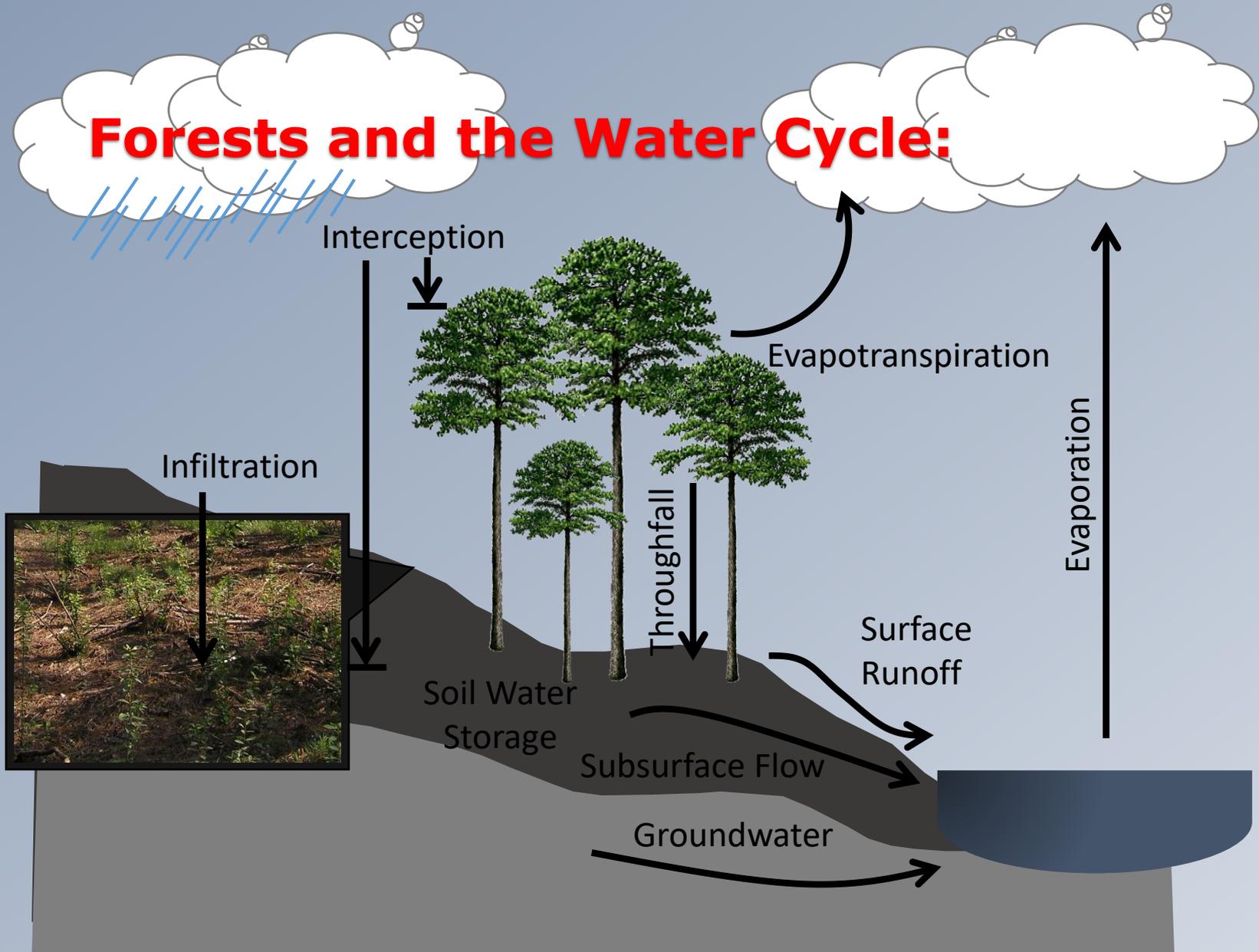
Children 12 years or older may volunteer with an adult.



Registration required by Oct. 22
McIntneyTexas.org/WCTrees



Forests and the Water Cycle:

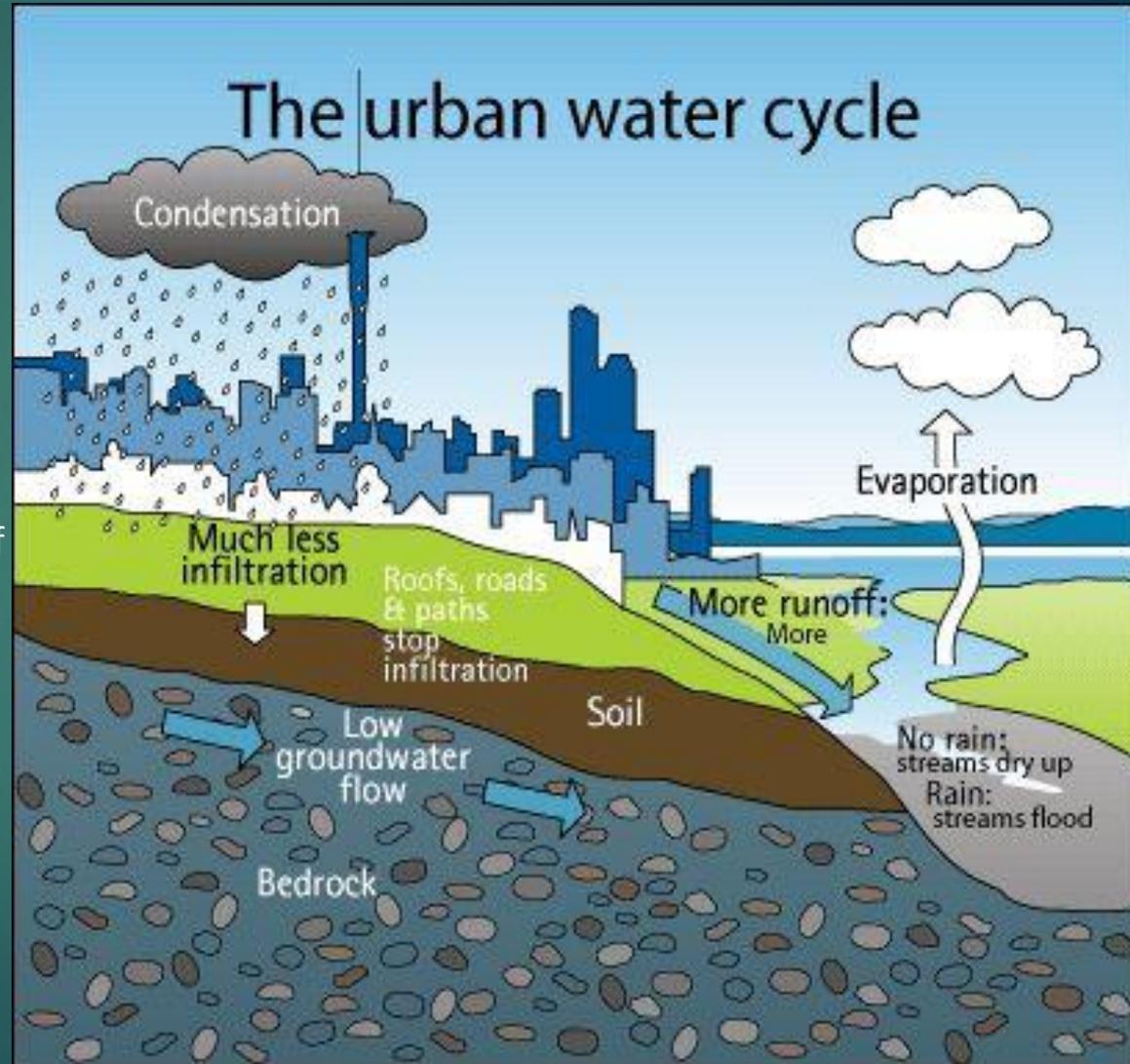




**Forested Watersheds Provide the Cleanest
Water of any Land Use**

General Urban Environments- Increase in Impervious Cover

- ▶ Removal of Tree Canopy Cover
- ▶ Removal of Ground Cover –
vegetation
- ▶ Removal of Permeable Top Soil
- ▶ Severe compaction and paving of
remaining soil
- ▶ Underground Pipe and Sewer
infrastructures

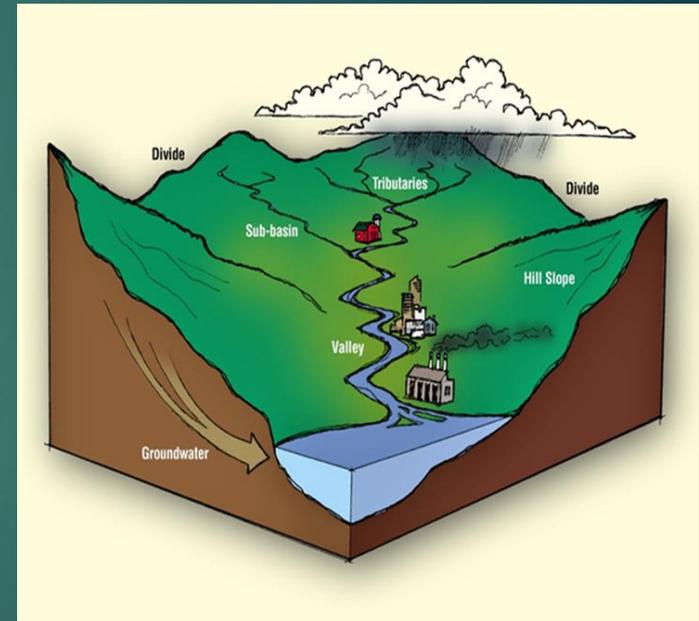


Importance of having a Watershed Protection Plan in place



Watershed Protection plans (WPPs)

- ▶ Non-regulatory framework to protect and improve water quality
- ▶ Watershed approach encourages coordination across multiple jurisdictions
- ▶ Community-driven by stakeholders who live, work and recreate in the watershed
- ▶ Relies on partnerships to develop and implement the plan

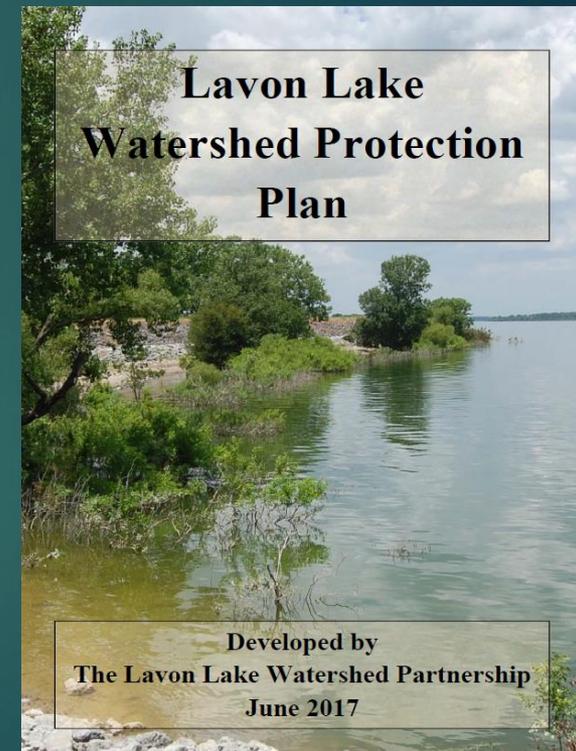


Lavon Lake WPP

Watershed Protection Plan

(Accepted by EPA December, 2017)

- ▶ Established a 10-year implementation horizon to:
 - Reduce bacteria
 - Reduce sediment and nutrient loads
 - Help keep toxic/hazardous substances out of the water
- ▶ Created grant funding opportunities for management measures identified in the plan
- ▶ Ongoing Implementation
 - Water quality monitoring (14 sites)
 - Demonstration of green stormwater infrastructure
 - Education & outreach
 - **Riparian & shoreline restoration projects**



Project Timeline and The Value of Networking

- ▶ September 19, 2019 – Urban Stream Restoration Workshop in McKinney, TX
- ▶ October 24th 2020 – Learns about Bonneville Environmental Foundation's "Change the Course Partnership" Funding Opportunity
- ▶ David was already talking to Bonneville Environmental Foundation at the time.
- ▶ February 18th 2021 – Project Proposal Submitted
- ▶ April 2021 – Project Fully Funded

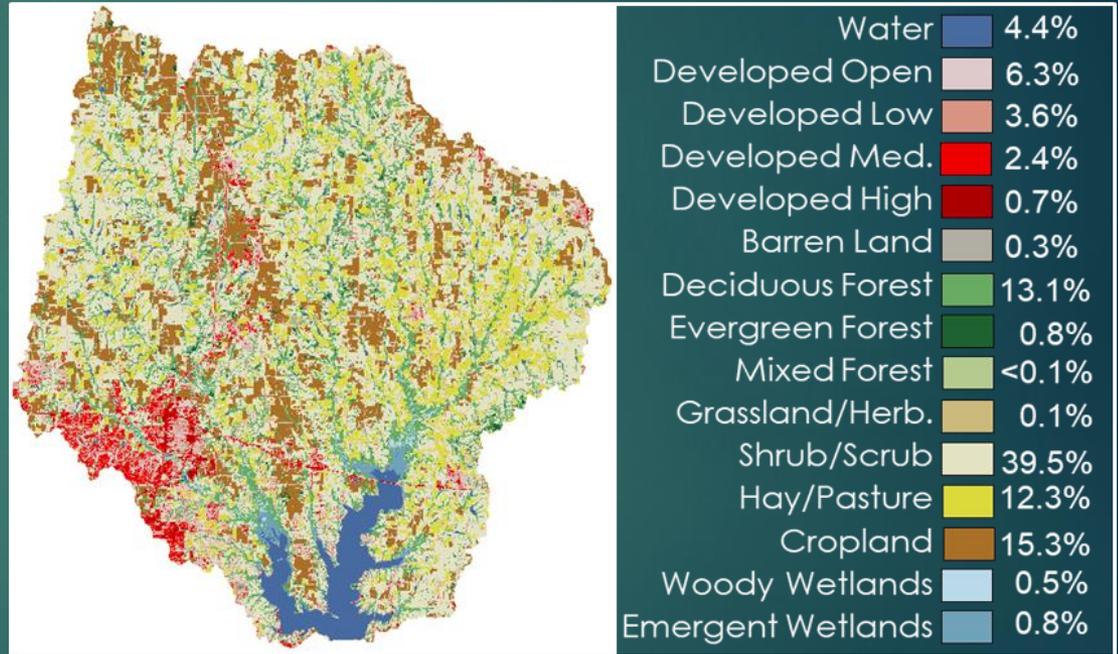
Site Selection

Macro-view

- ▶ Urbanizing area
- ▶ Impaired streams
 - ▶ East Fork Trinity River
 - ▶ Wilson Creek

Micro-view

- ▶ Appropriateness of the site
- ▶ Condition of the land
- ▶ Landowner fit



Important Criteria for Site Selection

01

Impact to Stream Restoration

- Thin Vegetative Riparian Buffer Density
- Adequate Planting Space
- Hydrologic Location Impact

02

Appropriate Access to Site

03

Ownership

- Future Use of the Property
- Can Owner Help with Maintenance

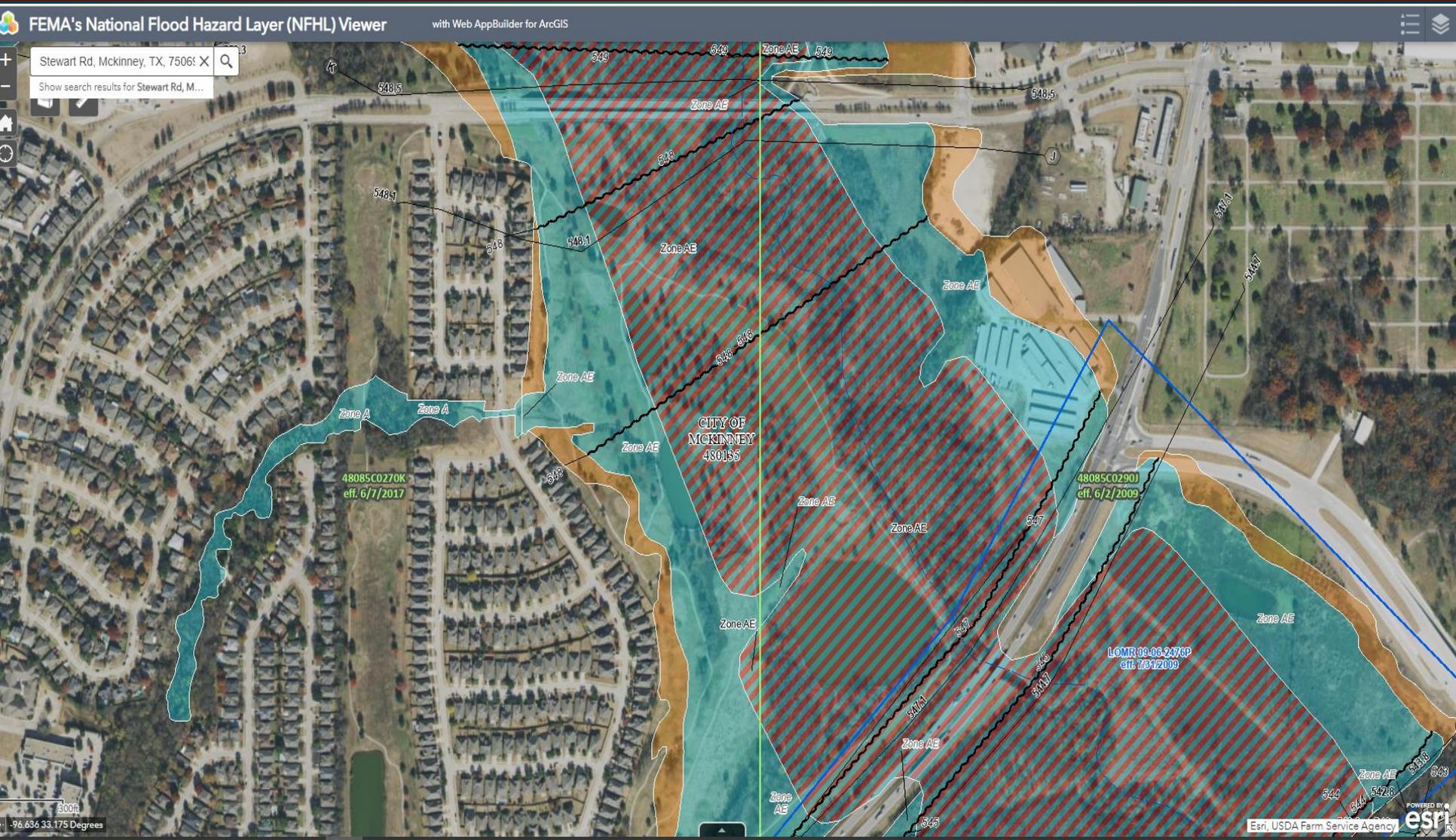
Impact to Stream Restoration



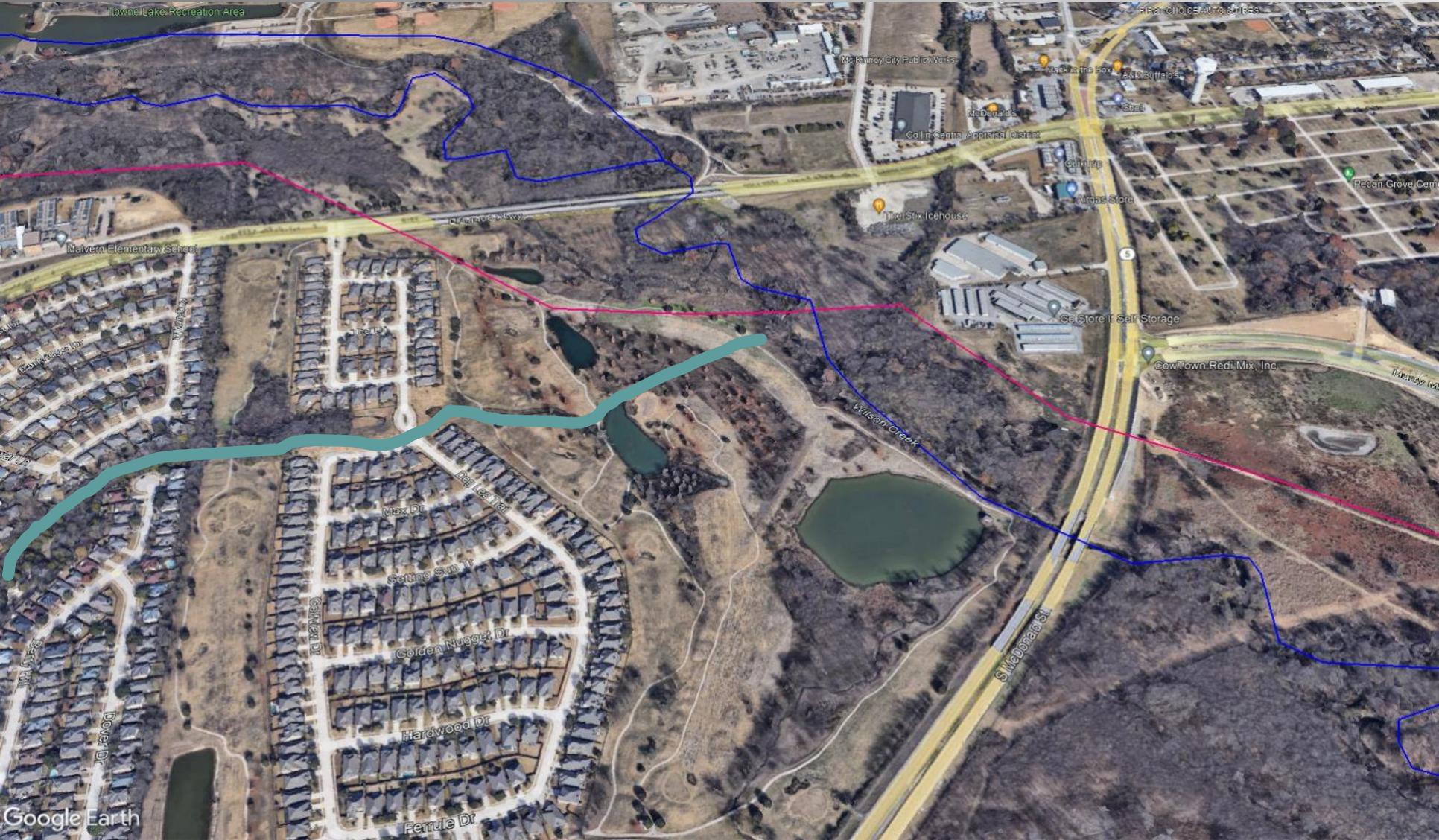
Google Earth

Image © 2021 Maxar Technologies

Impact to Stream Restoration



Impact to Stream Restoration



Adequate Access to the Site



© CCMGA 1

Adequate Access to the Site



© CCMGA 1

Adequate Access to the Site



Future Use of the Property



Project Partners



- ▶ Bonneville Environmental Foundation
- ▶ City of McKinney
 - ▶ Parks & Recreation Dept.
 - ▶ Solid Waste Dept.
 - ▶ Communication Dept.
 - ▶ Stormwater Dept.
- ▶ McKinney Parks Foundation
- ▶ Collin County Master Naturalists
- ▶ Collin County Master Gardeners
- ▶ The Heard Museum
- ▶ Texas A&M Forest Service
- ▶ North Texas Municipal Water District

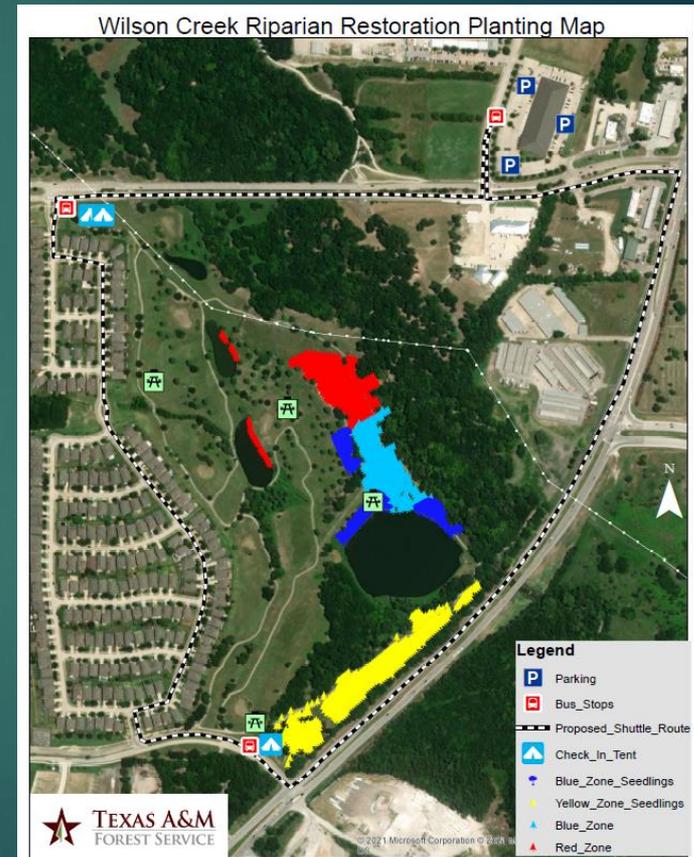


Project Planning

Planning & coordination between May and November

- ▶ Created advertising & set up volunteer sign-up web site
- ▶ Purchased 800 trees (Texas Tree Foundation)
- ▶ Secured 800 seedlings donated by Texas A&M Forest Service
- ▶ Purchased mulch (870 cu. ft.)
- ▶ Secured supplies and goodie bags
- ▶ Established planting zones
- ▶ Planned for volunteer day logistics

Core team began weekly planning meetings in October leading up to the November 6 event



Prep Week November 1-6

- ▶ Over 1,600 trees due to arrive in less than a week
- ▶ Volunteer participation
- ▶ Staging
 - ▶ Porta pots
 - ▶ Mulch
 - ▶ Trees
 - ▶ Equipment & Tools
 - ▶ Hand trowels
 - ▶ shovels & rakes
 - ▶ Pull Carts



Prep Week November 1-6

Site Prep

- ▶ Pipelines – Texas 811
- ▶ Heavy equipment
- ▶ Holes dug
- ▶ Mulch and trees distributed



Prep Week November 1-6

Volunteers just needed to
place trees in the hole,
backfill and mulch
Eazy Peazy!



Planting Day – November 6, 2021



Planting Day – November 6, 2021



Event Highlights

- ▶ 1 600 native riparian species trees planted near Wilson Creek
- ▶ Zero-waste event.
- ▶ Over 150 volunteers and 1146 hours of volunteer labor to complete site prep and planting.
- ▶ Part of Texas Arbor Day livestream



Tree Planting Benefits and i-Tree



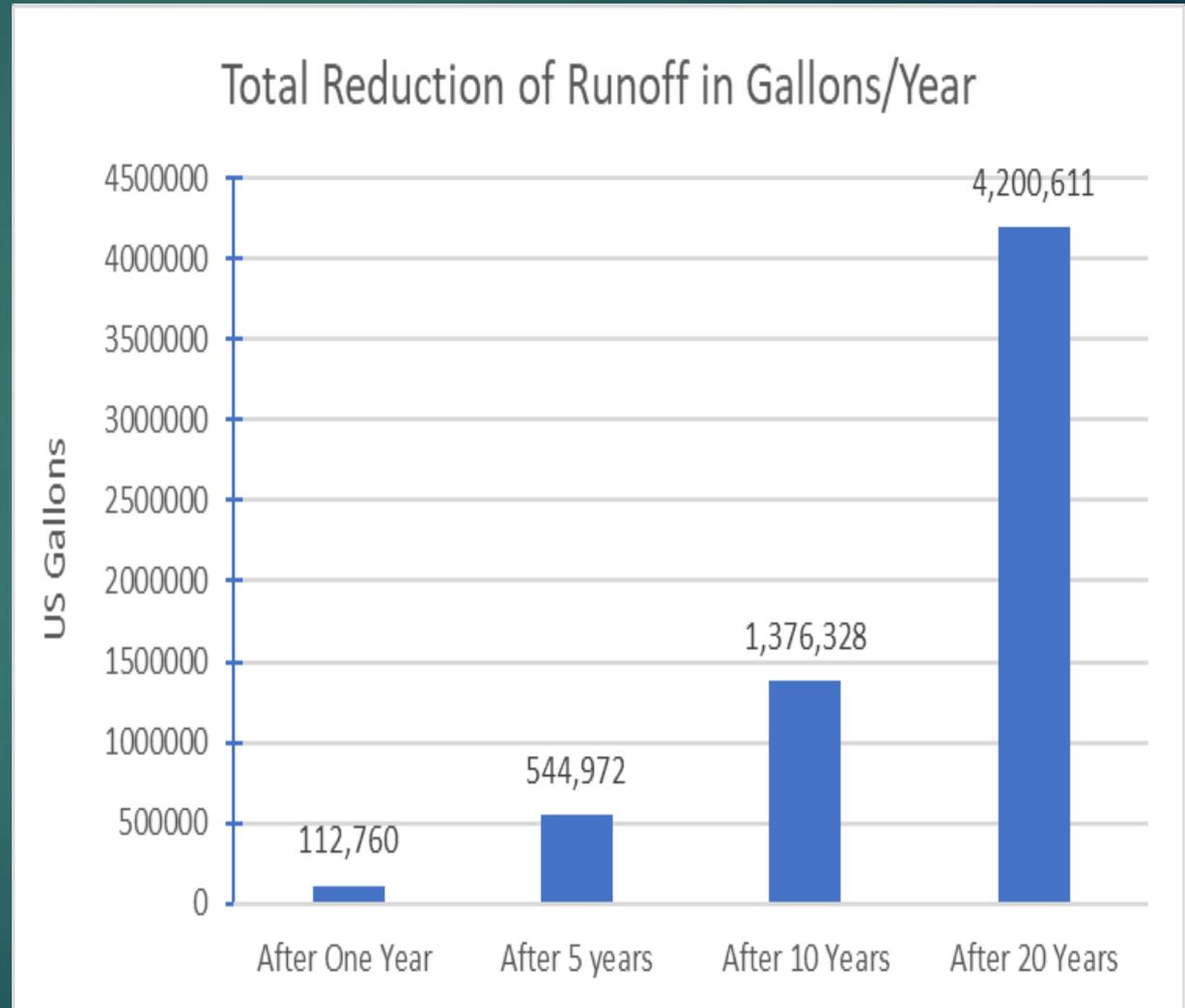
Suite of 6 online tools used to quantify the benefits of trees based on peer reviewed research by the U.S. Forest Service. These benefits include:

- ▶ Stormwater reduction and water quality improvements
- ▶ Carbon sequestration and storage
- ▶ Residential energy savings
- ▶ Air quality filtration (O₂, NO₂ and SO₂)



Predicted Total Surface Runoff Reduction On Site

- ▶ Combined water conserved benefits of all trees and reflected for anticipated mortality
- ▶ Mortality based on urban tree mortality literature values. (Hilbert et al. 2019)
- ▶ Tree benefits exist and grow in perpetuity as long as that tree is alive.
- ▶ Almost 1.1 million pounds of carbon sequestered and over 4000 pounds of air pollution removed after 20 years.



Challenges and Lessons Learned



- ▶ Coordinating So Many Different Agencies
- ▶ Logistics- Tree sizes, holes
- ▶ Volunteer sign-up confusion
- ▶ Inexperience- Easier every time moving forward



Conclusions



- ▶ Forested watersheds provide the cleanest water of any land use.
- ▶ Trees provide a number of benefits to urban watersheds including positive impacts to water quality and flood mitigation
- ▶ Consider increasing urban forest canopy as a water quality strategy in your local WPPs and other projects.
- ▶ Creating and maintaining successful partnerships are critical to successful projects now and in the future.

Questions?

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