



THE MEADOWS CENTER FOR WATER AND THE ENVIRONMENT

No natural resource is more important to our future than Water. Water is what we do.

RESEARCH | STEWARDSHIP | SERVICE | EDUCATION

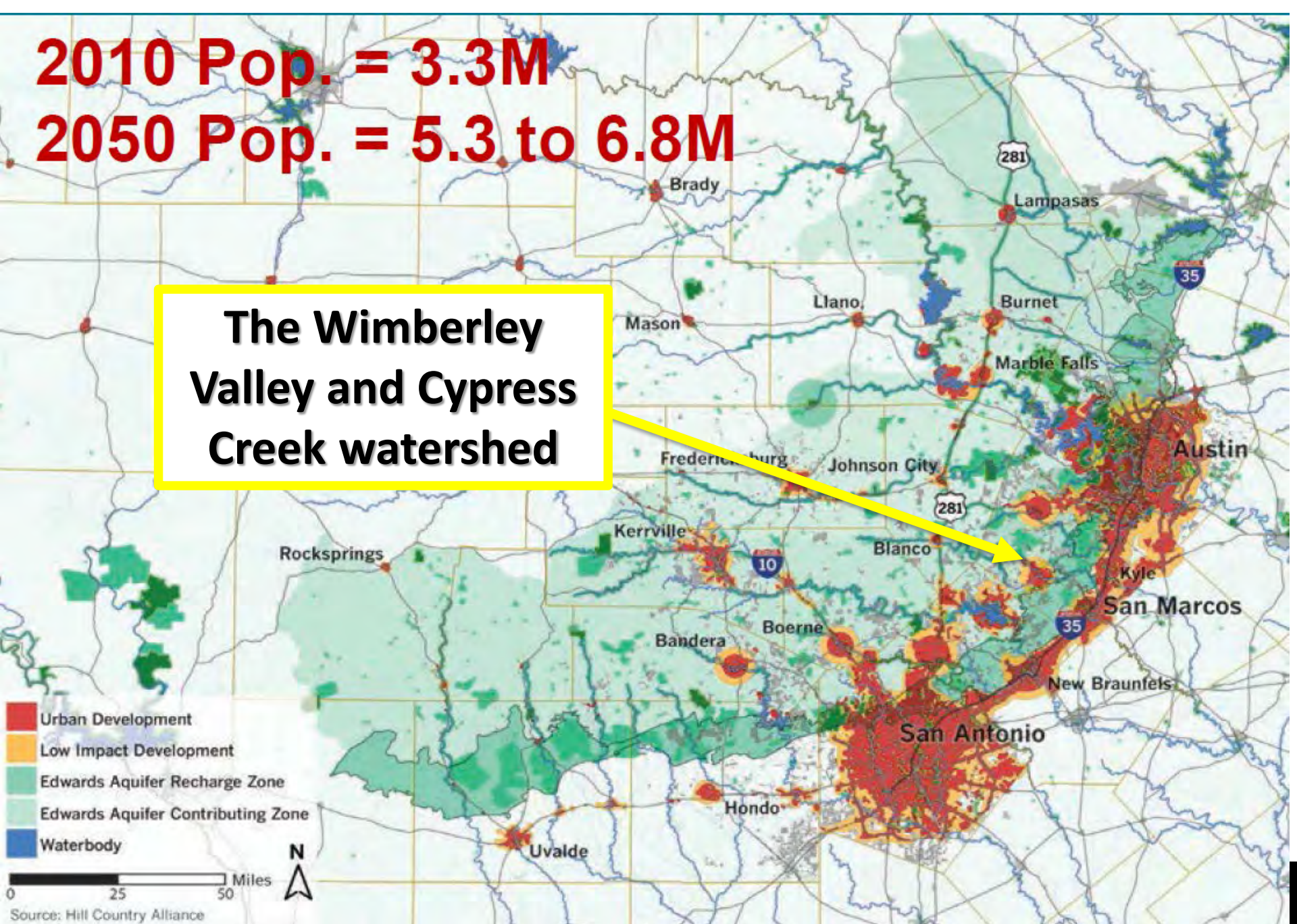


THE MEADOWS CENTER
FOR WATER AND THE ENVIRONMENT

TEXAS STATE UNIVERSITY

2010 Pop. = 3.3M
2050 Pop. = 5.3 to 6.8M

The Wimberley Valley and Cypress Creek watershed



- Urban Development
- Low Impact Development
- Edwards Aquifer Recharge Zone
- Edwards Aquifer Contributing Zone
- Waterbody



Source: Hill Country Alliance



CYPRESS CREEK

Let's keep it **clean**, **clear** & flowing



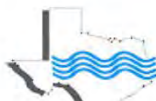
Celebrating 10 Years

Of stakeholder-driven watershed protection in the Cypress Creek Watershed



THE MEADOWS CENTER
FOR WATER AND THE ENVIRONMENT
TEXAS STATE UNIVERSITY

TEXAS STATE UNIVERSITY
The rising STAR of Texas



GBRA
GUADALUPE-BLANCO RIVER AUTHORITY



Texas Water
Development Board



United States
Environmental Protection
Agency



TEXAS COMMISSION
ON ENVIRONMENTAL QUALITY



The City of
Woodcreek
IN THE MIDST OF THE TEXAS HILL COUNTRY



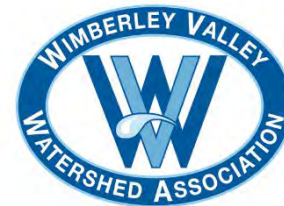
TEXAS A&M
AGRI LIFE
EXTENSION

The Nature
Conservancy



THE MEADOWS CENTER
FOR WATER AND THE ENVIRONMENT
TEXAS STATE UNIVERSITY

TEXAS STREAM TEAM



HAYS TRINITY
GROUNDWATER
CONSERVATION DISTRICT



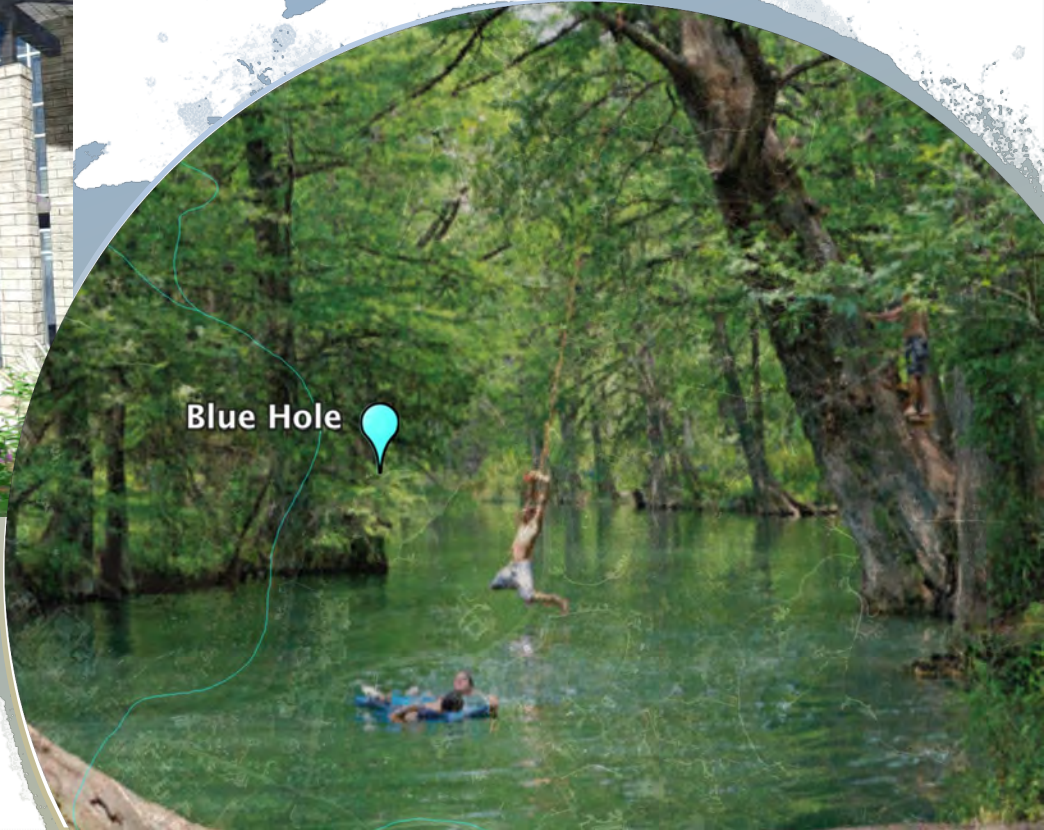
Cypress Creek Watershed Protection

- Activities to prevent pollution, protect flow
- Preserve water quality through local permitting, ordinances
- Improve tools for decision makers to calculate effects of land use changes on water quality
- Site-specific LID/Green Infrastructure demonstration sites
- Outreach and education efforts
- Monitoring and modeling water quality changes

Simply Stated:

The Cypress Creek Watershed Protection Plan aims to ensure that the long-term integrity and sustainability of the Cypress Creek watershed is preserved and that water quality standards are maintained for present and future generations.

A New Primary School for Wimberley ISD



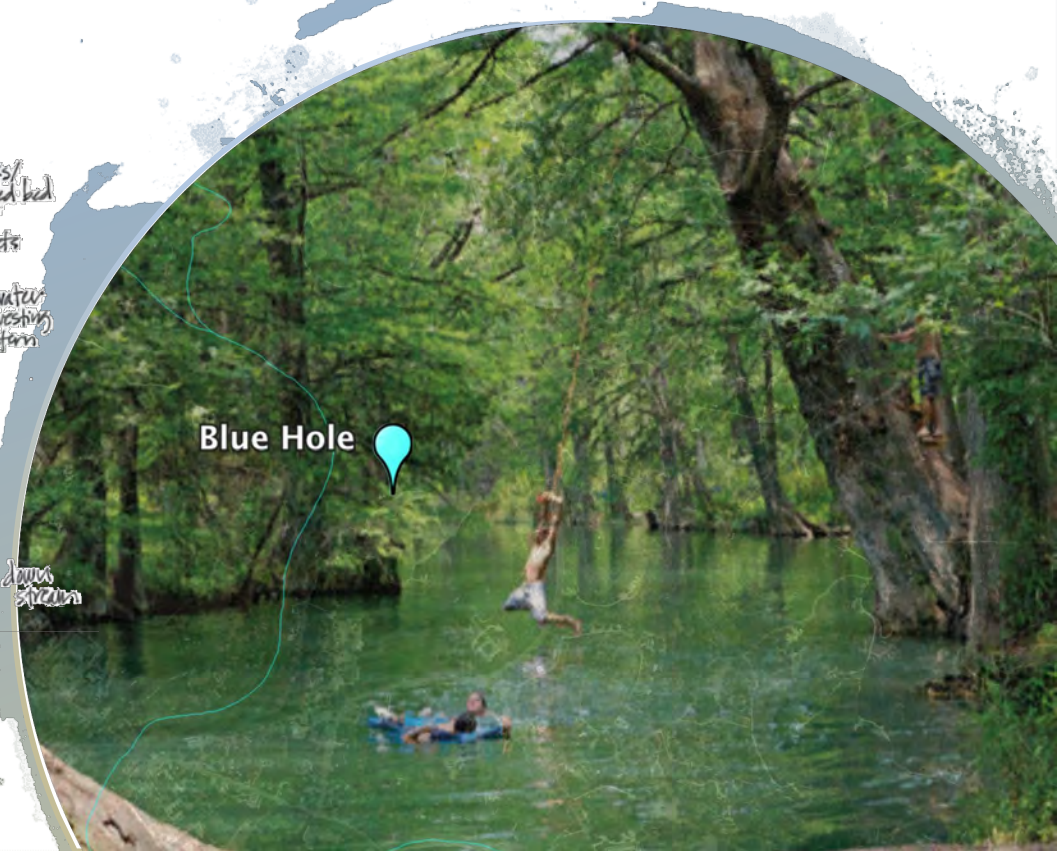
WISD Primary School

Environmental Concerns

- Conversion of native range to developed site
- Standard construction w/ minimal water conservation practices
- Wastewater mindset with raw sewage to be transported to off-site WWTP (additional infrastructure including lift station needed)
- Water supply from already stressed Cow Creek aquifer... the source of flow for Jacob's Well Spring
- Stormwater impacts to ephemeral tributary and Cypress Creek with no enhanced GSI
- A MISSED OPPORTUNITY

A solution?

A One Water School for Wimberley ISD



WHAT IS ONE WATER?

An intentionally INTEGRATED approach to water

One Water

promotes the management of **all water** — drinking water, wastewater, stormwater, greywater— as a **single resource**.

Across types
of water

Across
regions/
watersheds

ALL WATER IS ONE WATER



ADVANCING
ONE WATER
IN TEXAS



The *One Water* Standard:

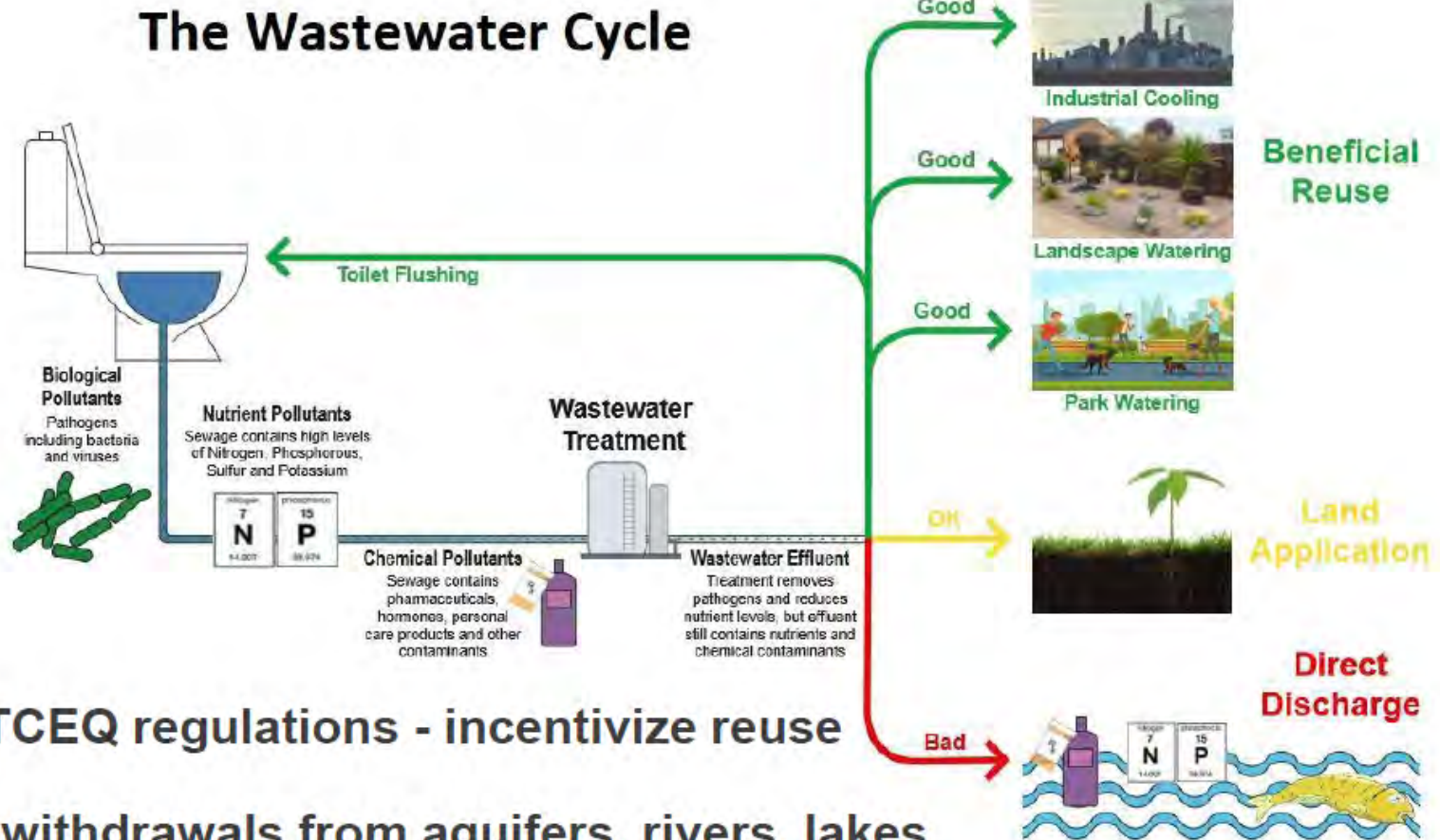
- *Collaboration*... with a wide variety of stakeholders and engagement with the community
- *Economics and finance*... that recognize the true cost of water, prices it accordingly, and are attractive for public and private investors
- *Green Infrastructure*... that works with and mimics nature
- *Closed-loop system*... that enhance nutrient and energy recovery and encourage water sensitive behaviors
- *Built Environment*... with multifunctional infrastructure that supplements the natural environment
- *Enabling conditions*... that foster innovative institutional and management arrangements
- *Flexible and adaptive*... to allow for innovation and strengthen

One Water standards as presented by Howe, C. and Mukhebeir, P., “Pathways to One Water: A guide for Institutional Innovation.” Water Environment & Reuse Foundation, 2015

WISD *One Water* Challenges

- Requires Education
 - Elected officials, general contractor, architects, ENGINEERS, watershed stakeholders, and US!
- Requires Courage
 - Technology is still innovative w/ few Texas examples
 - Permitting processes do not incentivize reuse... treat wastewater as a nuisance that needs to be “disposed”
- Requires Investment
- Dare to Lead!

Wastewater as a Water Supply



- Modify TCEQ regulations - incentivize reuse
- Reduce withdrawals from aquifers, rivers, lakes
- Preserve aquifers and streams natural character

Water Collection + Onsite Wastewater Reuse

- RECIRCULATING PACKED-BED FILTER SYSTEM
- FIRST COST SAVINGS - \$300,000 *based on 7500/day system
- POTENTIAL SAVINGS VS CONVENTIONAL SYSTEM
 - OVER 30 YEARS ANNUALLY \$20,000 - \$30,000
- CASE STUDY – ORENCO SCHOOL – ADVANTEX
- PARALLEL PERMITTING APPROACH WITH HAYS & TCEQ



Stormwater Management

- Protect Water Quality & Conserve Water Quantity



Conventional vs One-Water Cost Summary

WATER SUBSYSTEM	COST TYPE	CONVENTIONAL	ONE-WATER
WASTE WATER + REUSE	CAPITAL COST	\$ 750,000	\$ 446,778
	ANNUAL O & M COST	\$ 26,695	\$ 6,000
RAINWATER + AC CONDENSATE COLLECTION FOR TOILET FLUSHING	CAPITAL	\$ -	\$ 250,000
	ANNUAL O & M COST	\$ 19,488	\$ 10,188
STORMWATER MANAGEMENT (LID & GREEN INFRASTRUCTURE)	CAPITAL COST	\$ -	\$ 125,000
	ANNUAL O & M COST	\$ -	\$ -
SUM TOTAL ALL WATER SYSTEMS	CAPITAL + 30 YEAR O & M COST	\$ 2,135,490	\$ 1,307,418

Benefits: Bringing It All Together

- FOR WISD:
 - Reduced capital and operating costs
 - Establish leadership in the community on a flagship site
- FOR THE COMMUNITY
 - A catalyst for creating a watershed culture
 - A Living Lab for integrated water management
- FOR THE CHILDREN
 - Healthier and smarter kids
 - Engaging and Inspirational Learning Experience





LOCAL

Wimberley school to make history as first 'One Water' school in Texas

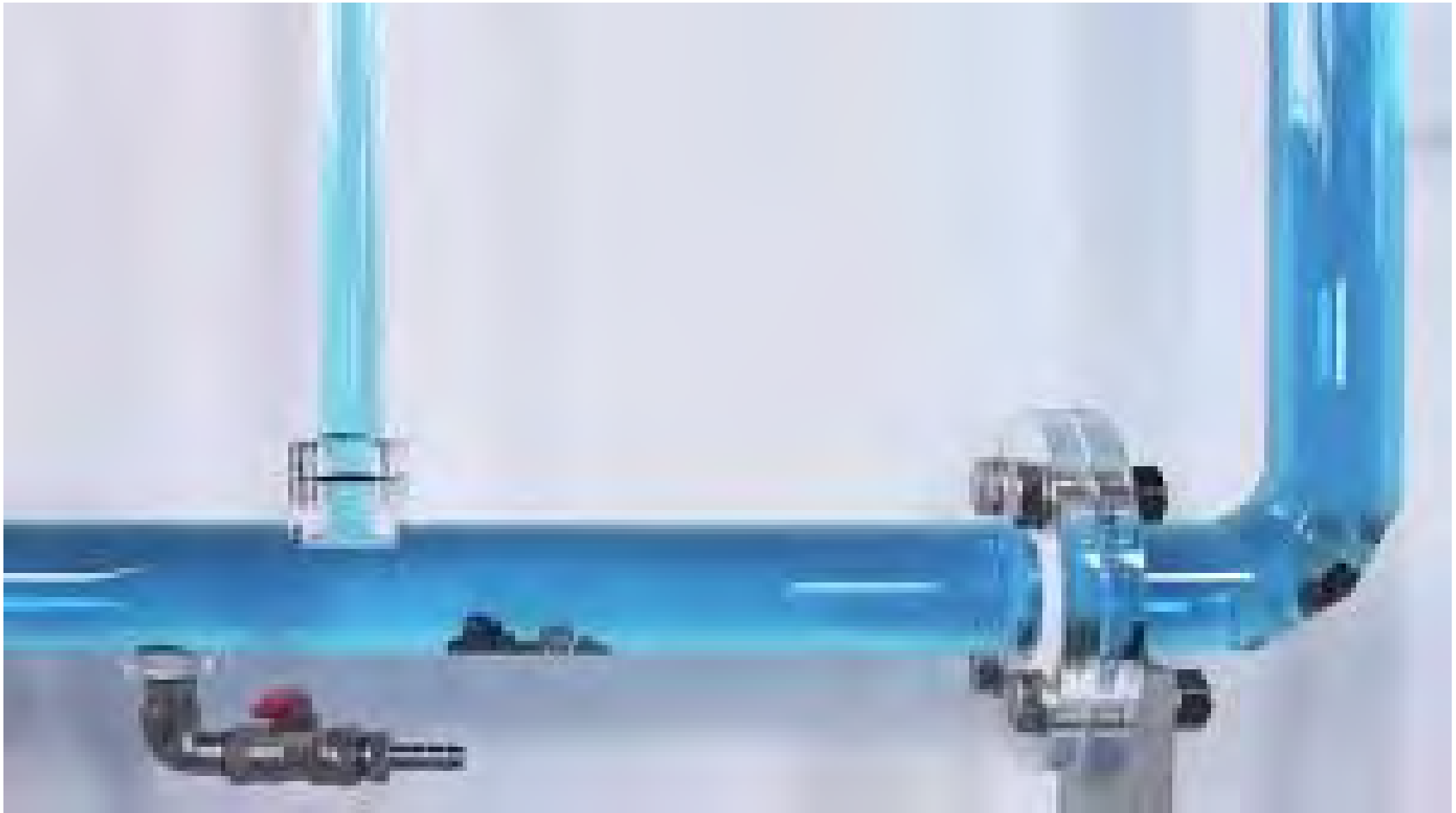
A 'One Water' school means it will use 90 percent less groundwater than a typical school of this size.

Author: Shawna Reding

Published: 8:04 AM CST December 3, 2018

Updated: 11:06 AM CST December 3, 2018

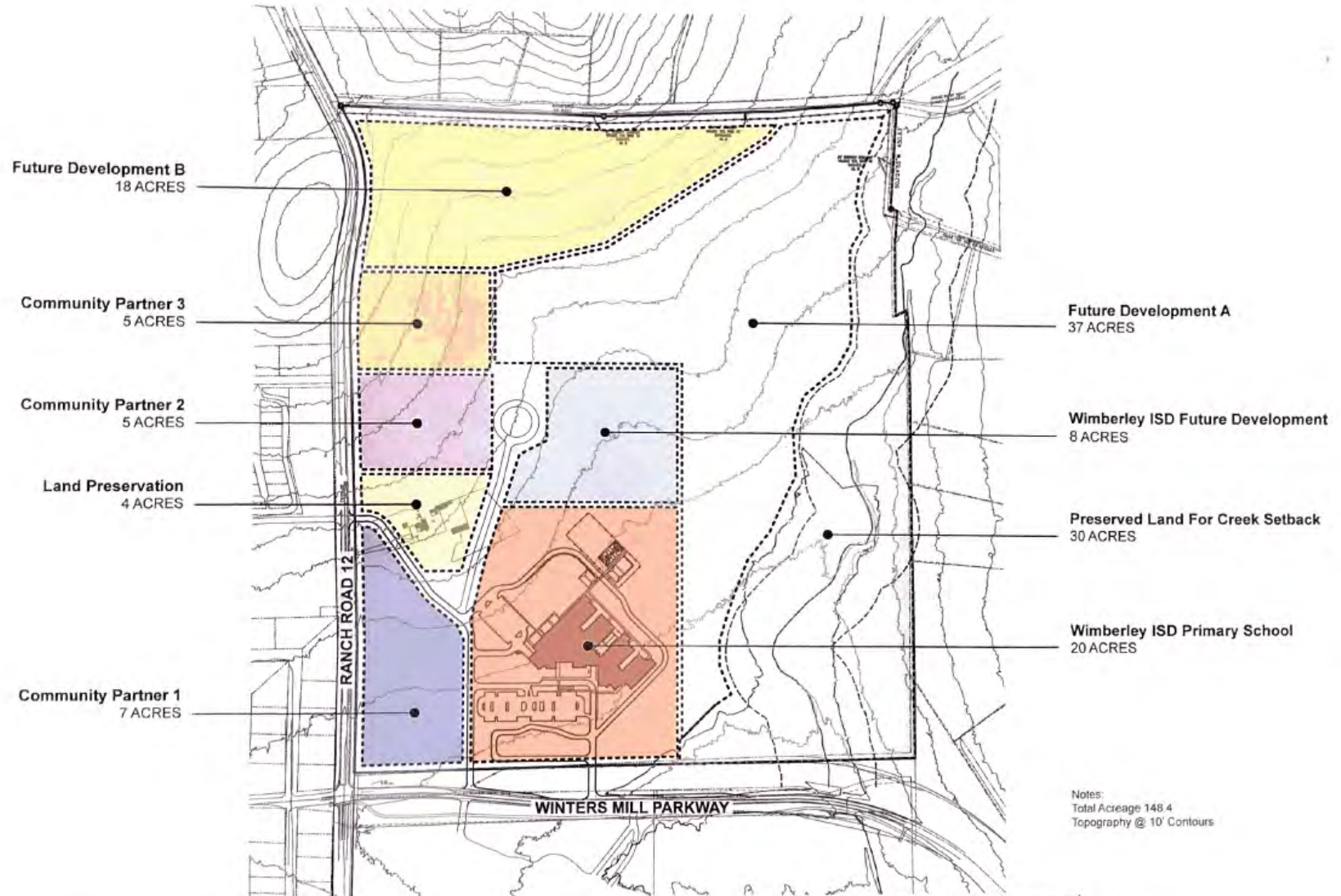
From Good to *One Water* Great



From Good to *One Water* Great

- GOOD: Educational signage for native plants, green stormwater infrastructure, and water saving plumbing fixtures
- GREAT: Incorporating One Water into a tangible asset interwoven into the architecture of the school, enhancing the learning experience.

Next Step: A *One Water* Master Plan:



Dr. Robert Mace
Executive Director

Nick Dornak
Director of Watershed Services

nickdornak@txstate.edu

512-245-6697

No natural resource is more important to our future than Water. Water is what we do.

RESEARCH | STEWARDSHIP | SERVICE | EDUCATION | SERVICE



THE MEADOWS CENTER
FOR WATER AND THE ENVIRONMENT
TEXAS STATE UNIVERSITY