OAK HILL PARKWAY

OAK HILL PARKWAY
WATER QUALITY WORKSHOP

August 25, 2015| 6-8 PM

Oak Hill United Methodist Church

Fellowship Hall

AGENDA

I. Welcome

Lynda Rife, Facilitator

II. Green Mobility Challenge

Melissa Hurst, Central Texas Regional Mobility Authority

III. Williamson Creek

Wade Strong, Rodriguez Transportation Group

Rose Marie Klee, Texas Department of Transportation

IV. Water Quantity and Water Quality

Joe Skidmore, K Friese & Associates, Inc

John Middleton, City of Austin Watershed Protection Department

V. Reporting Out

Lynda Rife, Facilitator

VI. Next Steps

GREEN MOBILITY CHALLENGE

- In July 2011, the Mobility Authority, in partnership with TxDOT, launched the Green Mobility Challenge
- This sustainable design competition challenged Texas' most creative landscape architects, planners and engineers to propose better ways of constructing, operating and maintaining future transportation projects
- One of the projects selected for teams to submit sustainable concepts was the Oak Hill Parkway

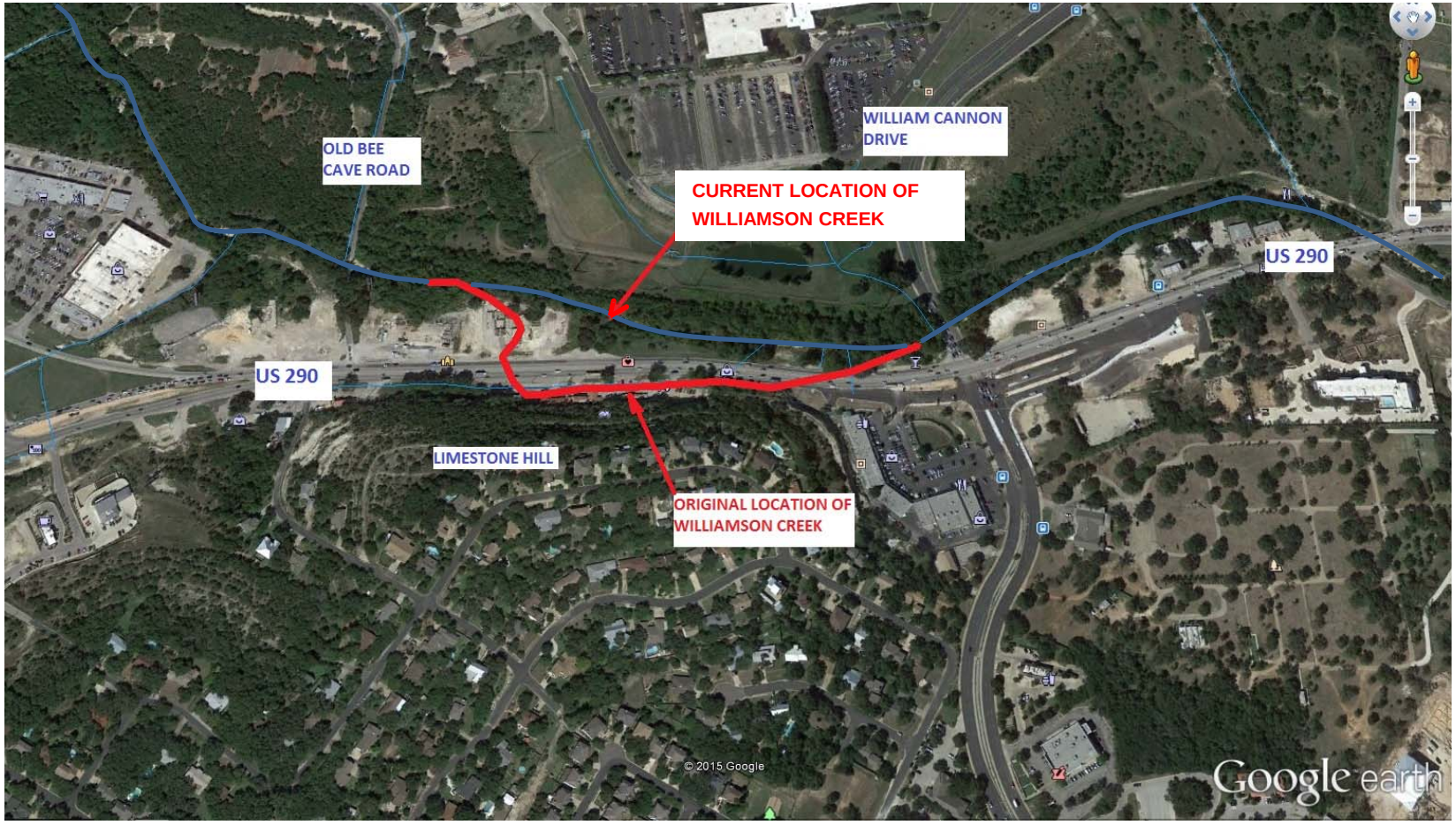
GREEN MOBILITY CHALLENGE

Ideas submitted as part of the challenge are being evaluated and added where feasible

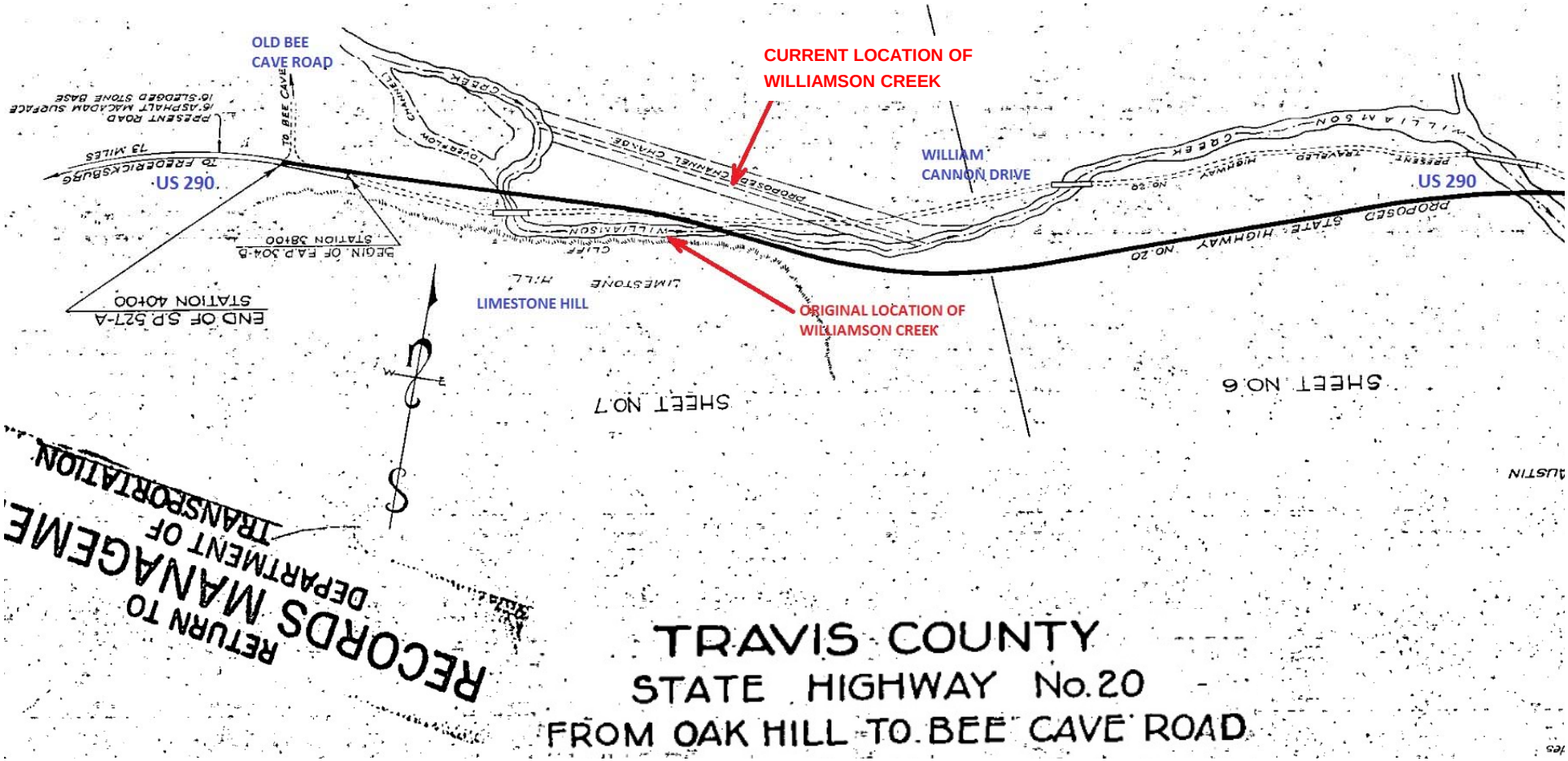
- Multi-use trails or paths/ trailheads
- Enhancing Williamson Creek (while maintaining natural setting)
- Community Gateway
- Native, low-maintenance vegetation/trees
- Permeable friction course (PFC) pavement
- Grass filter strips
- Vegetated swales
- Regional detention/biofiltration
- Riparian plantings
- Solar pedestrian lighting
- Use of recycled materials

OAK HILL PARKWAY

WILLIAMSON CREEK REALIGNMENT IN 1933

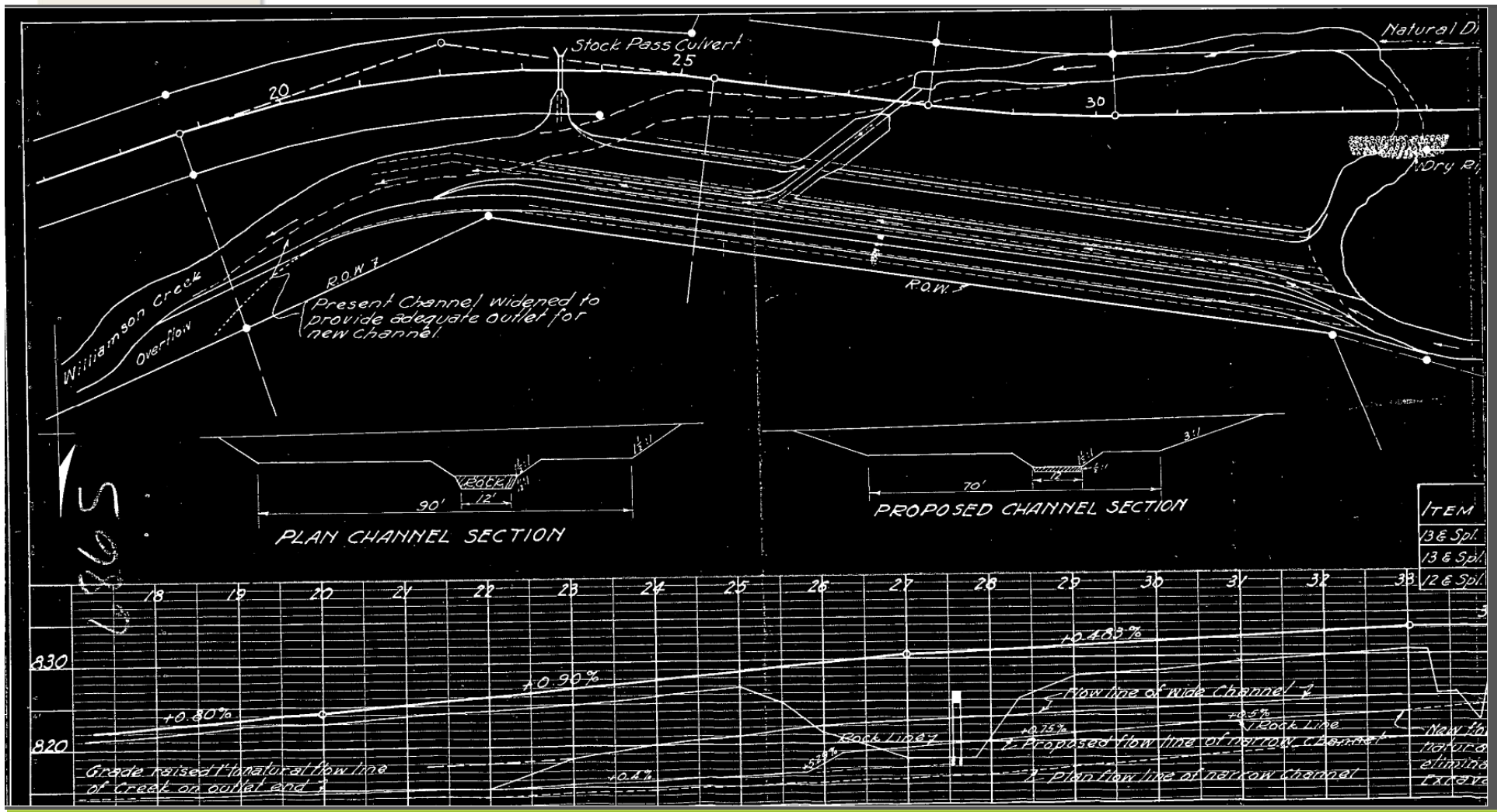


1933 PLANS


OLD BEE
CAVE ROAD
CURRENT LOCATION OF
WILLIAMSON CREEK
WILLIAM
CANNON DRIVE
US 290
US 290
LIMESTONE HILL
ORIGINAL LOCATION OF
WILLIAMSON CREEK
SHEET NO. 7
SHEET NO. 6
TRAVIS COUNTY
STATE HIGHWAY No. 20
FROM OAK HILL TO BEE CAVE ROAD

OAK HILL PARKWAY

1933 PLANS



OAK HILL PARKWAY

EXISTING BRIDGE REMOVAL

OAK HILL PARKWAY

EXISTING BRIDGE REMOVAL

OLD BEE CAVES ROAD

OAK HILL PARKWAY

EXISTING BRIDGE REMOVAL

WILLIAM CANNON DRIVE

OAK HILL PARKWAY

EXISTING BRIDGE REMOVAL

US 290

NEW BRIDGE COLUMNS IN FLOODPLAIN

- ANTICIPATE SIX NEW COLUMNS IN 25-YR FLOODPLAIN – 220 CY
- NET VOLUME REMOVED FROM FLOODPLAIN IS ABOUT 2,900 CY

EXAMPLE ONLY – FROM SH 161, GRAND PRAIRIE, TX

OAK HILL PARKWAY

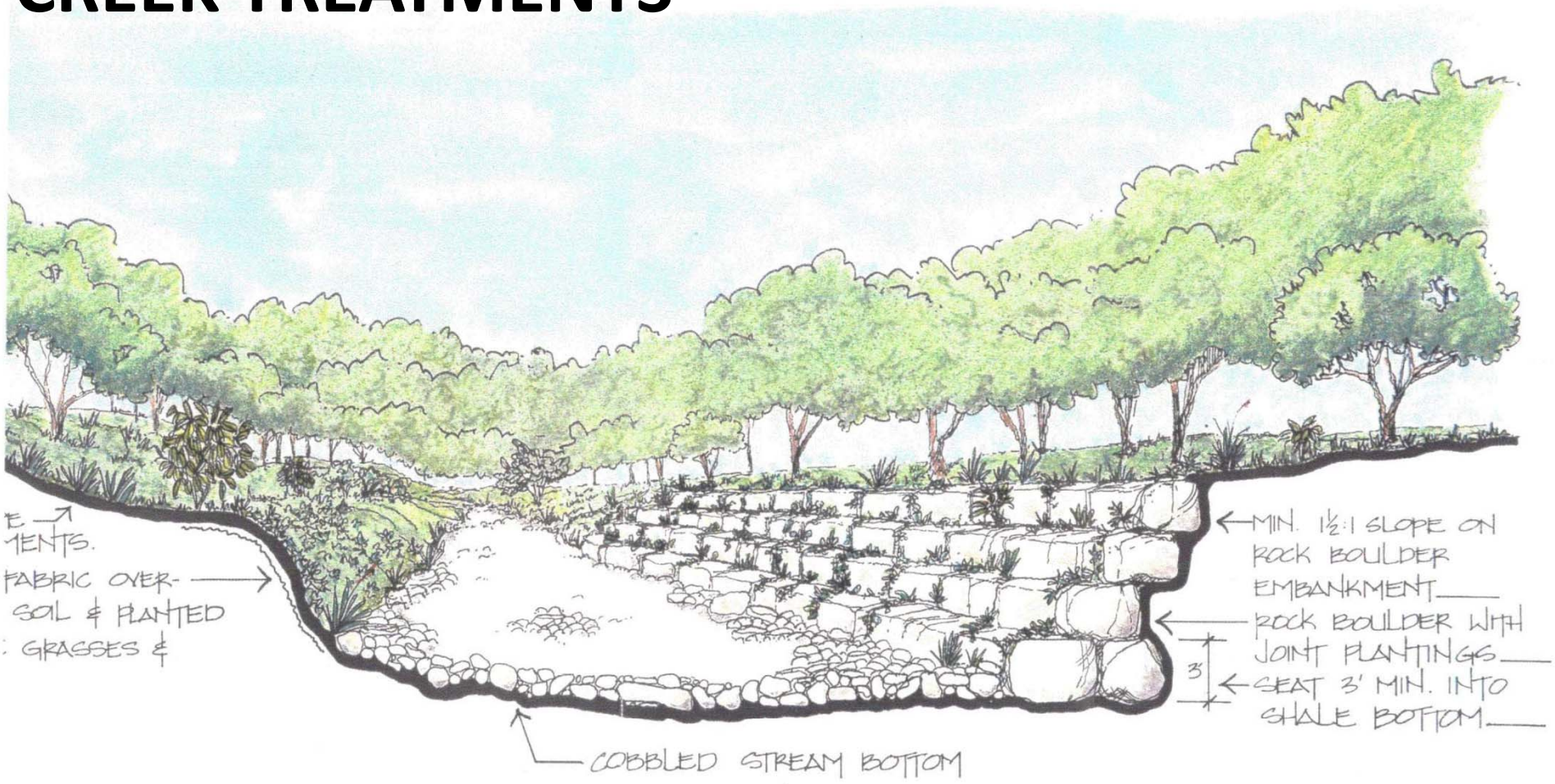
CREEK TREATMENTS

Vegetative Treatment

Scale: Horizontal: 1/4" = 1'-0"
Vertical: 3/8" = 1'-0"

Artistic Rendering from City of Austin – Watershed Protection Department

CREEK TREATMENTS

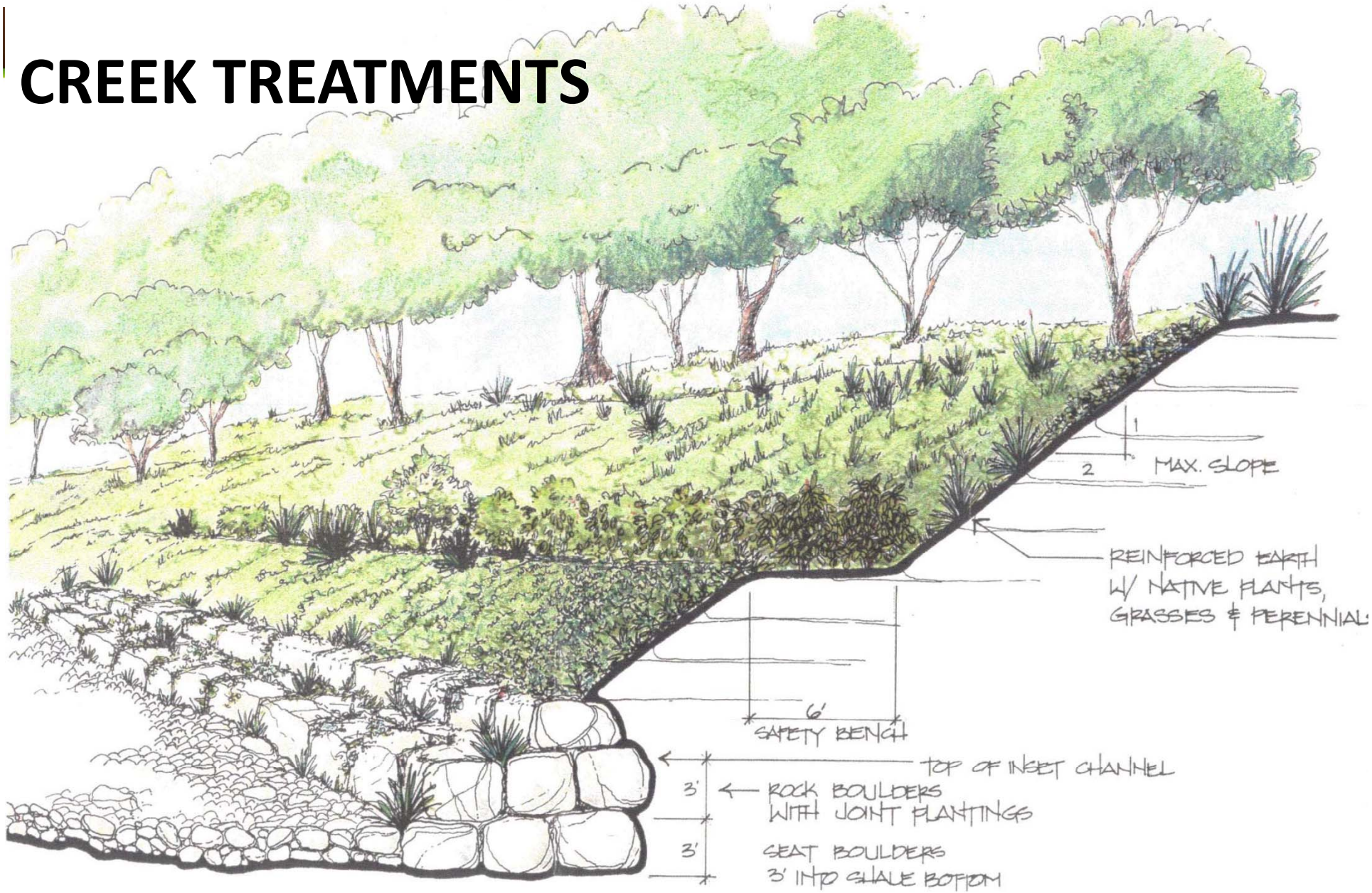


Rock Boulder Treatment with Joint Plantings

Scale: Horizontal: 1/4" = 1'-0"
Vertical: 3/8" = 1'-0"

Artistic Rendering from City of Austin – Watershed Protection Department

CREEK TREATMENTS

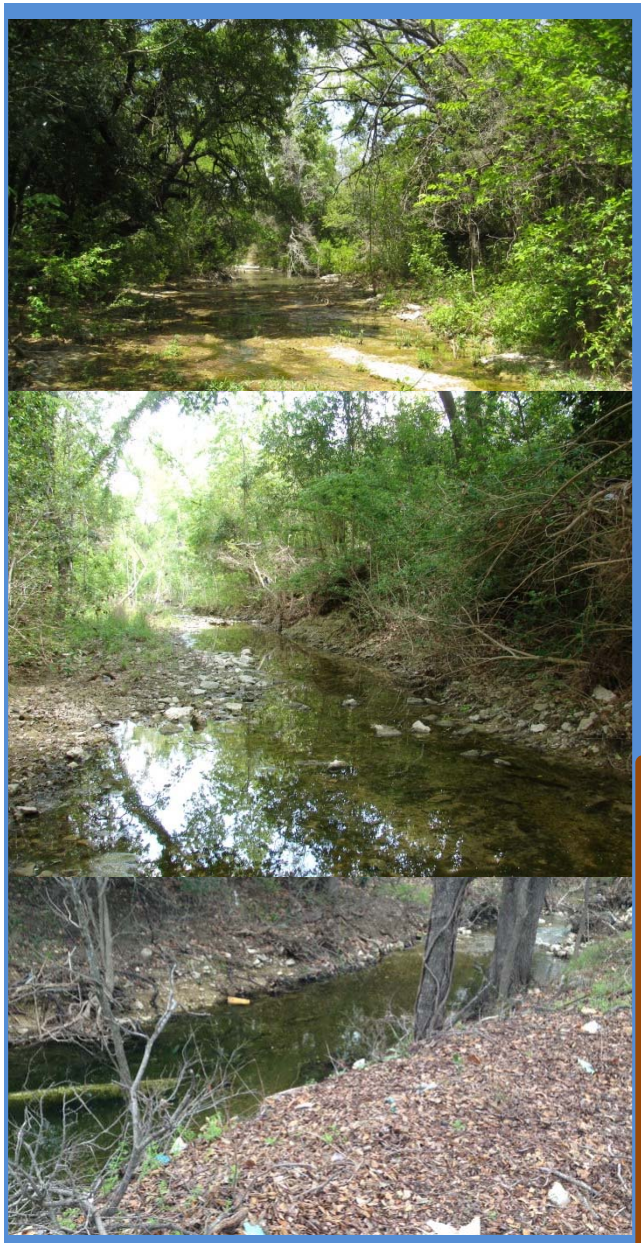


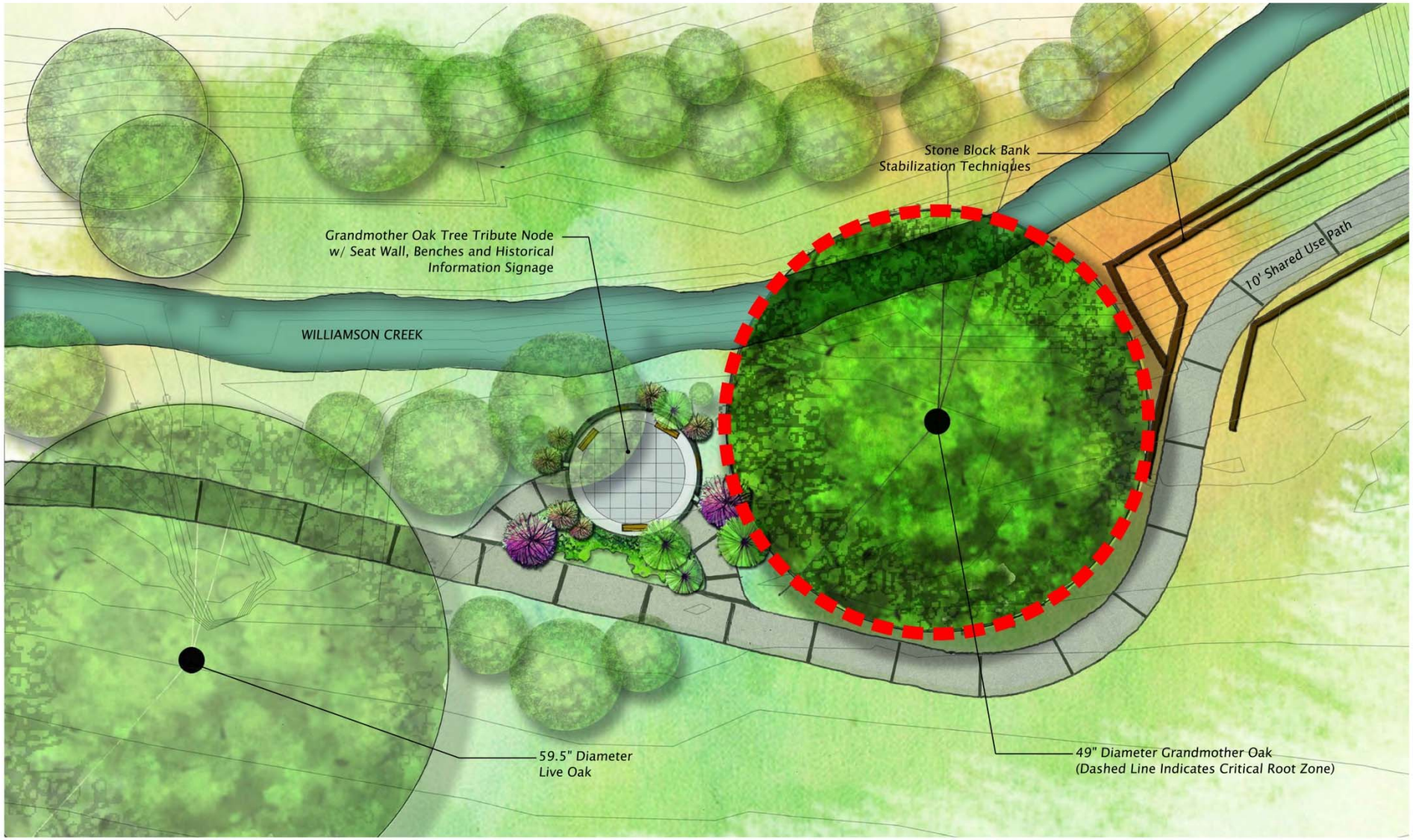
Reinforced Earth Treatment

Scale: Horizontal: 1/4" = 1'-0"
Vertical: 3/8" = 1'-0"

Artistic Rendering from City of Austin – Watershed Protection Department

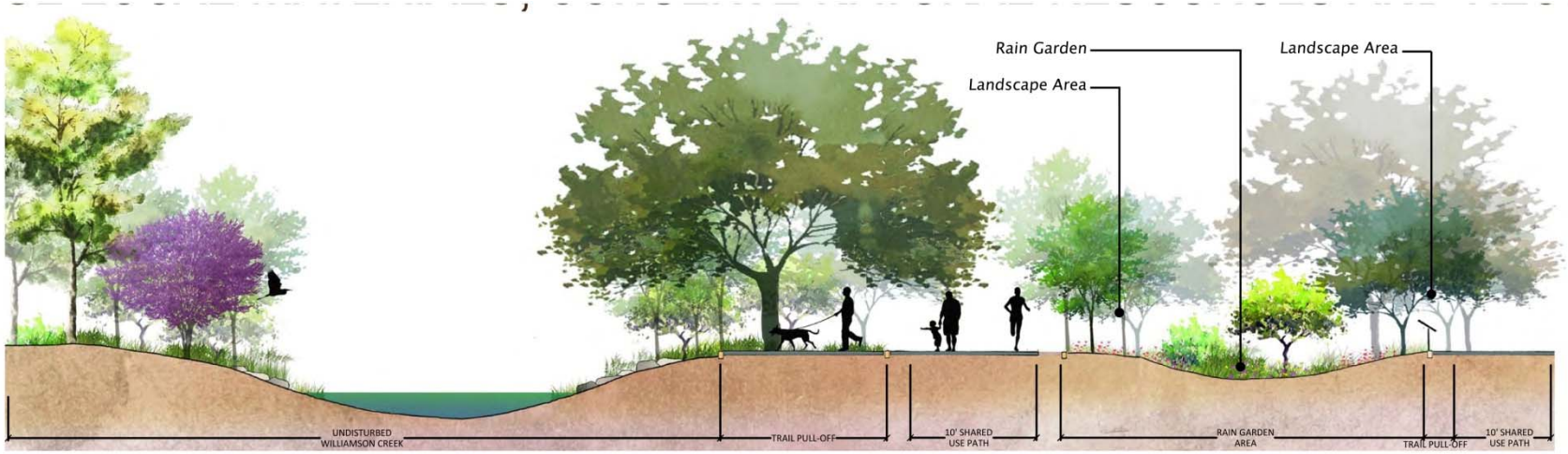
GAINING VERSUS LOSING FLOW





CONCEPTUAL ARTISTIC RENDERING
Subject to Change

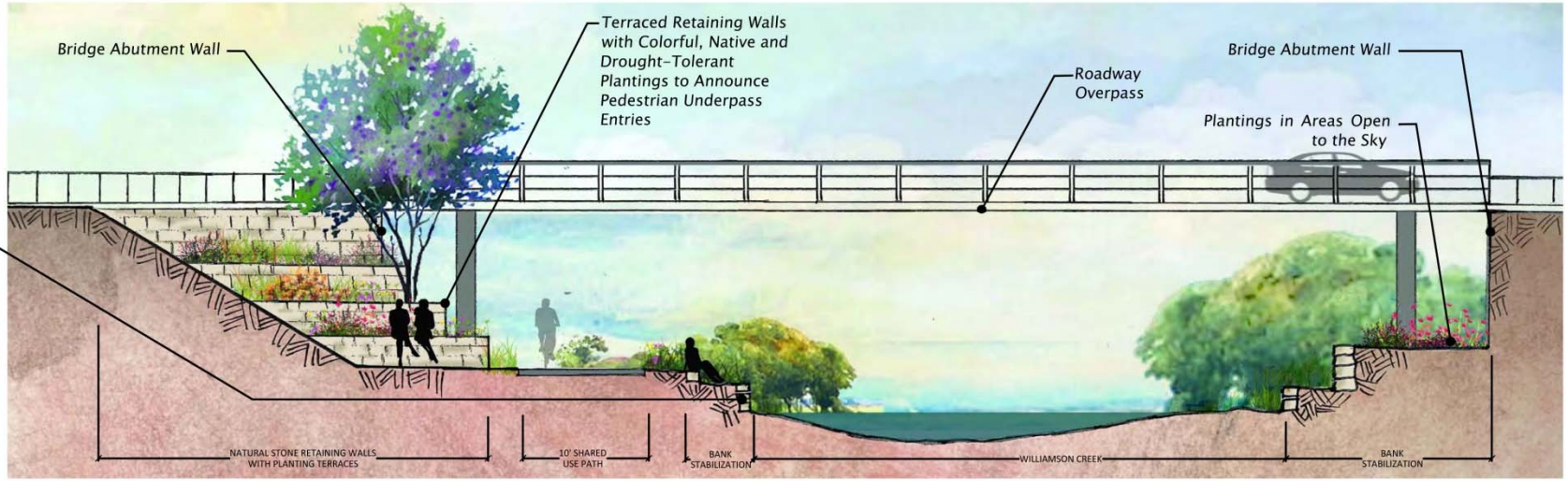
OPTIONS AT WILLIAMSON CREEK & GRANDMOTHER OAK



SECTION - OBSERVATION, INTERPRETIVE AND GATHERING NODE
SCALE: 1/4" = 1'-0"

Transition Bank Stabilization to Natural Landscape and Topography of Creek

Stone Block Bank Stabilization Techniques



SECTION - SHARED USE PATH AT BRIDGE OVERPASS
SCALE: 1/4" = 1'-0"

CONCEPTUAL ARTISTIC RENDERING
Subject to Change

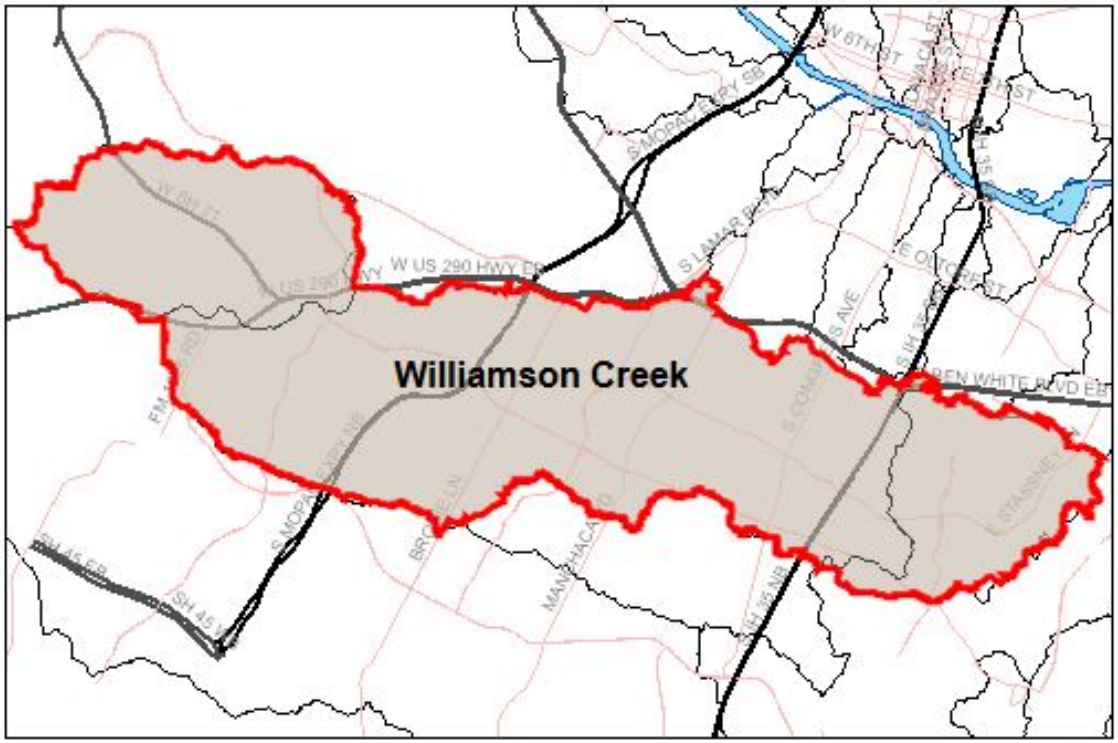
OPTIONS AT WILLIAMSON CREEK

VIEW OF SHARED USE PATH ADJACENT TO McCARTHY LANE LOOKING NORTHWEST TOWARD OVERPASS

Stormwater Management - Oak Hill Parkway

City of Austin
Watershed Protection Department
Watershed Engineering Division

Williamson Creek

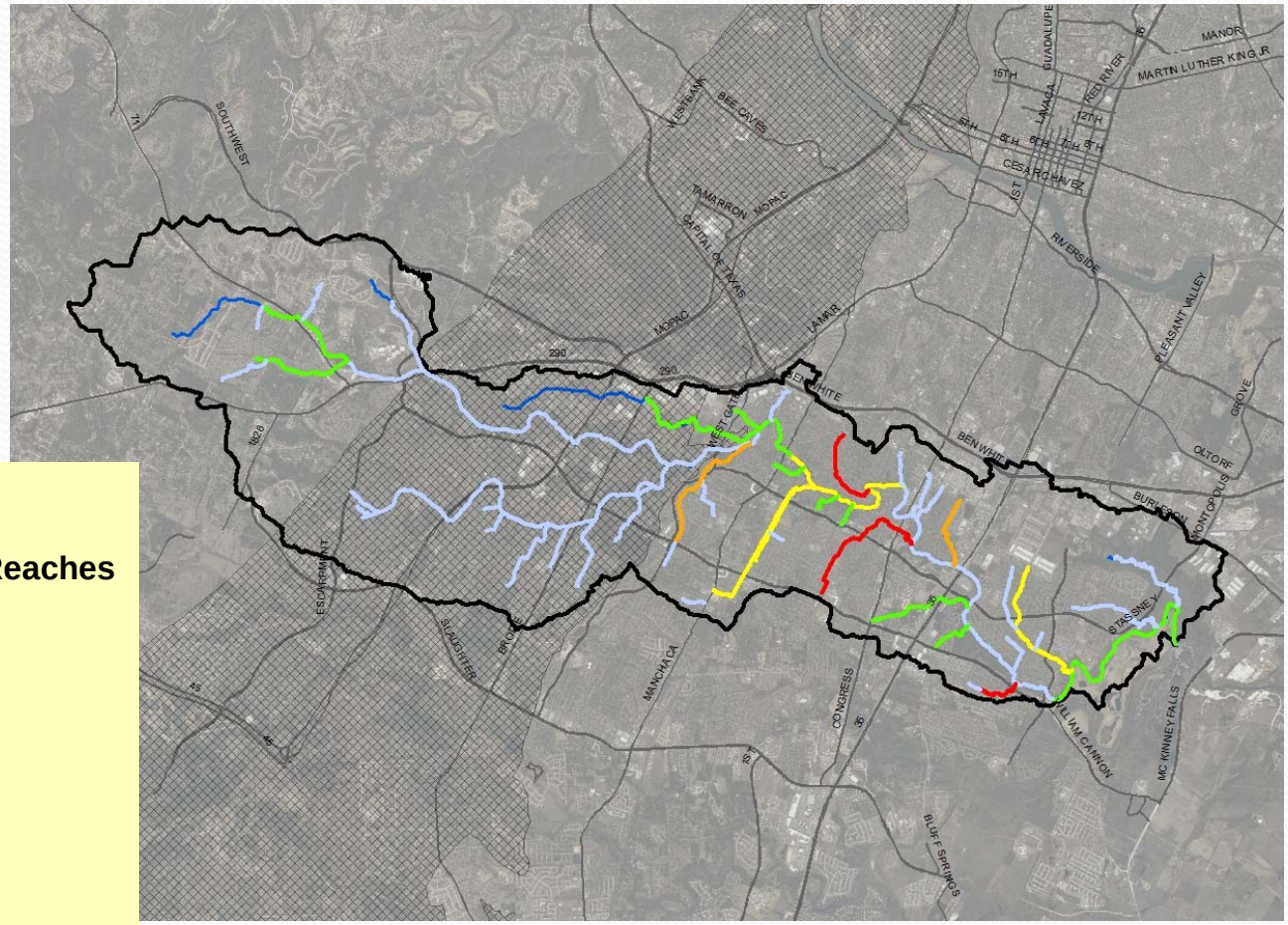


Watershed Summary

- 30 square miles
- 19 miles in length
- 8 square miles in recharge
- 30% Impervious Cover 2006*
- 36% Impervious Cover 2012*

*provisional

Williamson Creek - Erosion



Legend

Erosion Geomorphic Reaches

Rating

- Very High
- High
- Medium
- Low
- Very Low
- Recharge Zone

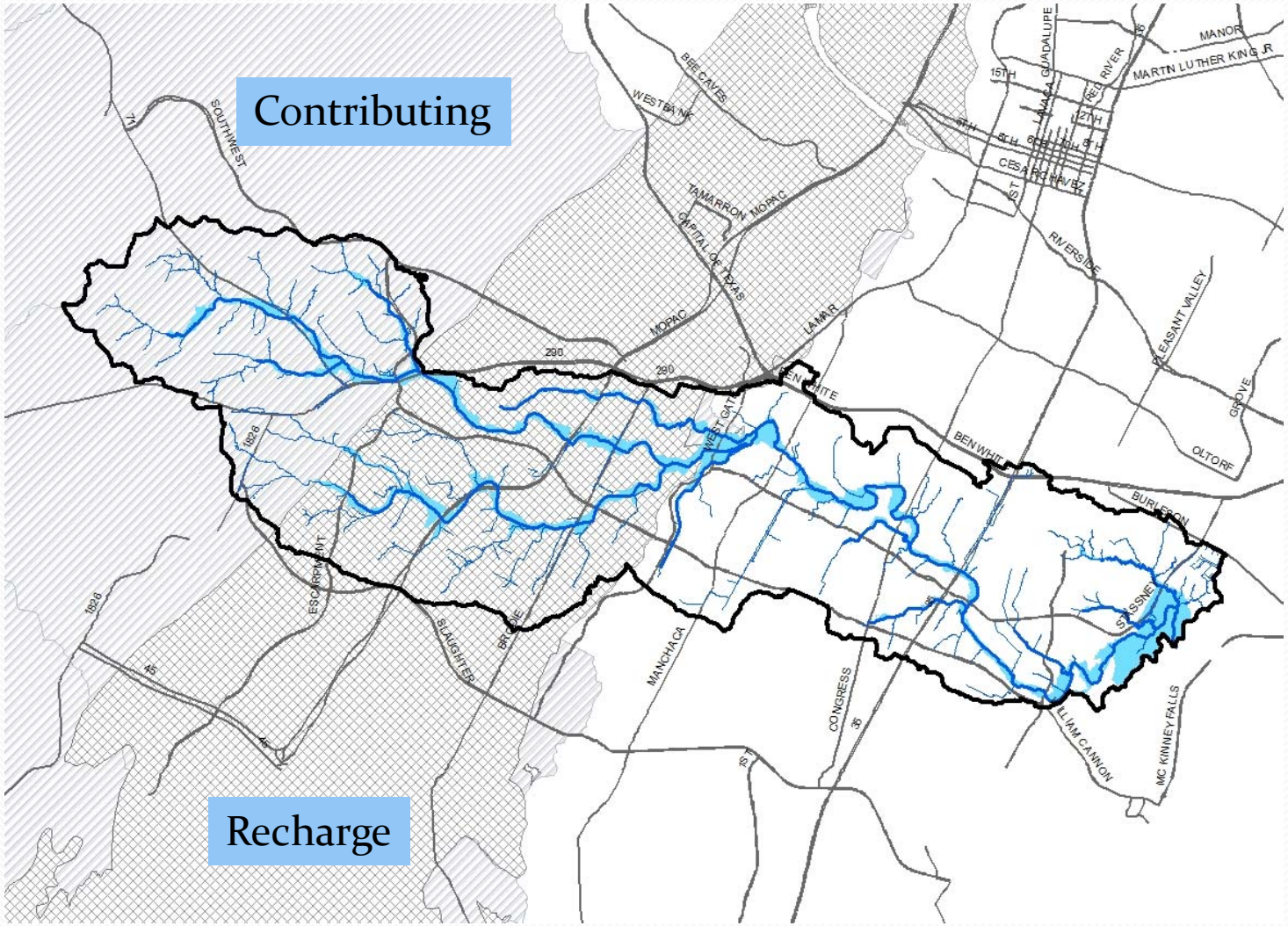
Williamson Creek

Watershed Scores

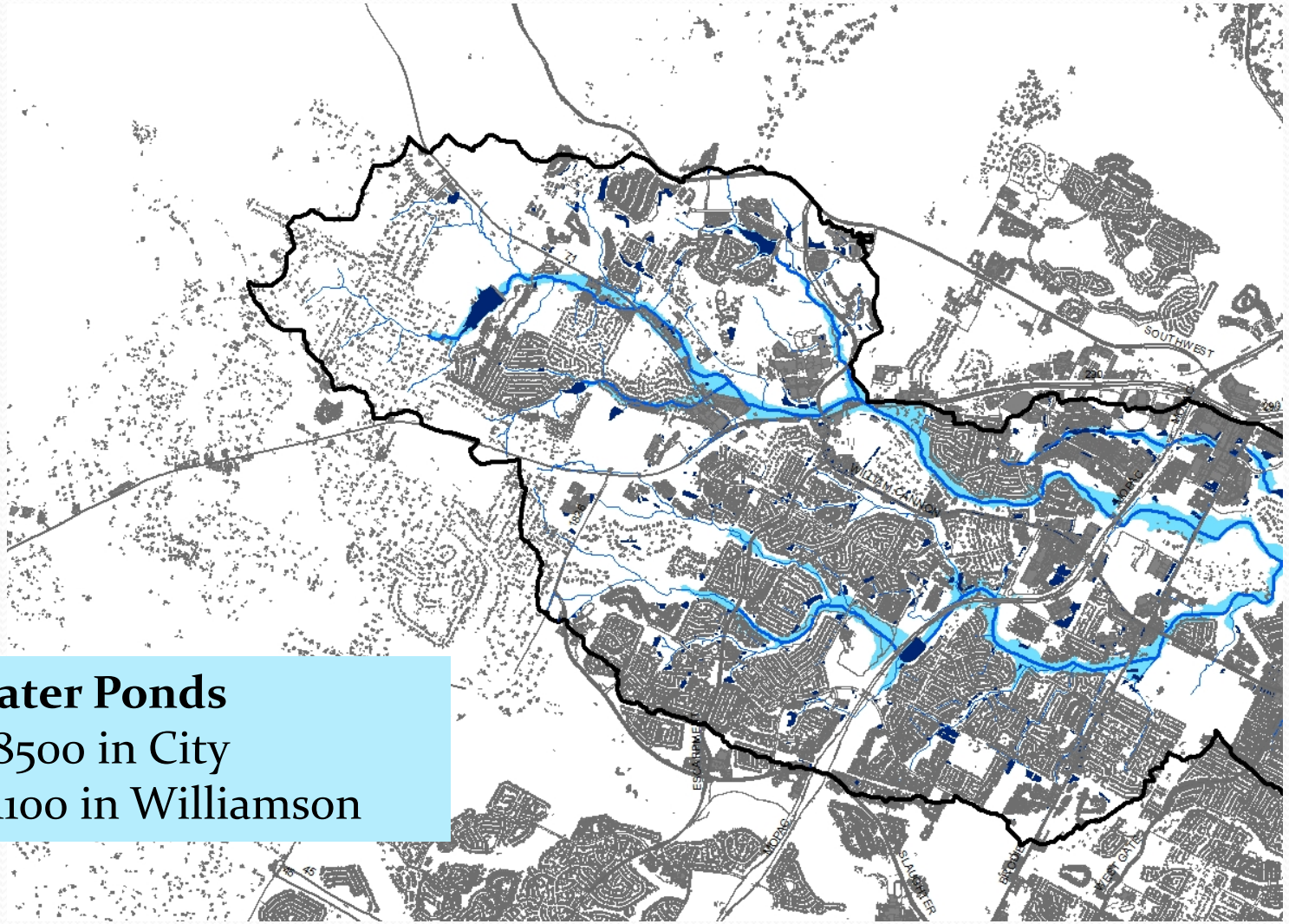
100 -87.5 Excellent
87.5 – 75 Very Good
75 – 62.5 Good
62.5 – 50 Fair
50 – 37.5 Marginal
37.5 – 25 Poor
25 – 12.5 Bad
12.5 – 0 Very Bad

Index	Score	Category	Details
Overall Score	70	Good	Williamson Creek ranks better than 27 other watersheds in Austin
Water Chemistry	64	Good	Water quality is above average
Sediment Quality	83	Very Good	PAHs are low, herbicides/pesticides are low, metals are low
Recreation	58	Fair	During dry weather conditions, bacteria is usually not a threat
Aesthetics	80	Very Good	Some litter is present, odor is not a problem, some of the creek bed is dry
Habitat	62	Fair	Some sediment deposition, cover is insufficient
Aquatic Life	72	Good	The benthic macroinvertebrate community is fair, the diatom community is very good

Williamson Creek 100-yr Floodplain



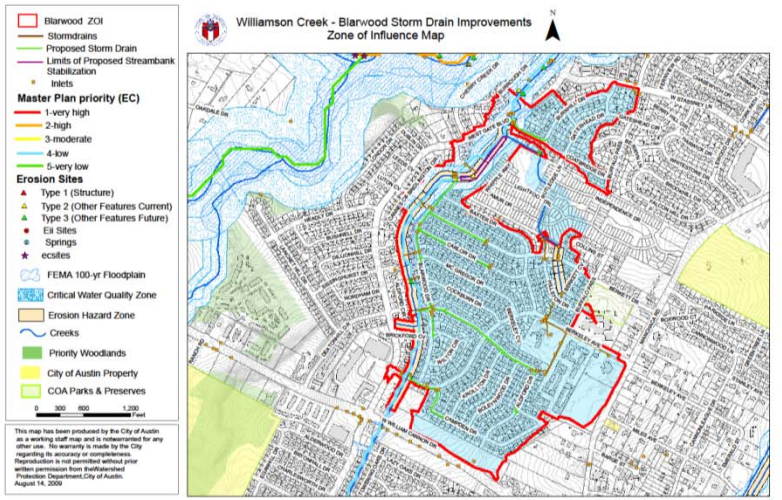
Development and Ponds



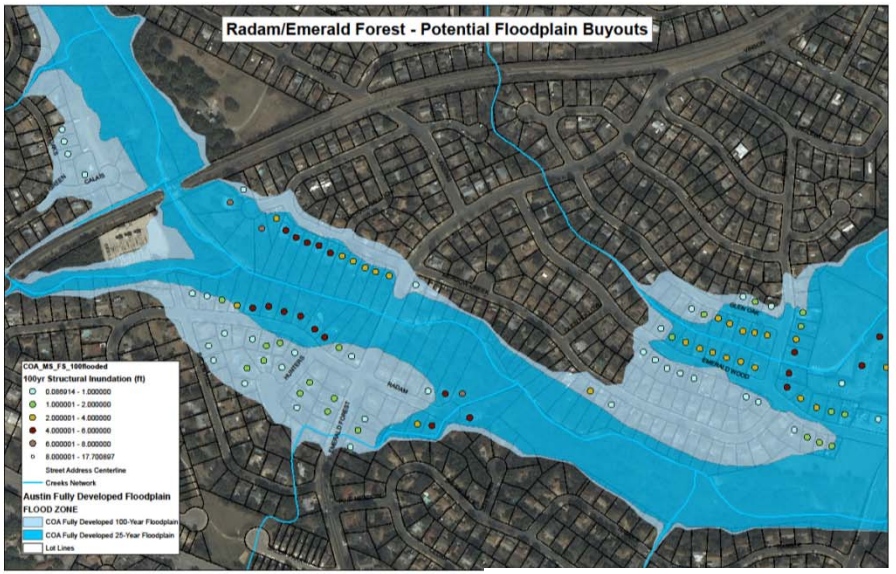
Stormwater Ponds

- Over 8500 in City
- Over 1100 in Williamson

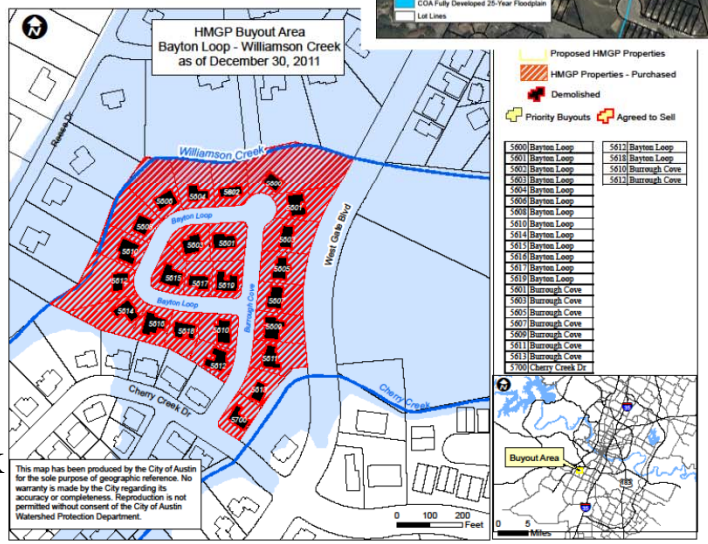
CIP Projects in Williamson Watershed



Blarwood
Westgate/Wm Cannon
$8M

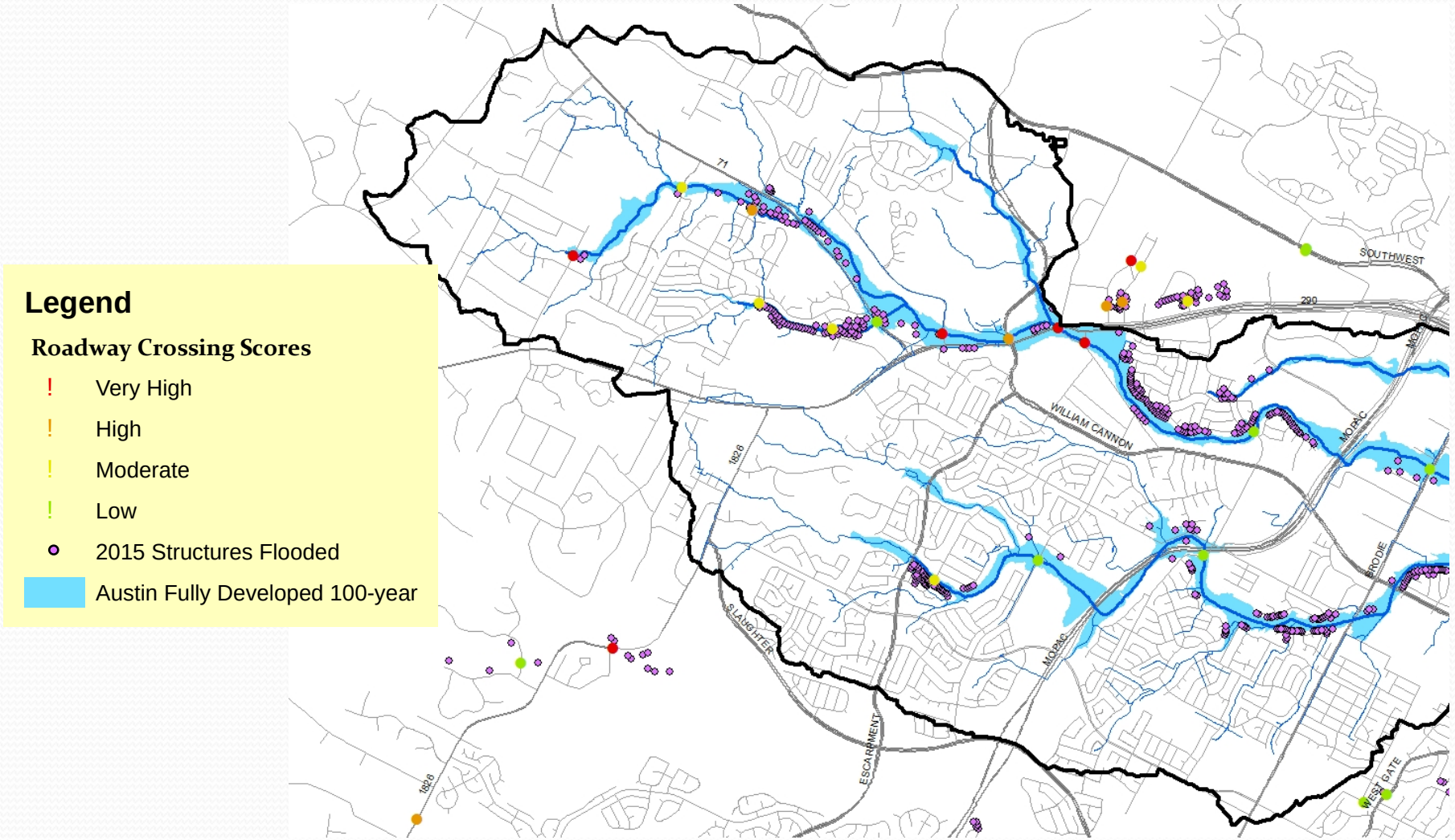


Radam/Emerald
Forest/Heartwood
$18M (projected)



Bayton Loop
Westgate /Cherry Creek
3.7M

Williamson Creek - Flood Scoring



Creek Flood – Road and Structure Flooding

- Downstream of Joe Tanner (along Steer Trail, McCarty Lane)
- US 290/SH 71 between Patton Ranch Rd and the Y
- SH71 west of the Y
- Scenic Brook Trib at SH 71
- Fletcher and SH 71
- Holt Drive (Kincheon Branch)

Creek Crossings

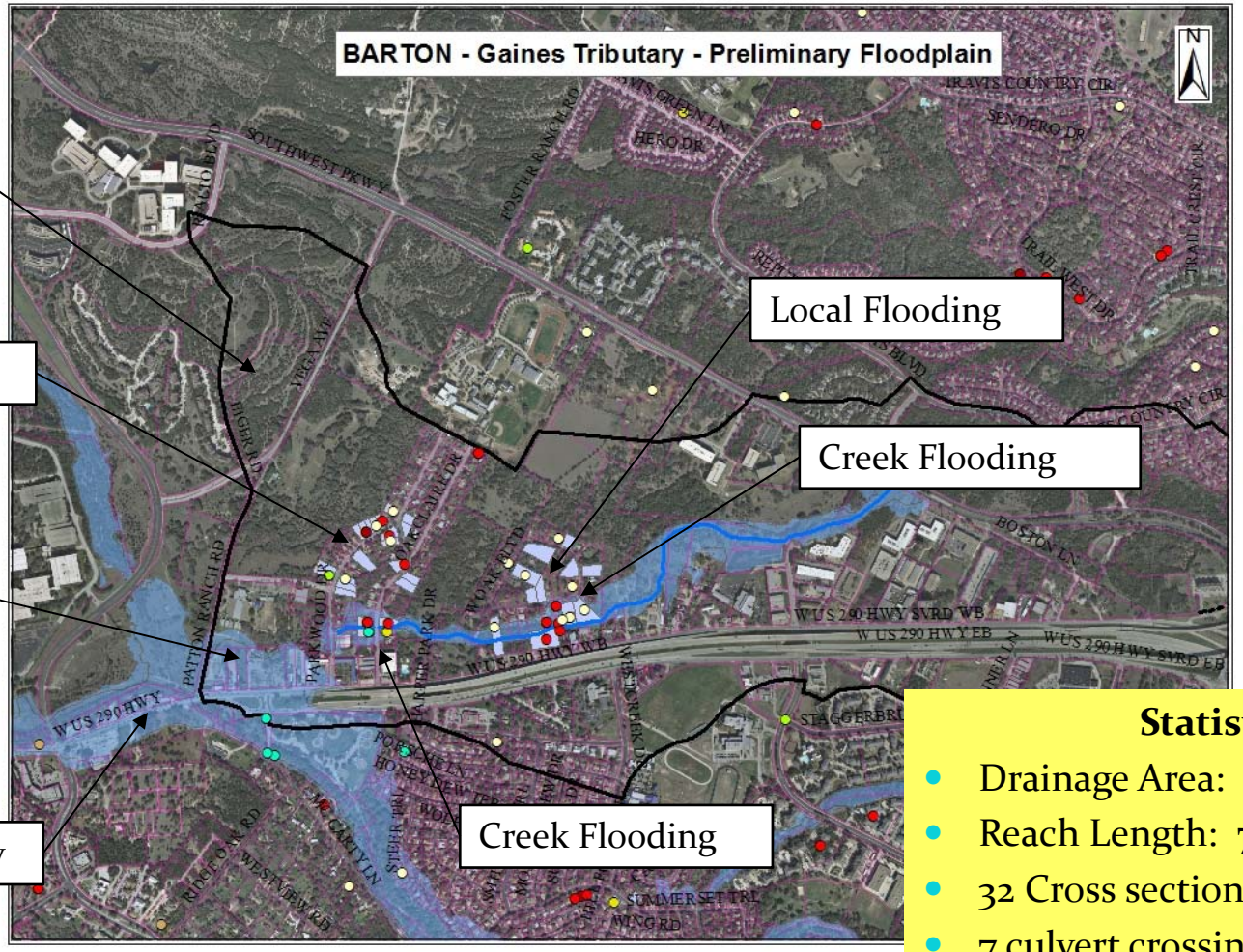
	Depth of Inundation (ft)				
	2-year	10-year	25-year	100-year	Priority
Joe Tanner	3.15	4.81	5.36	6.17	Very High
Old Bee Caves Road	4.27	7.44	8.55	9.53	Very High
US290/SH71 near McCarty	1.16	3.88	5.74	6.82	Very High
William Cannon	0	1.74	3.32	4.87	High
SH71 at Scenic Brook	0	0	0.77	1.29	Low
Silvermine	0.58	0.19	1.23	1.49	High
Covered Bridge	0	0.49	1.61	2.55	Moderate

Improved by project

Not affected by project

Outside project area

Gaines Trib Overview



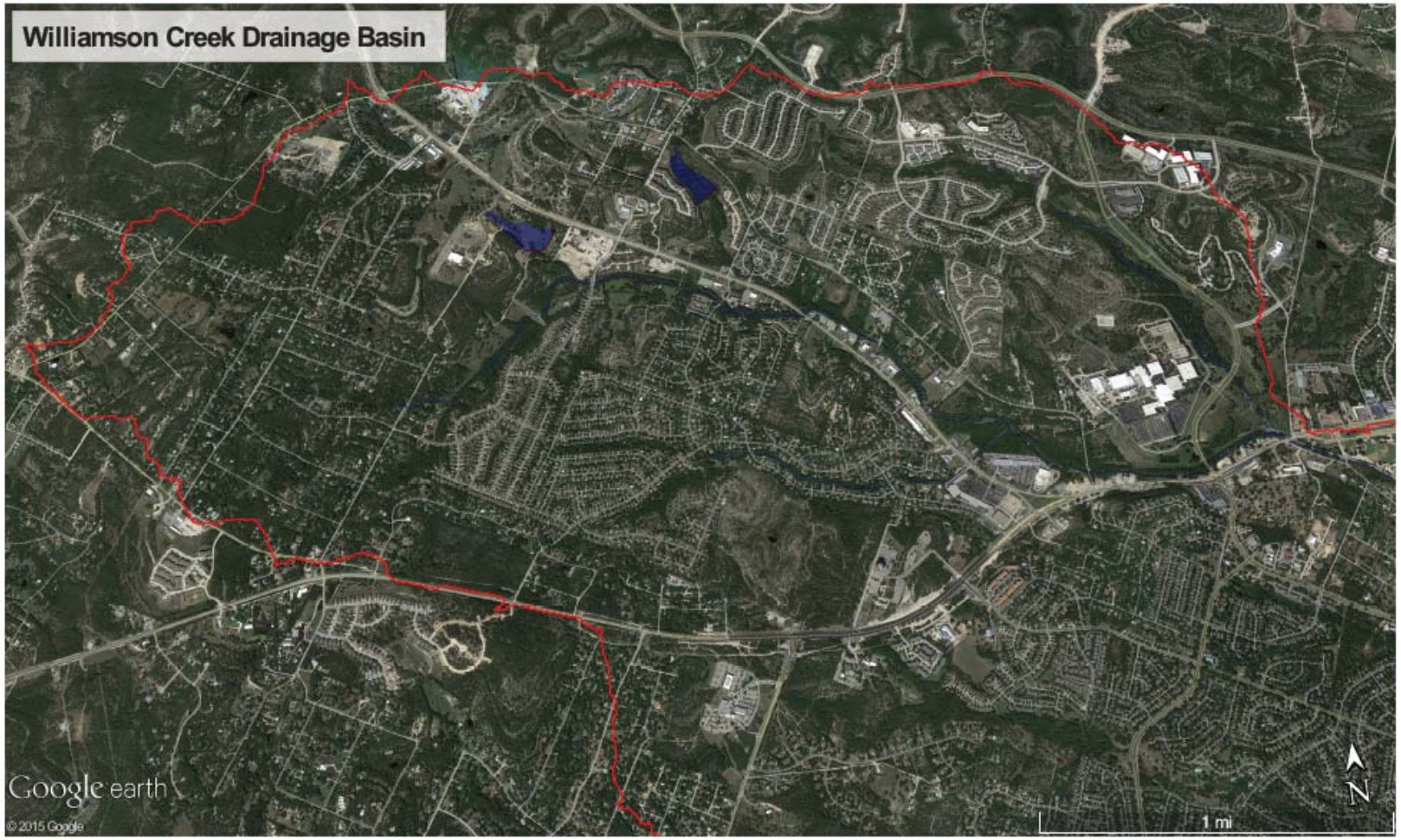
Statistics

- Drainage Area: 1.9 Square Miles
- Reach Length: 7,920 feet
- 32 Cross sections
- 7 culvert crossings

OAK HILL PARKWAY

REGIONAL DETENTION

WHAT? WHY?



REGIONAL DETENTION

Potential Upstream Pond Locations:

- Old Bee Caves Road near Sunset Ridge

OAK HILL PARKWAY

REGIONAL DETENTION

Potential Upstream Pond Locations:

- SH 71 near Covered Bridge Drive

REGIONAL DETENTION

Nearby Examples:

- Covered Bridge Drive south of SH 71

REGIONAL DETENTION

Nearby Examples:

- Terravista Drive near Rialto Blvd.

WATER QUALITY: Why?

Protect Williamson Creek and the Edwards Aquifer from pollution associated with development

Photo courtesy FWS

REGULATIONS:

- **TCEQ Edwards Aquifer Protection Program**
- **US Army Corps of Engineers Section 404 of the Clean Water Act**
- **TCEQ Section 401 Water Quality Certification**
- **TCEQ TPDES (Texas Pollution Discharge Elimination System) Stormwater permit**

WATER QUALITY: What?

Provide treatment of stormwater runoff from the project before discharging into Williamson Creek and its tributaries

- TCEQ: Total Suspended Solids (TSS). TSS is one indicator of effectiveness of a water quality treatment strategy, since its relationship with other pollutants is known.

STRATEGIES -"Best Management Practices (BMPs)"

- **Vegetative Filter Strips , Grassy Swales**
- **Sedimentation/ Sand Filtration Basins**
- **Bioretention Ponds**
- **Extended Detention Basins**
- **Regional Water Quality**

WATER QUALITY: How?

Vegetative Filter Strips & Grassy Swales

- First Choice for Treatment
- Very Efficient
- Roadway safety benefits
- Easy Maintenance
- Inexpensive
- Aesthetically pleasing Wildflowers, etc.

US 183 near MoPac

WATER QUALITY: How?

Sedimentation / Sand Filtration Basins

- Work with storm sewers
- Excellent pollutant removal
- Can be located between roadway or under bridges
- Can also be landscaped

US 290 at I-35

WATER QUALITY: How?

Bioretention Ponds

- Also works with storm sewers
- Excellent pollutant removal
- Additional landscape and CSS (Context Sensitive Solutions) opportunities

Sedimentation Basin

Filtration Basin

WATER QUALITY: How?

Extended Detention Basins

- Work with storm sewers
- Less complicated basin configuration
- Lower pollutant removal efficiencies
- Can be combined with other detention basins for flood protection

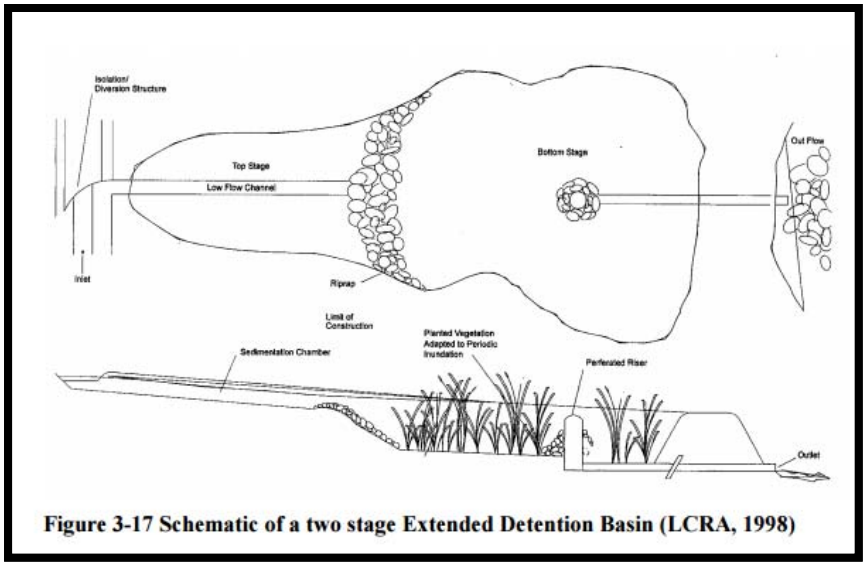


Figure 3-17 Schematic of a two stage Extended Detention Basin (LCRA, 1998)

ADDITIONAL WATER QUALITY OPPORTUNITIES

Freescale Property

Regional Water Quality

Permeable Friction Course (PFC) Pavement

- *Being Considered for Roadway Noise & Safety Benefits, not to meet TCEQ Requirements*
- *It would, however, also provide a water quality benefit*