Riparian Area Initiative

How should Fort Worth better protect our streams and rivers?

1st Stakeholder Meeting | February 29th, 2024

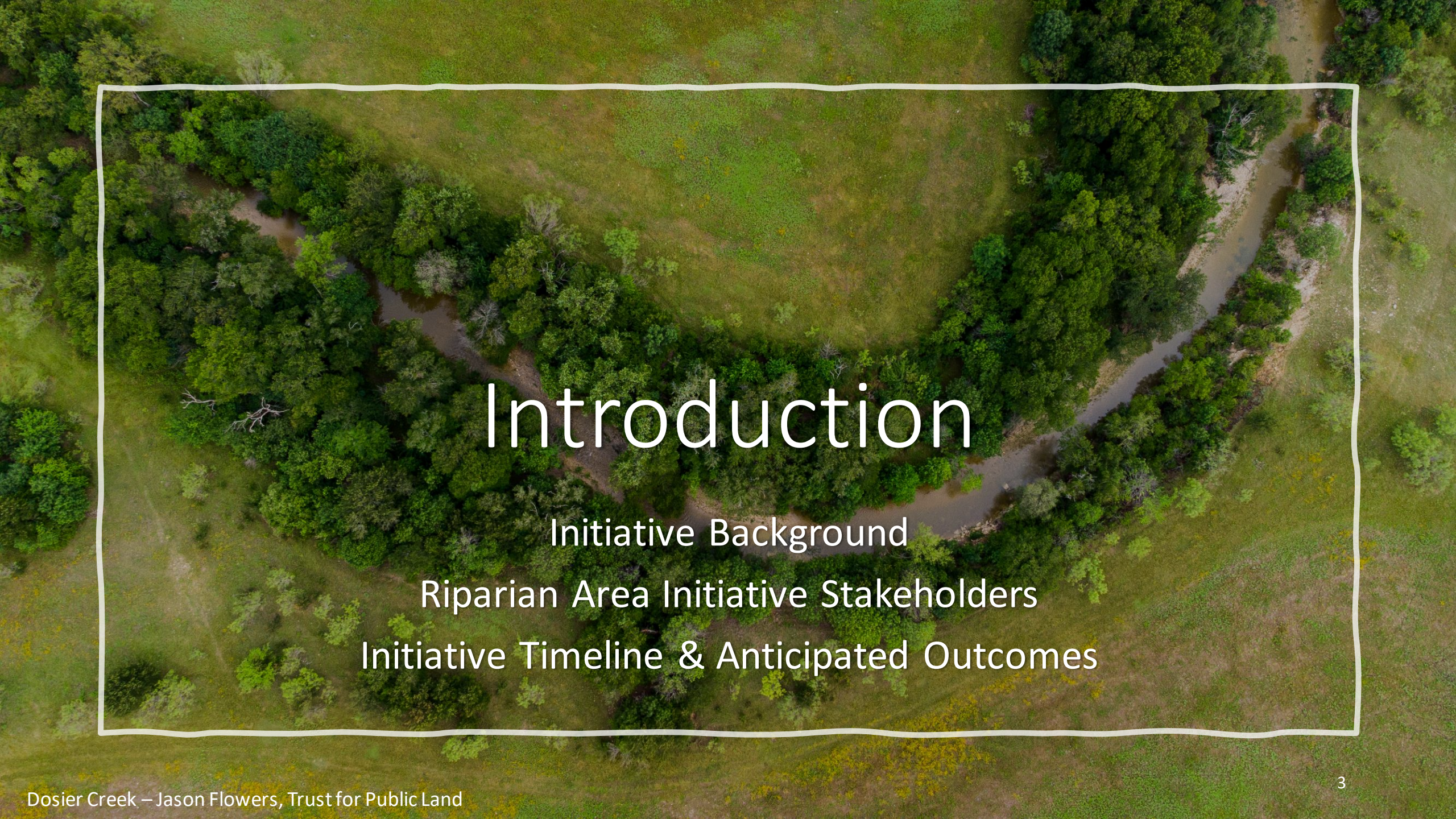
AJ Prebensen – FUSE Fellow

Brandi Kelp – Senior Planner, Stormwater Management

Meeting Agenda

- Introduction
- Existing Conditions
- Benchmarking Results
- Riparian Buffer Area & Incentives
- Next Steps

Bear Creek – Jason Flowers, Trust for Public Land



Introduction

Initiative Background

Riparian Area Initiative Stakeholders

Initiative Timeline & Anticipated Outcomes

Dosier Creek – Jason Flowers, Trust for Public Land

Initiative Background

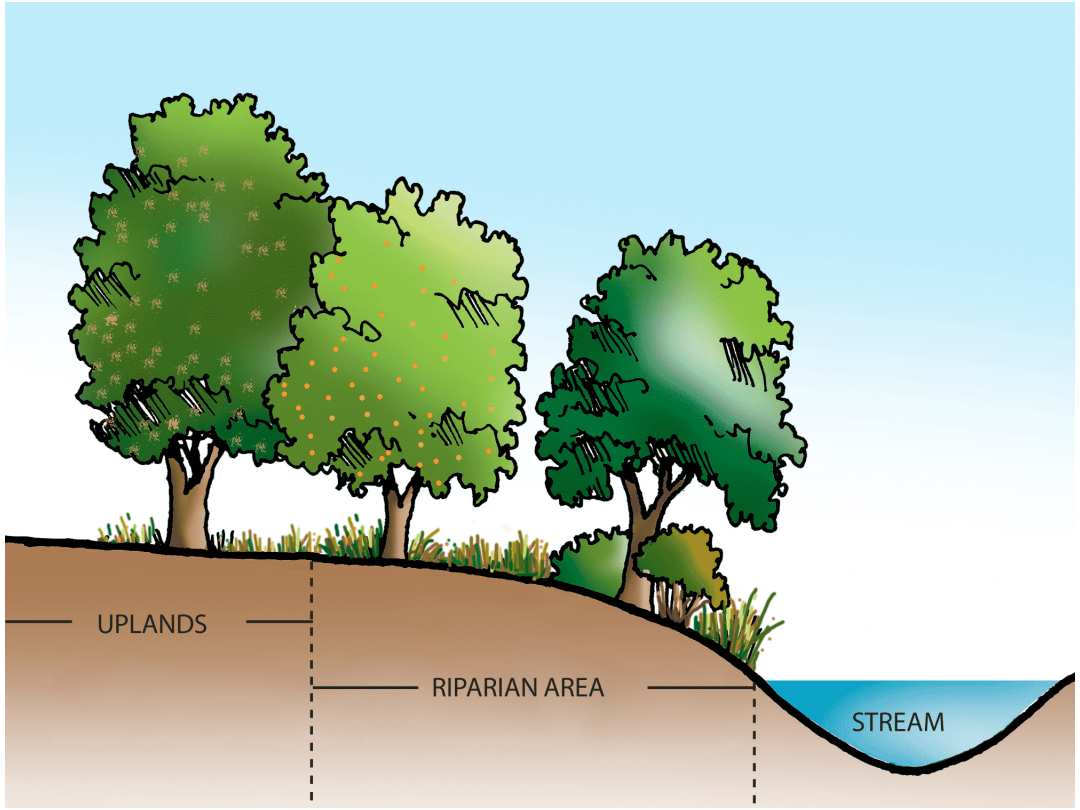
- FUSE – Strategic collaboration & community-based problem solving for pressing local challenges
- Growth – What will FW look like in 20 years?
- Vision – How can we achieve our vision of being the most livable city in Texas?
- Ties into multiple initiatives and plans across the city, "So safe, so clean, so green"
- Balanced approach – Consider City, Development, & Community needs

What is a Riparian Area?

Proposed Riparian Area Definition:

Riparian areas are ecosystems that occur along watercourses or water bodies where vegetation is strongly influenced by the presence of water. These areas serve many purposes and are beneficial for water quality, wildlife, recreation, and health.

Adapted from the National Resource Conservation Service and Texas Parks & Wildlife definitions

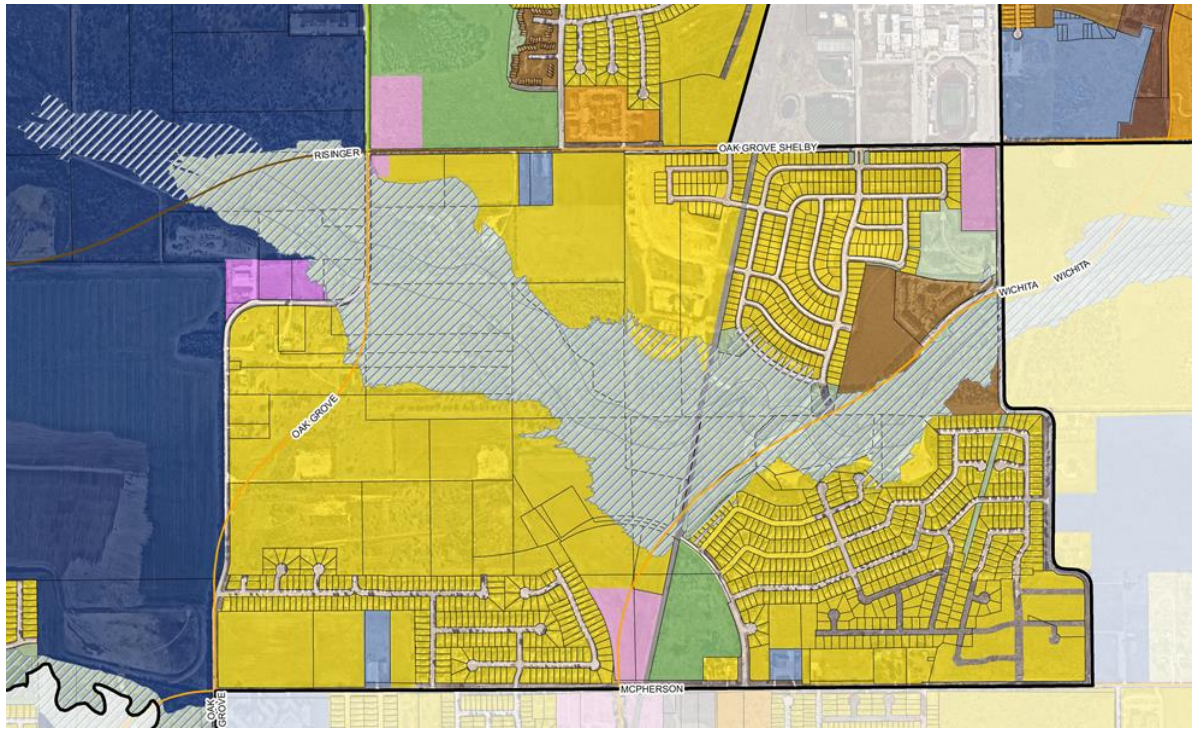


Illustrator: Gary Bentrup, USDA national Agroforestry Center 2015

Related City Plans & Programs

- Mayor's Good Natured Green Space Initiative
  - Major Update – Park, Recreation & Open Space Master Plan
  - Open Space Conservation Program Strategy Report
  - New – Urban Forestry Master Plan
- Comprehensive Plan
- Floodplain Management Plan
- Stormwater Master Plan
- Environmental Master Plan
- Active Transportation Plan

Future Land Use Map (floodplain undeveloped)



Vacant, Undeveloped, Agricultural

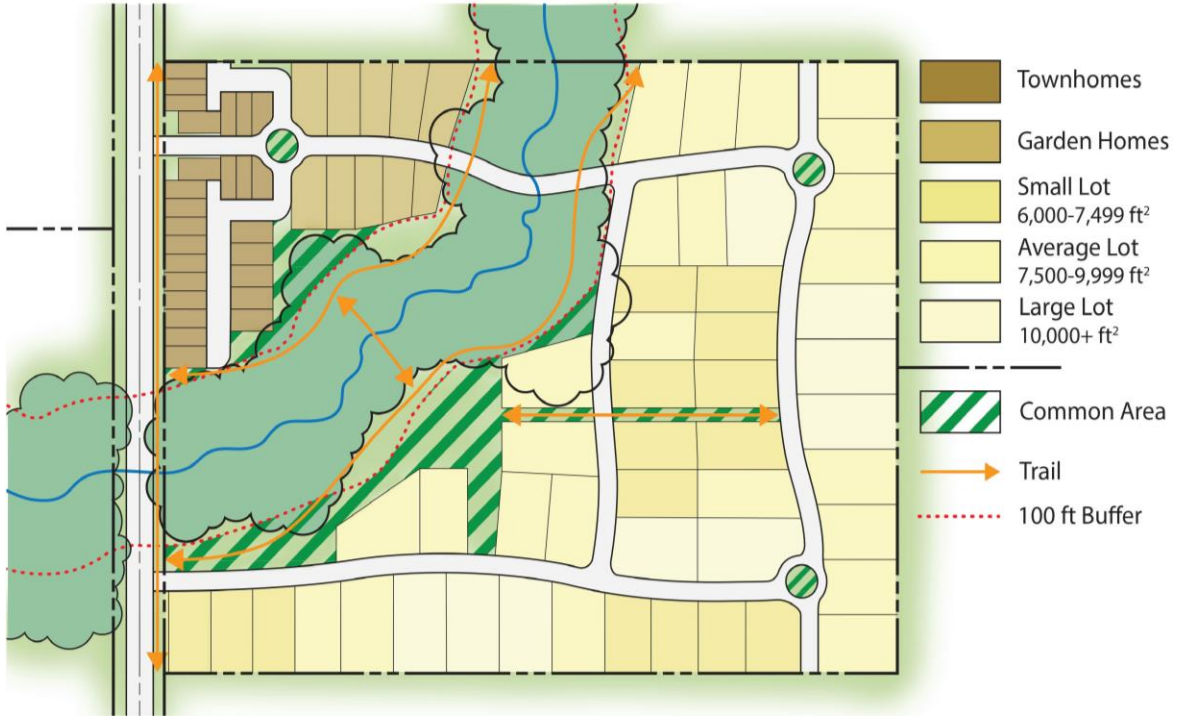
2023 Comprehensive Plan – Key policies related to initiative

- Maintain floodplains in natural state to protect water quality, reduce erosion risk, and protect riparian environment.
- Encourage parks, bike trails, and open space within floodplains and along water bodies.
- Promote pedestrian-oriented developments that encourage walking, bicycling, mixed uses, slower traffic, public places, and attractive streetscapes.

Arcadia park trails, Fort Worth
Photo by Jennifer Dyke

2023 Comprehensive Plan – Key policies related to initiative

- Encourage development and building practices that reduce environmental impacts.
- Encourage clustering in subdivisions to conserve 100yr floodplains, tree cover, wildlife habitat, stormwater detention, riparian buffers.
- Promote use of Low-Impact Development (LID) techniques to reduce erosion and sedimentation.



planokc.org

Results from 2022 Public Survey on Open Space Conservation Program

Top priorities for preserving open space


Ecosystem preservation


Stream river & lake health


Community health

Top requested programs and activities

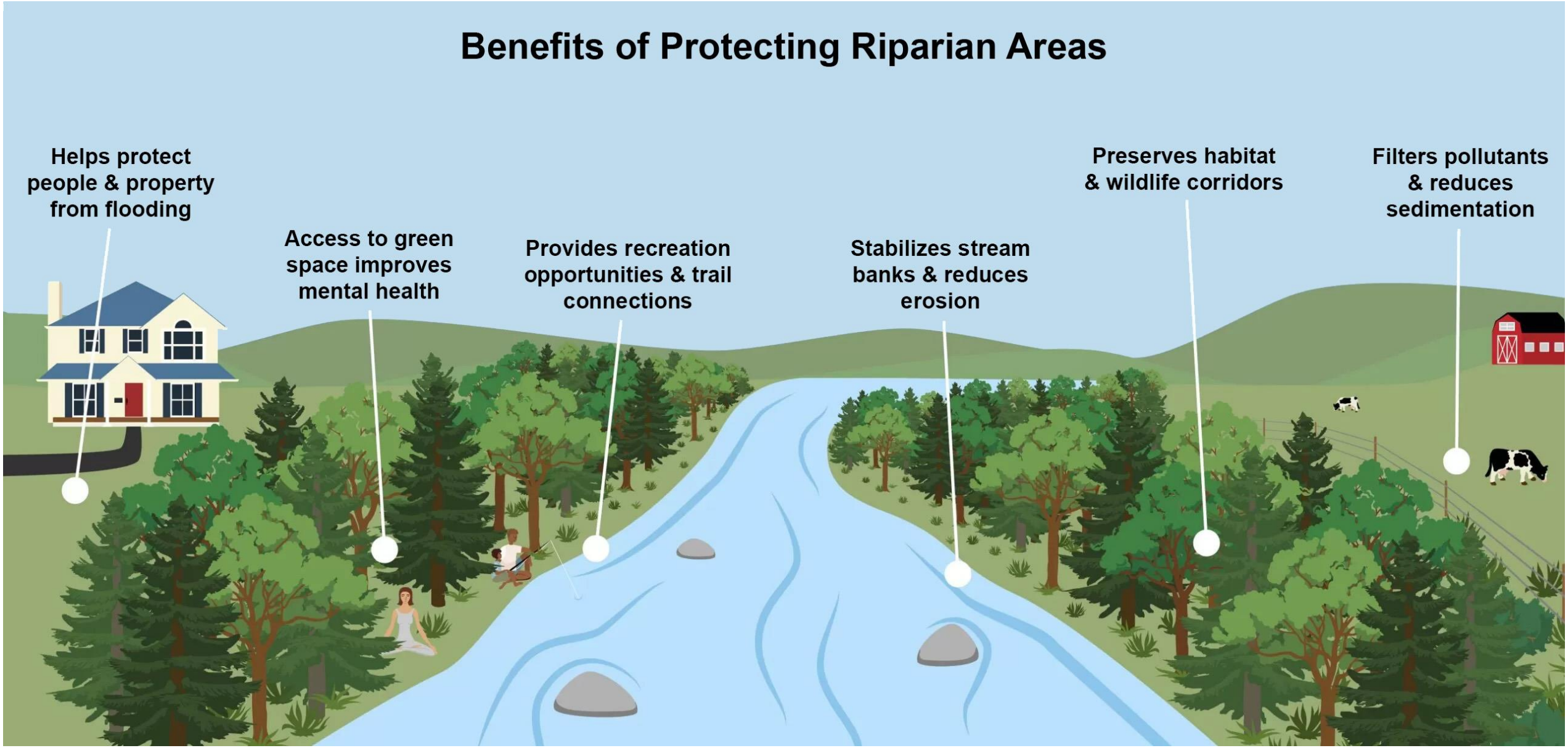

Hiking/Walking


Bird Watching & Wildlife Viewing


Educational Programming & Outdoor Education

Icons from Flaticon

Benefits of Protecting Riparian Areas



Economic Benefits of Trails & Greenways

- Near the Katy Trail in Dallas, developers reported a **25% premium** for properties sold. *Dallas Morning News*
- Trails generated the highest **Return on Investment** of any park typology, **over 50:1** from 1998-2016. *HR&A study of Dallas Park System*
- Property values associated with a single greenway resulted in estimated **$13.64M new property tax revenue** for Austin. *Journal of Leisure Research*

Trailhead on Clear Fork Trinity
Dallas Morning News

Increased Home Prices Near Green Space

On average, home prices increase:

- 20% – adjacent to passive park
- 32% – next to a larger and longer greenbelt area for hiking and biking
- 22% – near tree-covered undeveloped area
- 37% – near heavily wooded open land

Community Economics - A Literature Review
University of Washington Study

Biking on the Medina River Greenway Trails
San Antonio Parks & Recreation

Riparian Area Initiative Stakeholders

Communities & Industries

- Community Members
- Private Property Owners
- Academia
- Riparian Area & Water Specialists
- Engineers & Landscape Architects
- Development & Real Estate

Partner Agencies

- US Army Corps of Engineers
- US Department of Agriculture
- Texas Parks & Wildlife
- North Central Texas Council of Governments
- Tarrant Regional Water District
- Streams & Valleys

US Army Corps of Engineers®

USDA

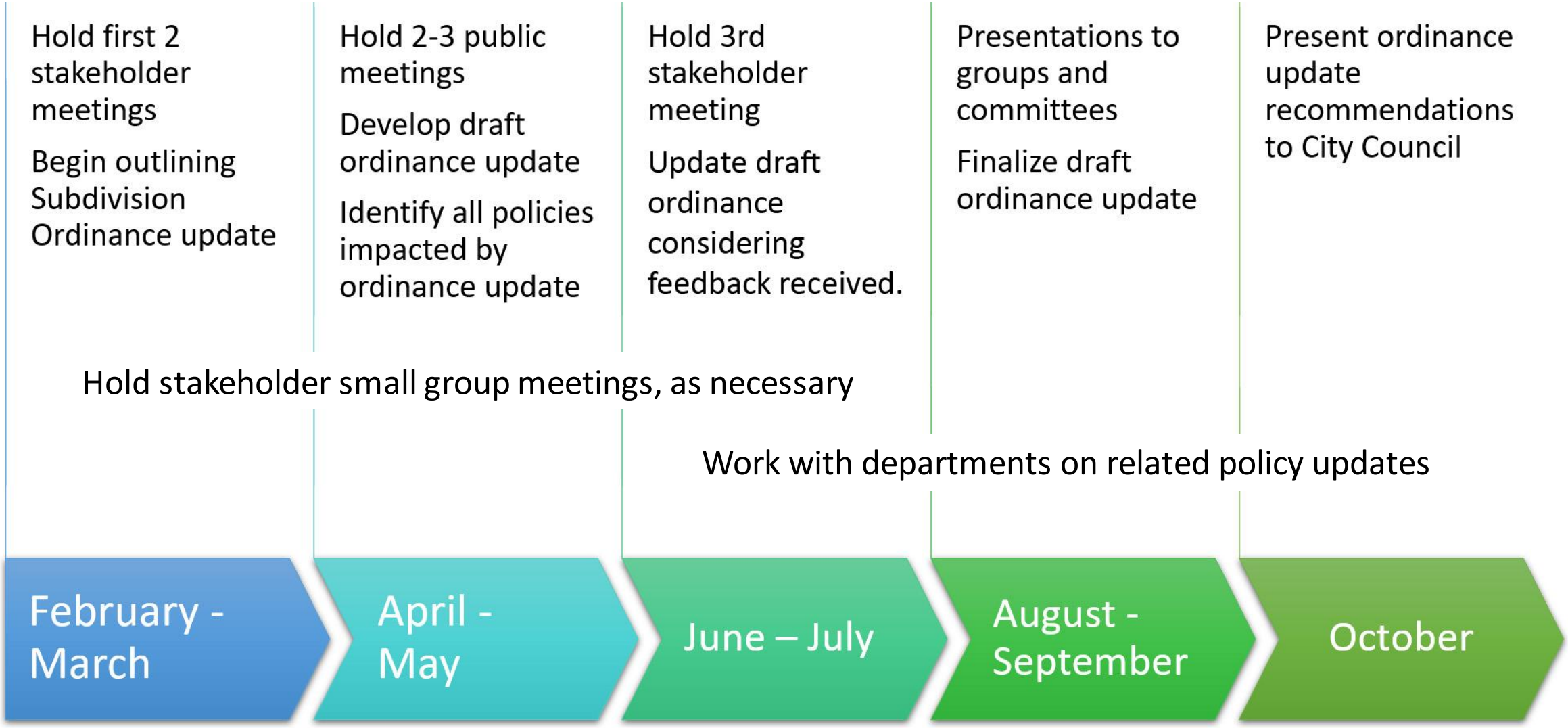
TEXAS PARKS & WILDLIFE

North Central Texas Council of Governments

trwd Tarrant Regional Water District

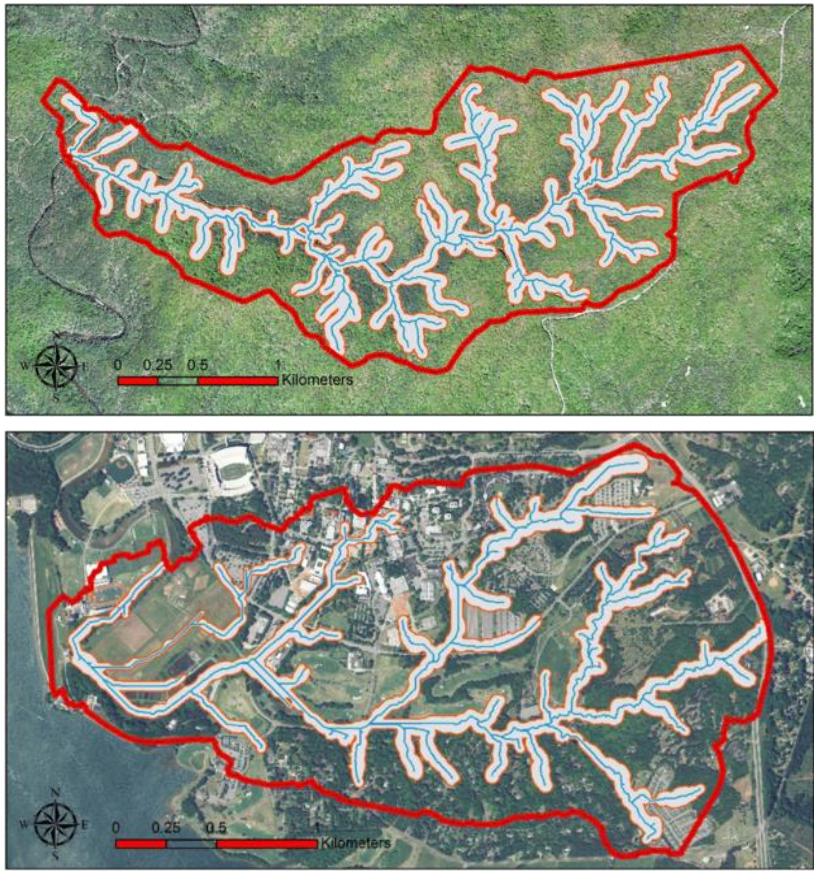
Streams & Valleys

Riparian Area Initiative Timeline



Riparian Area Initiative Anticipated Outcomes

- Update the Subdivision Ordinance with riparian area protection regulations and incentives
- Update applicable development criteria manuals, ordinances, and policies
- Provide a map of the impacted areas based on existing data that is easy for developers and City staff to understand



Modeling and monitoring riparian buffer zones using LiDAR data in South Carolina

Discussion

Existing Conditions

Fort Worth Growth & Development

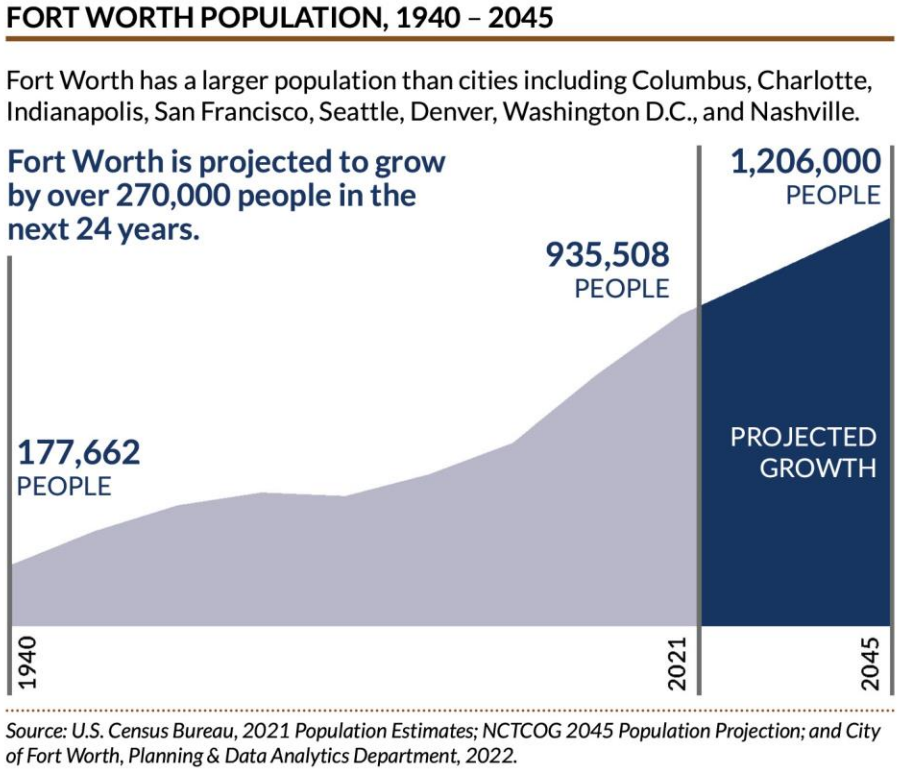
Existing Development Requirements that Impact Riparian Areas

Gaps in Existing Requirements & Policies

Big Fossil Creek – Jason Flowers, Trust for Public Land

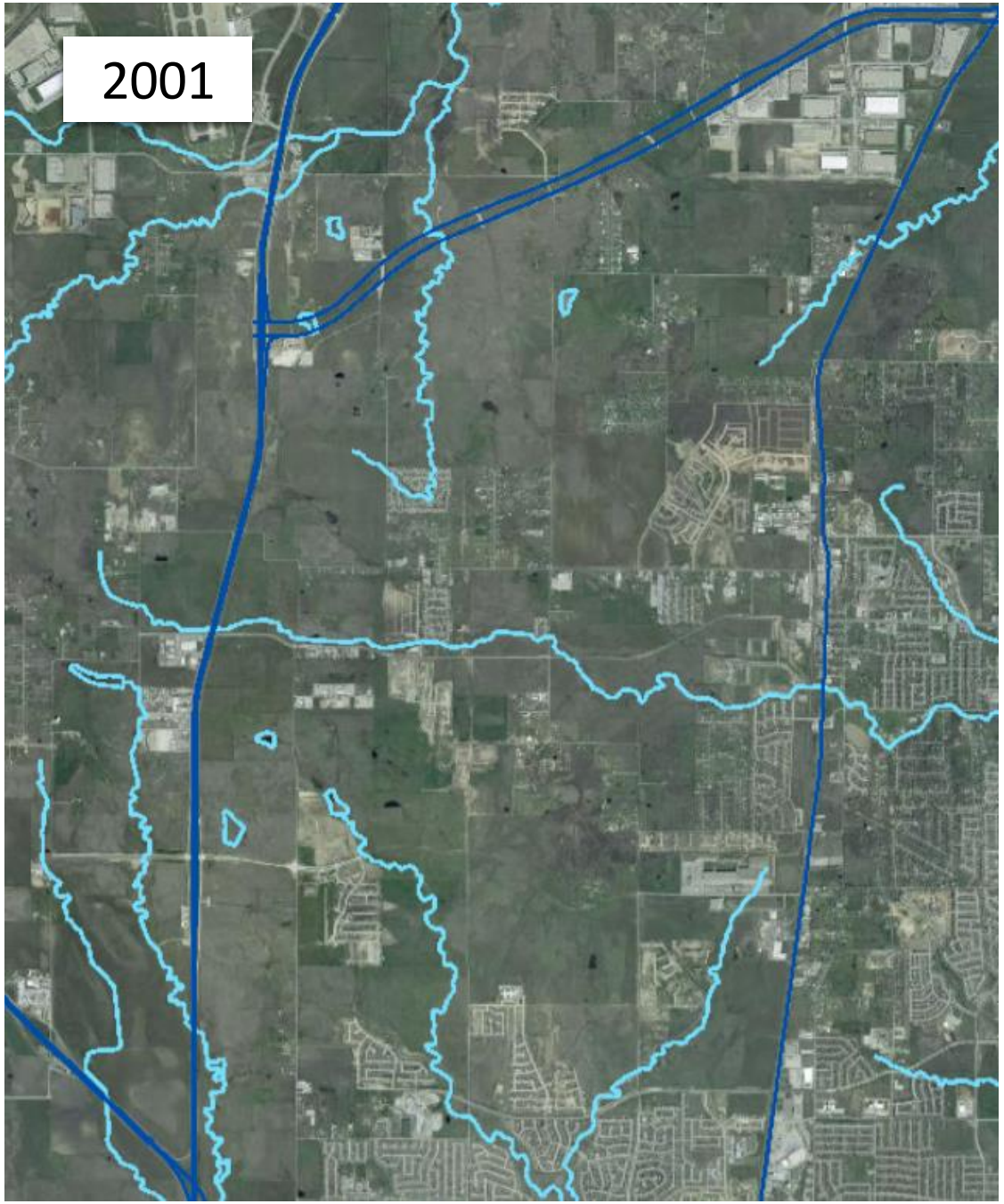
Rapid Growth

- Fort Worth is experiencing rapid growth
  - Fastest-developing large city in the US
  - Population projected to be 1.2M by 2045
  - 348.24 square miles in City Limits, additional Extraterritorial Jurisdiction (ETJ) 275 square miles
  - 63,986 acres of developable land – 2nd most for large city
  - Losing 50 acres of undeveloped land a week to development



Development & Storm Events

- Development creates pressure on riparian areas by increasing:
  - Impervious surfaces and soil compaction
  - Stormwater runoff, sedimentation, and pollutants
  - Stream flow velocities that can cause erosion
- Extreme rainfall events in Texas are:
  - Becoming more frequent and severe
  - Expected to worsen in the future
  - Significantly increasing urban flooding
- Flood control and riparian area stabilization projects cost millions of dollars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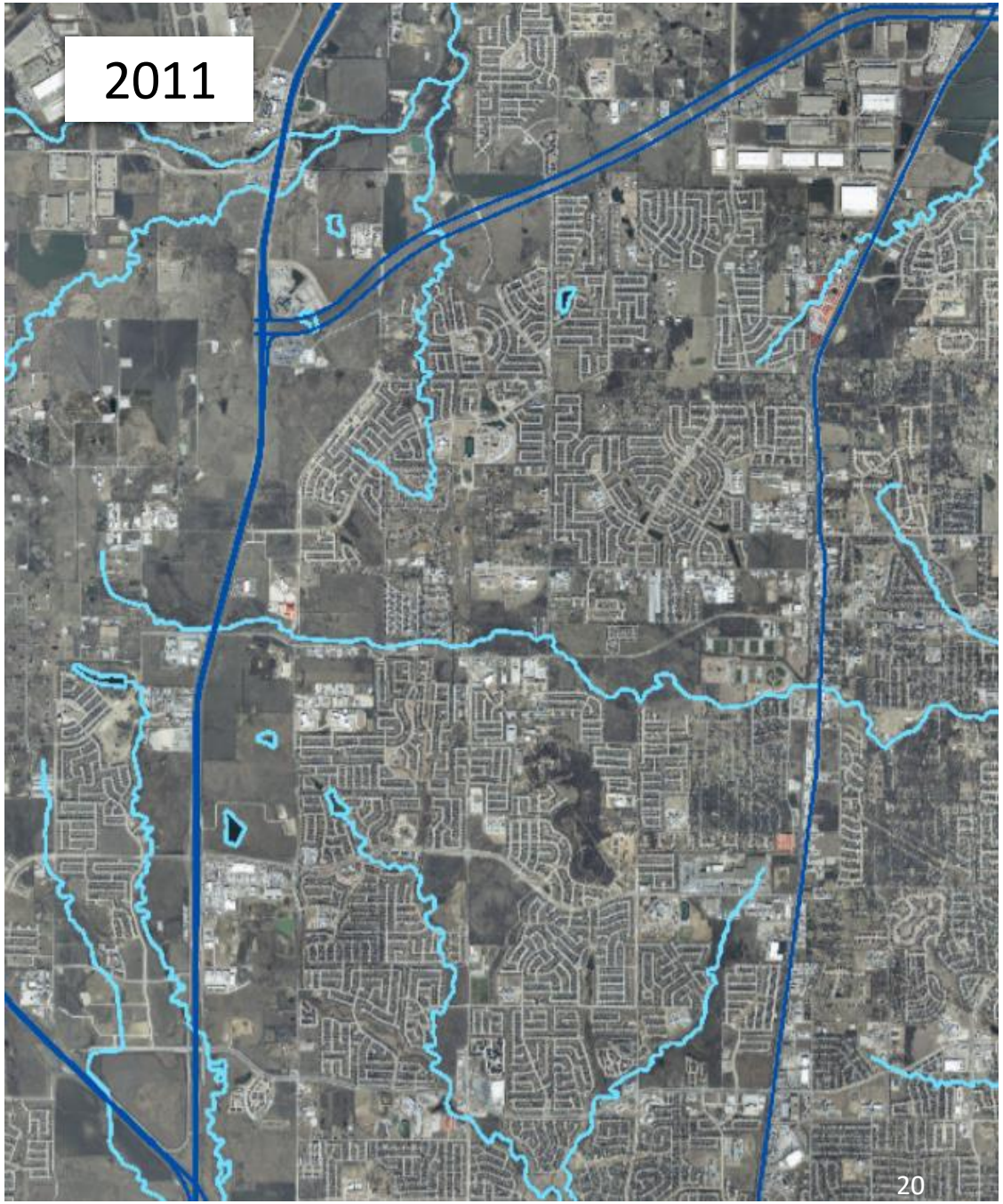
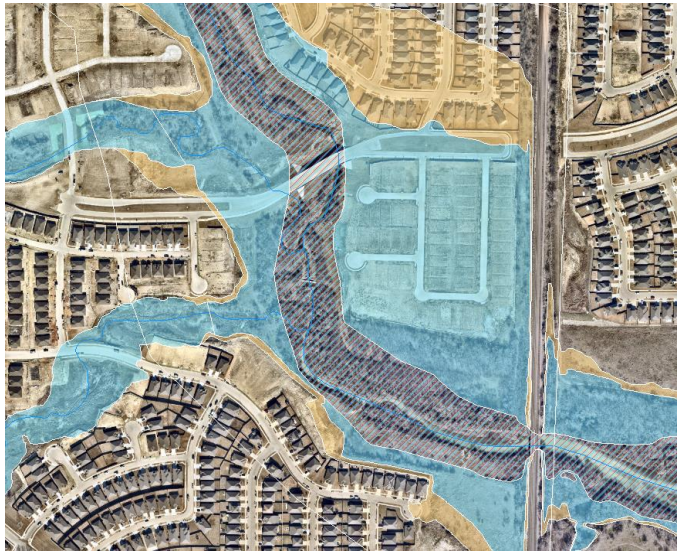
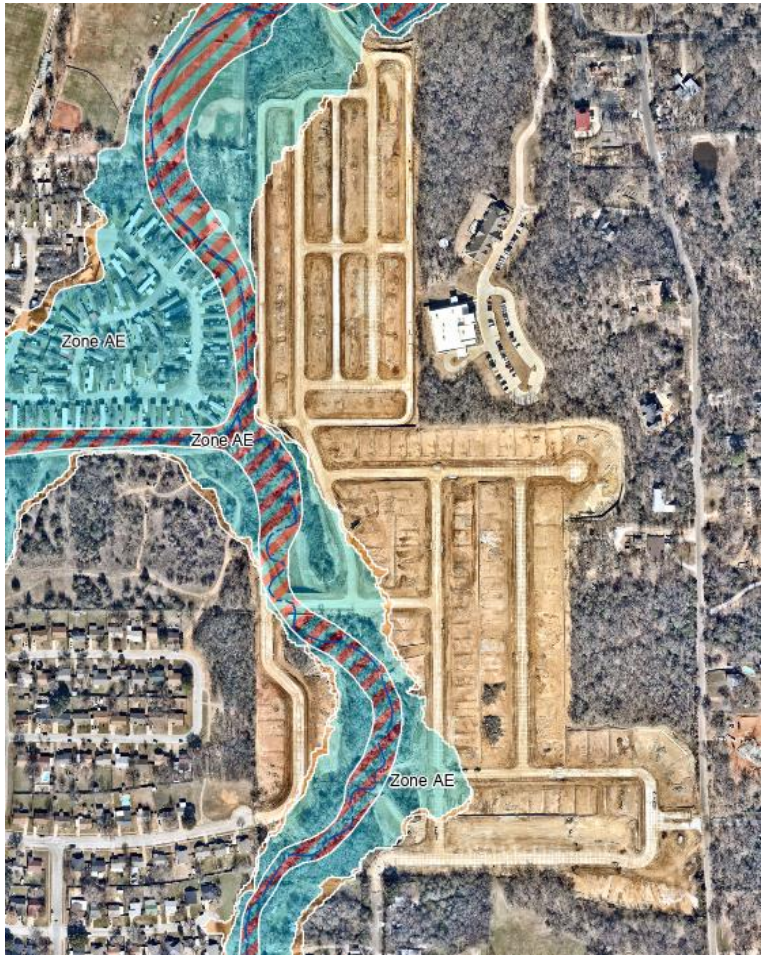
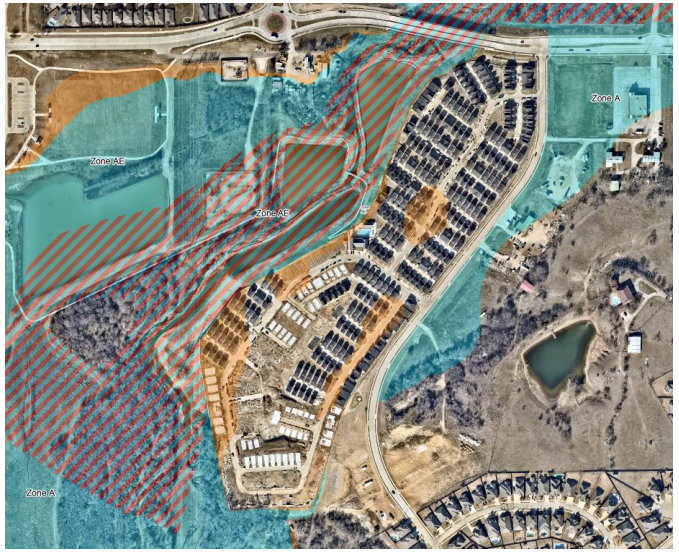

2011

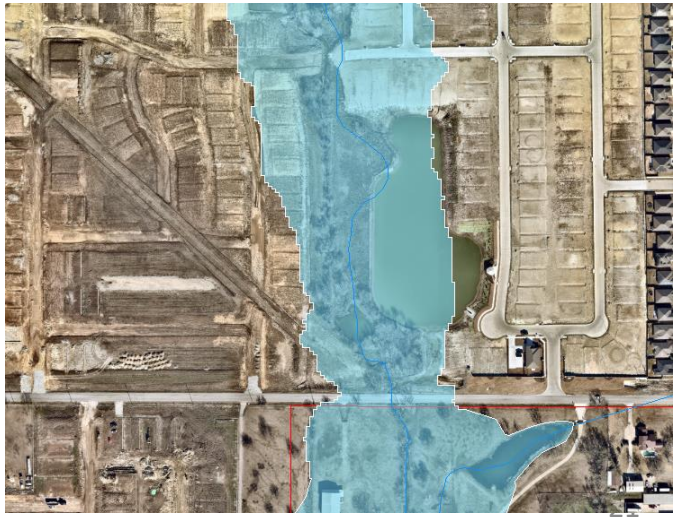
Development in the Floodplain Allowed Under Existing City Regulations





All images are of development within the past year





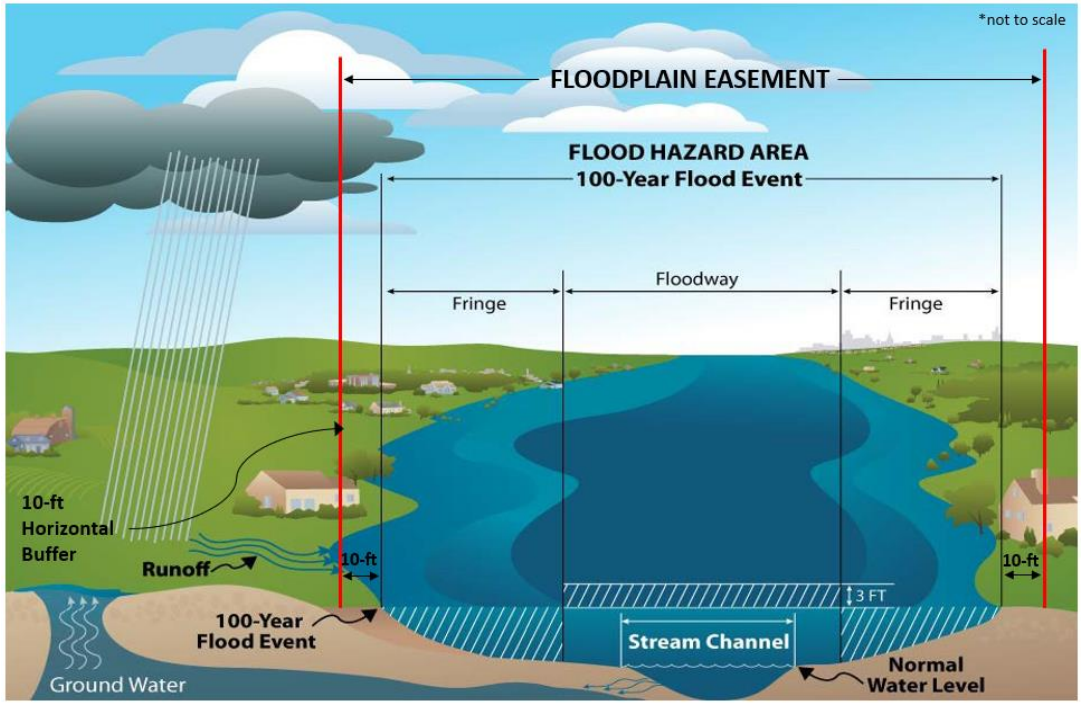
Potential Impacts of Developed Floodplains

Western Hills/Bandera Road

Lebow

Development Requirements that Impact Riparian Areas

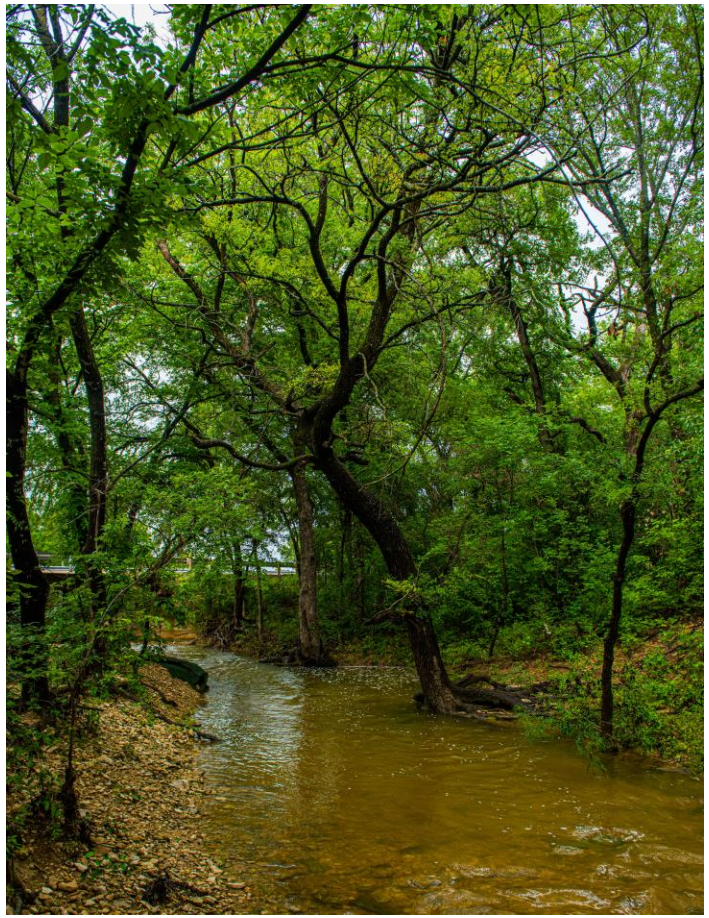
- If platting, a floodplain easement is established based on the extent of the fully-developed 100-year Water Surface Elevation (WSEL) with 10’ horizontal buffer added
- Stream velocity requirement of 6ft per second maximum + 5% increase is permissible
- Park Dedication – at least 25% of park dedication must be outside of floodplain with slopes less than 10%



TFMA 2015 Quick Guide on Floodplain Management in Texas

Urban Forestry Development Requirements

- Canopy for development is 25% for all land use except when exempt. Riparian area & floodplain tree canopy is typically used to meet 25% preservation requirement.
- Urban Forestry permit requirements for tree removal on private property or removal concerning development
- Permit required to plant, prune, or remove trees on City-owned property



Dosier Creek – Jason Flowers, Trust for Public Land

Gaps in Development Requirements & Policies that Impact Riparian Areas

- By state law, comprehensive plans (and other plans) don't have enforcement authority, they are guidance documents only.
- Existing regulations focus on peak stormwater runoff versus total volume.
- Floodplain permits are not required in floodplain easement for development outside of FEMA Floodplain (FEMA is usually narrower than floodplain easement).
- Grading permits & drainage studies only apply to development of 1 acre or more.
- Development is allowed in the FEMA regulatory floodplain with a Floodplain Development Permit (FDP). Not all FDPs require flood studies.

Discussion

Benchmarking Results

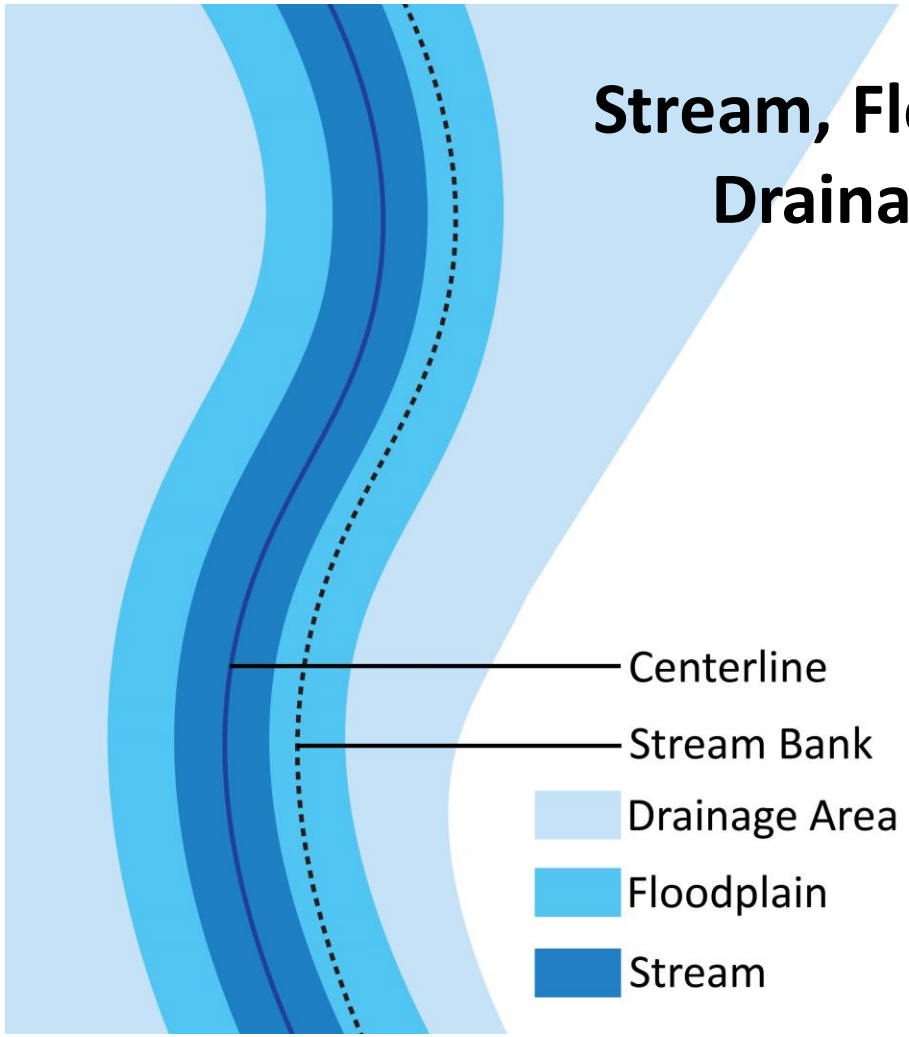
What are other cities doing?

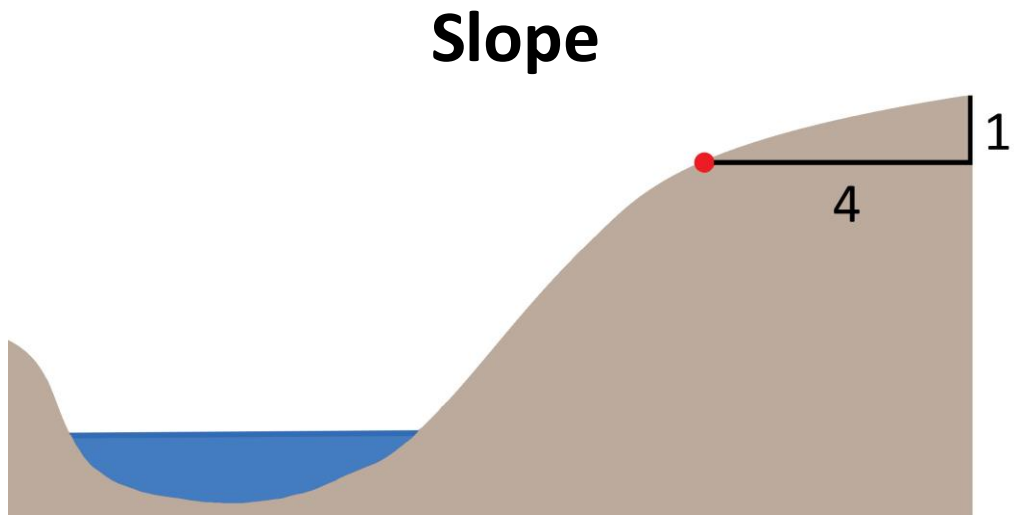
Best Practice Recommendations from Benchmarking

Pitfalls to Avoid

West Fork Trinity River – Jason Flowers, Trust for Public Land

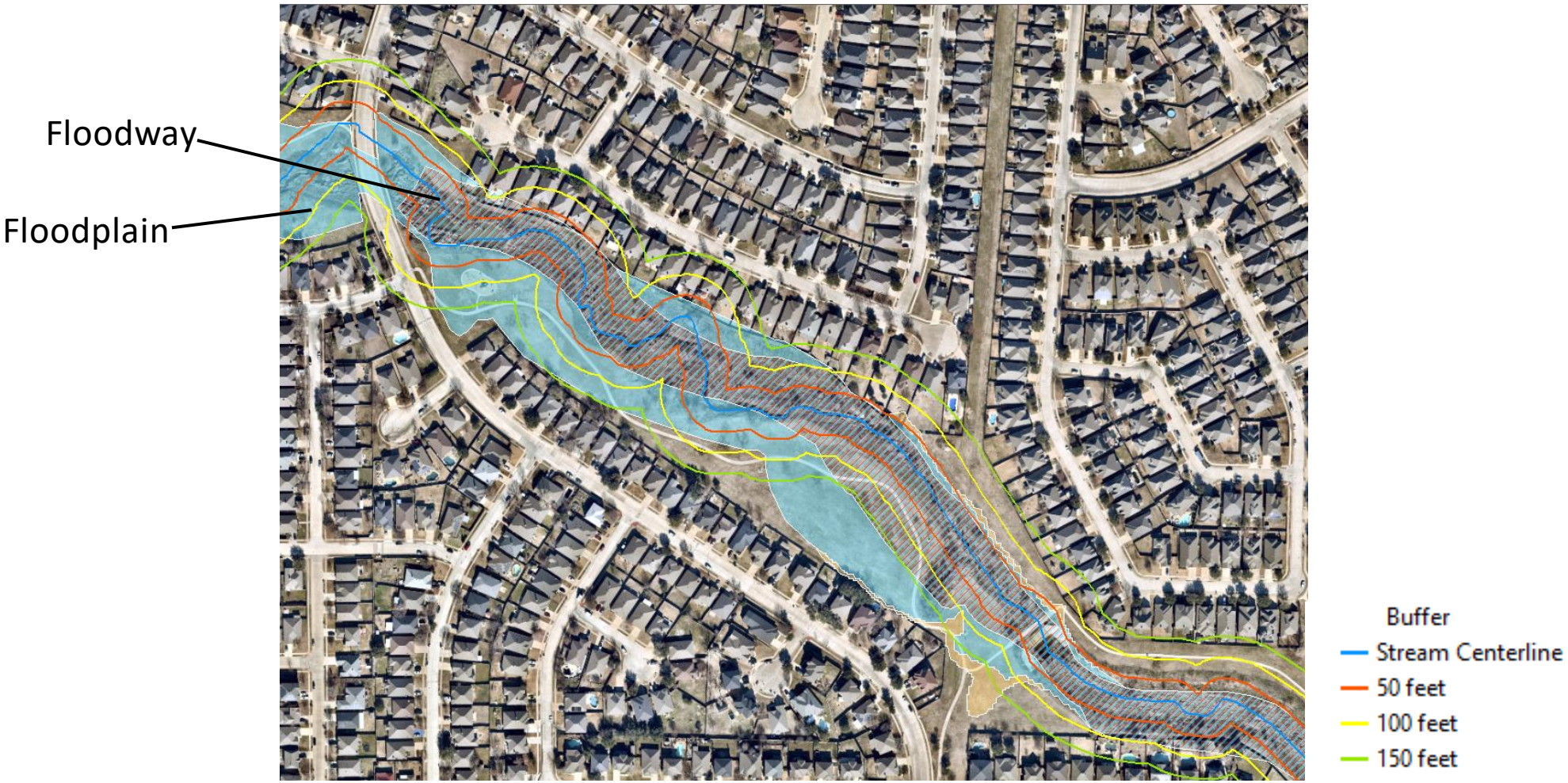
Ways to Measure Riparian Buffers





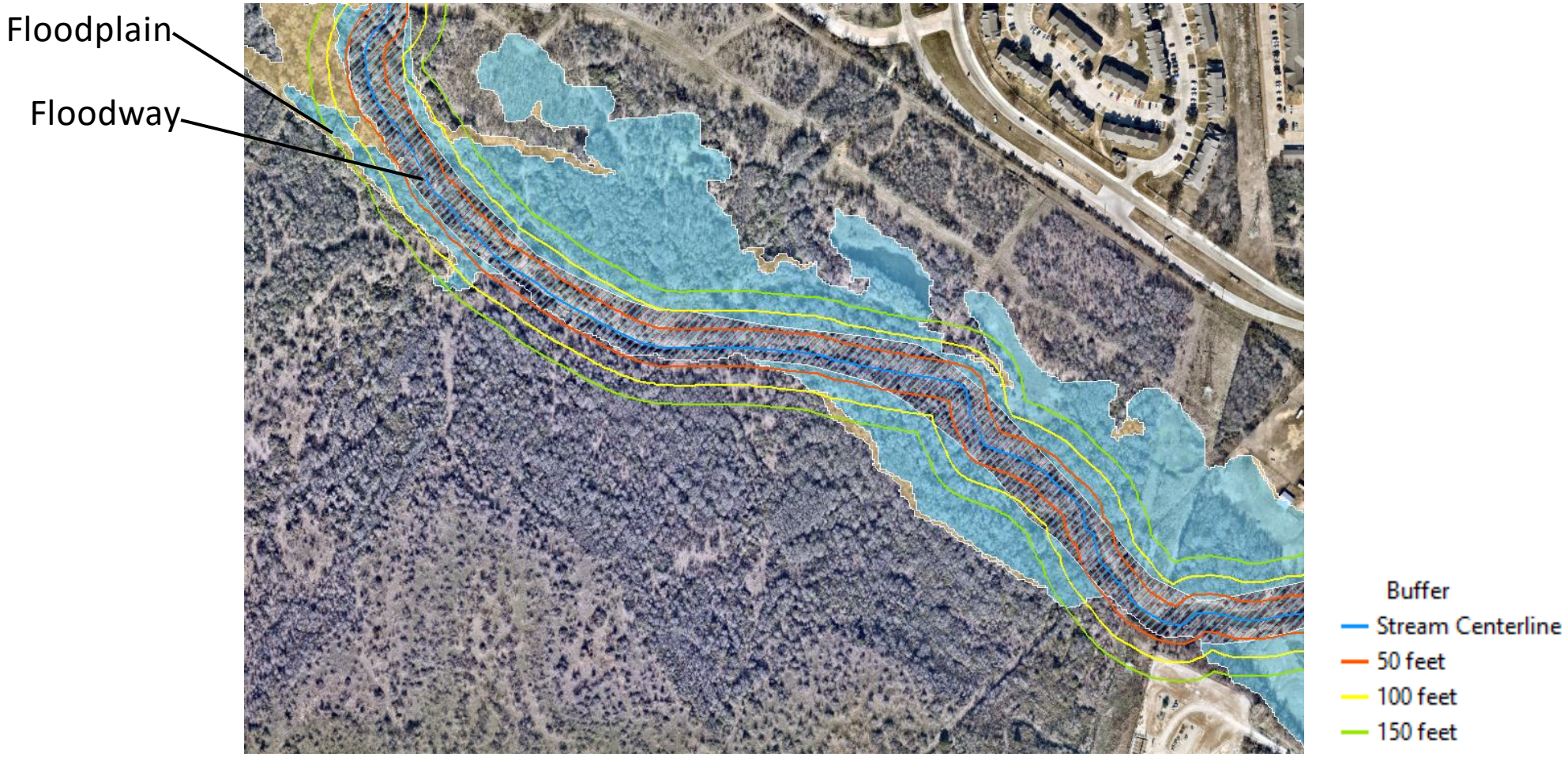
City	Regulated Area (from centerline of stream unless otherwise stated)	Key Flexibility & Incentives (all have utility exemptions)
Arlington, TX	25yr fully urbanized floodplain + Erosion Clear Zone + 25ft from top of bank for Creek Buffer Zone	None
Austin, TX	Rural: 50-400ft based on stream drainage area Suburban: 100-300ft based on stream drainage area More regulations in Critical Water Quality Zones	Athletic fields, Trails, Council-approved master planned communities, Sustainable urban agriculture/community gardens
Dallas, TX	50 ft from point where stream slope is 4:1 for clay soil	None
Denton, TX Flower Mound, TX	50-100ft based on watershed drainage area	Cluster development density bonus
Frisco, TX	Voluntary 100ft buffer from stream bank in addition to 15 ft Erosion Hazard Setback	Density bonus, May count toward open space requirements, lower design standards
Grand Prairie, TX	10 ft from point where stream slope is 4:1	None
Charlotte, NC	35-100ft plus 50% of area of the FEMA fringe based on drainage area	Counts toward open space dedication requirement, Density bonus
Fulton County, GA (Atlanta Metro)	150ft from top of stream bank of all USGS blueline streams	Trails, Density bonus, Exemptions, Variances
Kansas City, MO	100ft minimum, FEMA Floodplain + 75ft maximum	20% increase in total lots & smaller lots allowed

What does 50ft, 100ft, and 150ft from centerline look like in practice?



Arcadia Park, just west of North Tarrant Pkwy & North Beach St

What does 50ft, 100ft, and 150ft from centerline look like in practice?



Marine Creek, just downstream of Marine Creek Lake

Discussion

Best Practice Recommendations from Benchmarking

- Wider buffers offer the most flood control and ecosystem benefits – *Tx Parks and Wildlife*
- Buffers should be 100ft minimum from stream bank and have 3 zones – *National Association of Wetland Managers (NAWM)*
- Offer incentives for developers to encourage more sustainable development – *NAWM*
- Offer realistic exemptions – *USDA*
- Plant vegetation, as appropriate – *Virginia Dept. Of Conservation & Recreation*
- Should be easy to understand and apply – *KPI Tech*

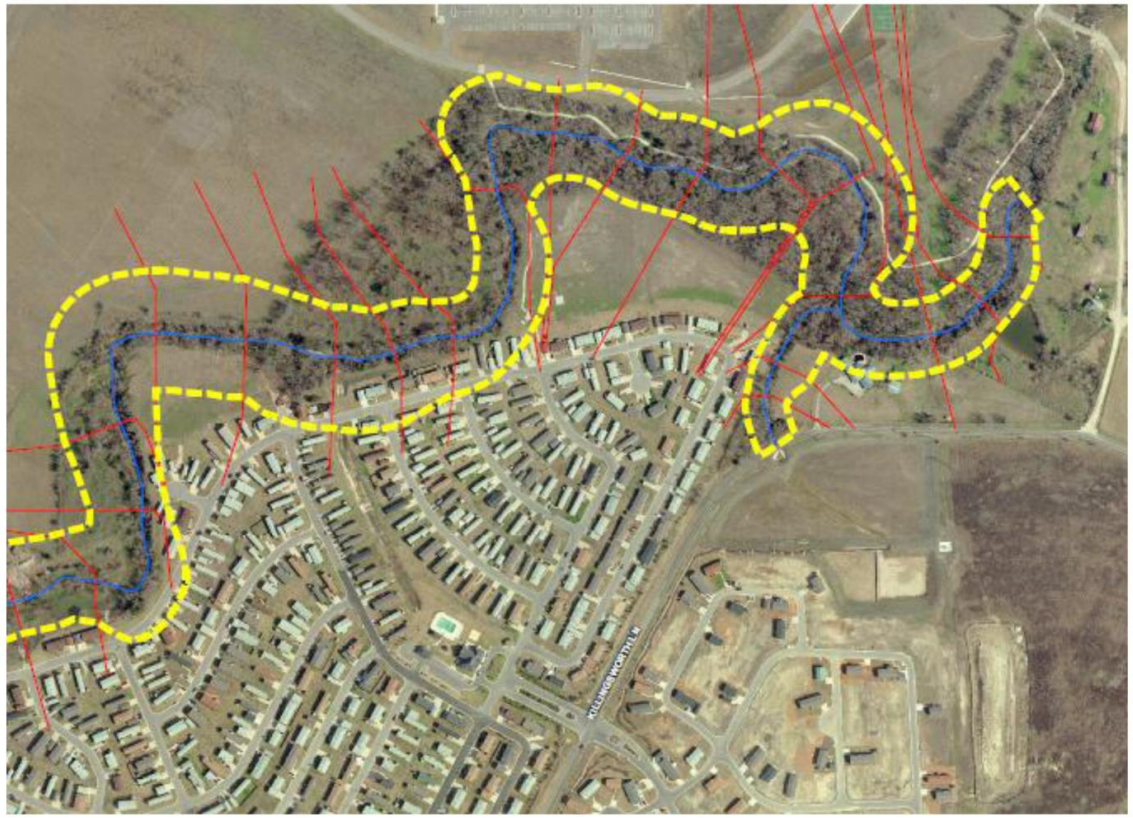
"The most effective buffers are at least 100ft wide, composed of native forest, and are applied to all streams, including very small ones."

Carl Vinson Institute, University of Georgia

Pitfalls to Avoid

- Lack of flexibility and incentives
- Overly-complex or vague riparian area definitions with too many criteria and/or data that isn't currently available
- Regulations defined differently across City documents
- Variances that need City Council versus administrative approval - lengthens process
- Weak or unimpactful penalties that enable bad actors
- Lack of ability to enforce

Pitfalls to Avoid



An Example Planimetric Surface Erosion Hazard Zone Delineation
City of Austin
Criteria for Establishing an Erosion Hazard Zone

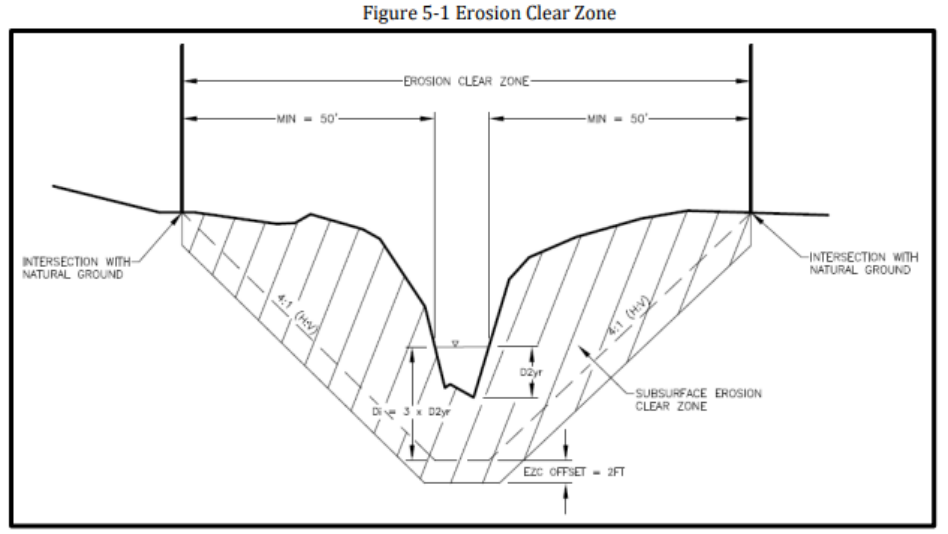
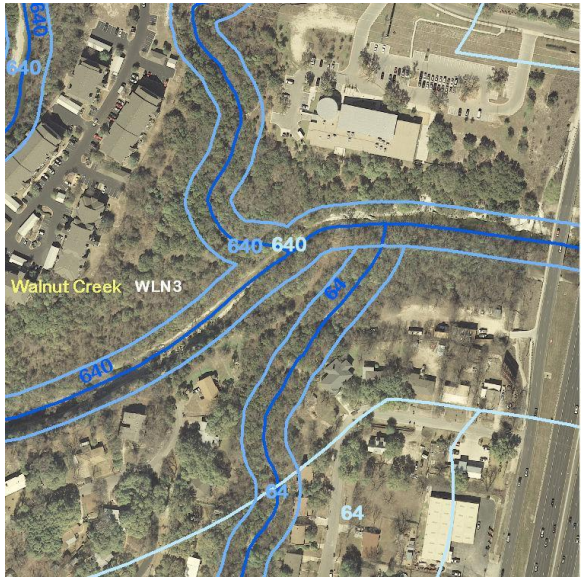


Figure 5-1 Erosion Clear Zone

Design Criteria Manual, STORMWATER 5-22

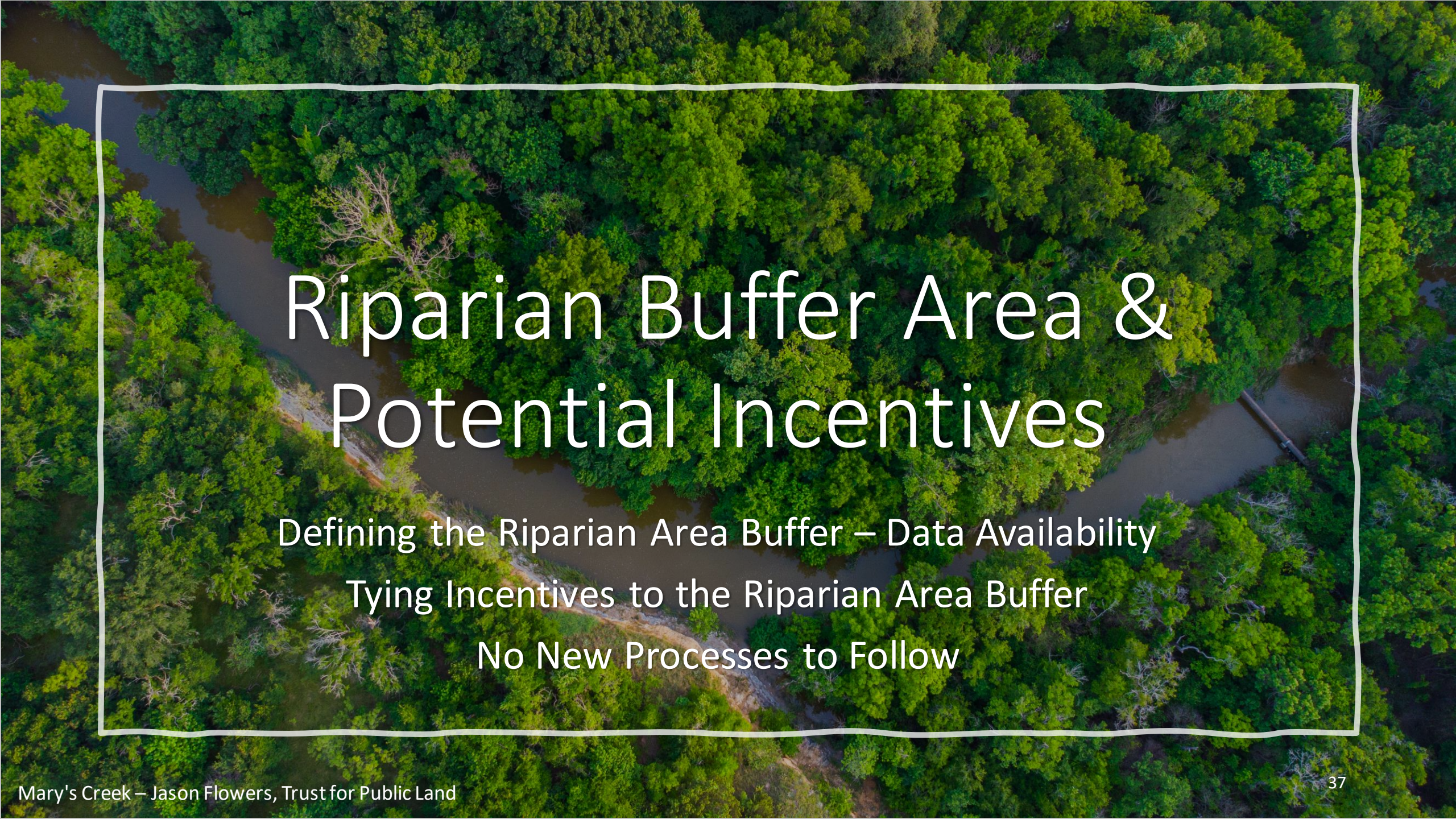
City of Arlington



Example of creek line, 50' and 400' buffer base files with respective drainage area threshold values and watershed values labeled for same riparian zone

City of Austin
Watershed Protection

Discussion



Riparian Buffer Area & Potential Incentives

Defining the Riparian Area Buffer – Data Availability

Tying Incentives to the Riparian Area Buffer

No New Processes to Follow

Mary's Creek – Jason Flowers, Trust for Public Land

Defining the Riparian Area Buffer – Data Availability

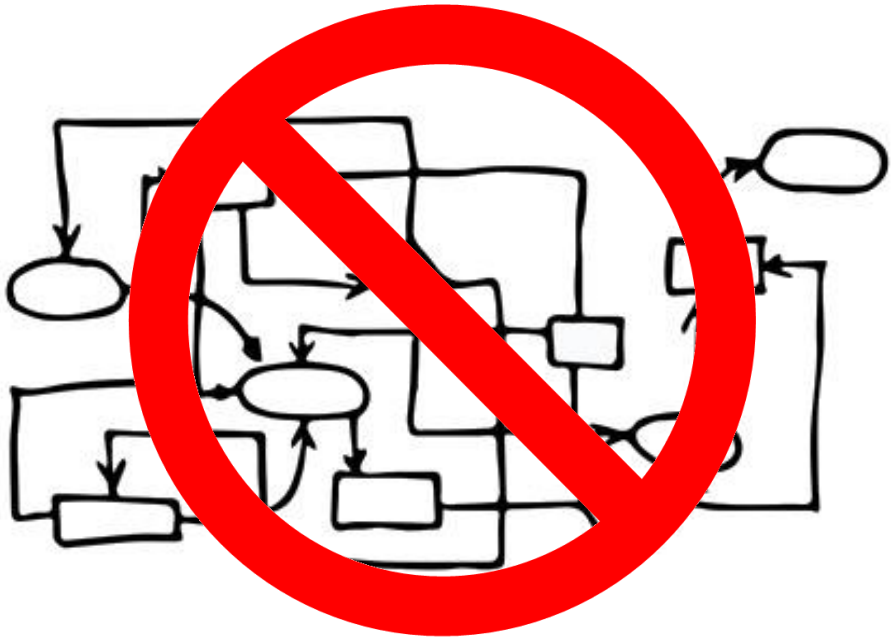
- Size of stream/river, floodplain, and drainage areas – stream/river centerline and floodplain data available, but not stream banks and drainage areas
- Water quality – impaired streams and reservoirs are mapped
- Soil type and erosion potential – we have clay soil, high erosion potential in some areas, but no detailed erosive conditions data available
- Slope – Contours available, but not detailed slope analysis
- Other considerations:
  - Typical development patterns in Fort Worth are low-density
  - Any buffer would only apply to new development
  - Streams are primary habitat and wildlife corridors in developed areas
  - Amount and type of vegetation – primarily tree canopy and native grass

Tying Incentives to the Riparian Area Buffer

- Incentives should be dependent on size of buffer and/or developer actions
- Potential Incentives
  - Flexible build zone within buffer area
  - Density/height bonuses, especially for mixed-use development
  - Credits: Park fees/dedication, Urban Forestry, Stormwater Utility Fees
- Potential Developer Actions:
  - Build trails and/or parks
  - Developing to Low Impact Development (LID) or LEED (Leadership Energy & Environmental Design) standards
  - Remove invasive species, plant approved trees and vegetation, and maintain until established (2 years)
  - Stream bank stabilization

No New Processes to Follow

- Need to develop riparian area buffer and incentives that tie into existing processes and permits
- Previously-developed areas and already platted areas – no new requirements
- Utilities and roadways – no new requirements
- Administrative variance process for development permits – no new requirements



Discussion

Next Steps

Cottonwood Creek – Jason Flowers, Trust for Public Land

Next Steps

- Second stakeholder meeting late March or early April
- Develop small groups, as needed
- Work through development examples based on stakeholder feedback
  - What does the riparian area buffer proposed by stakeholders look like in practice?
  - What development incentives work with the riparian area buffer proposed by stakeholders?

Thank You