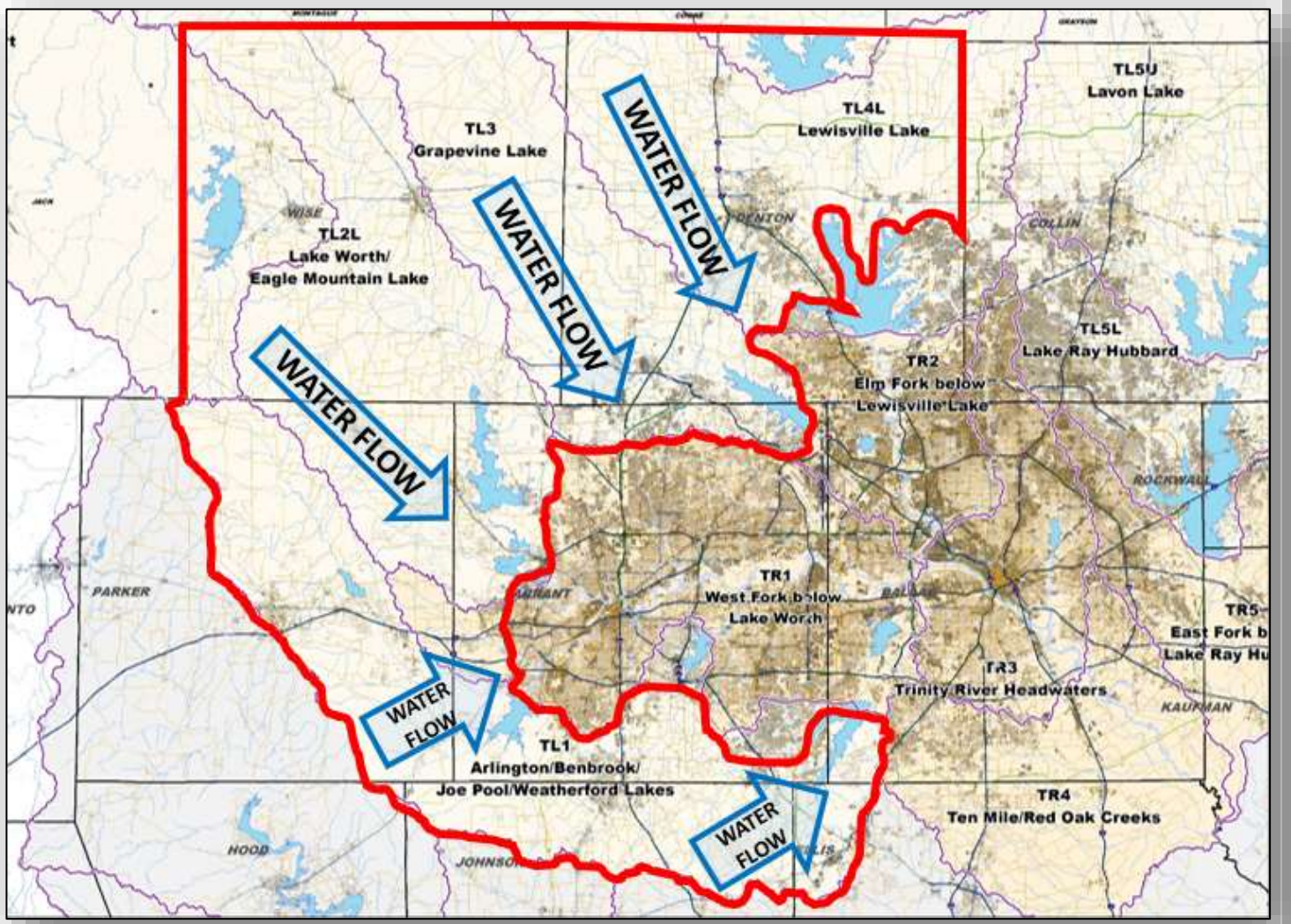
North Central Texas Council of Governments

Integrated Watershed Based Planning for Regional Transportation and Stormwater Management in the Upper Trinity River Basin



Project Update Webinar
June 18, 2020

WELCOME

1) Everyone is muted
2) Please use the chat box to ask questions
3) Presentation will be available on NCTCOG website (https://www.nctcog.org/envir/watershed-management)

AGENDA

1) Project Overview and Goals
2) Timeline and Funding Updates
3) Stakeholder Engagement
4) Next Steps and Upcoming Efforts
5) USACE and NCTCOG Remarks
6) Questions

PROJECT OVERVIEW AND GOALS

Project initiated through partnership between NCTCOG and USACE

Project Vision:

- Undergo a proactive, comprehensive, integrated planning process that incorporates transportation, stormwater, and environmental infrastructure to address impacts of future growth in the project area.

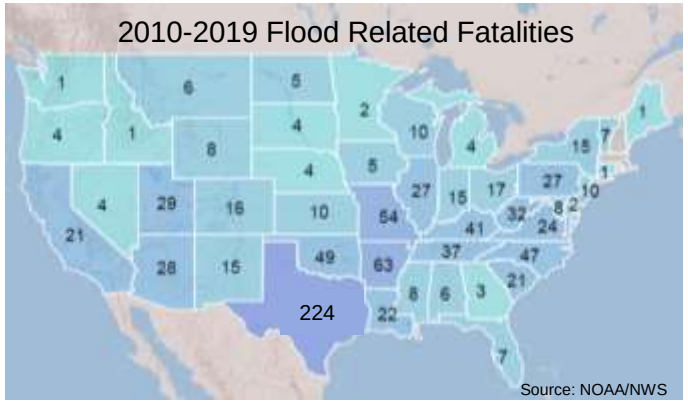
Many partners will be involved in this project:

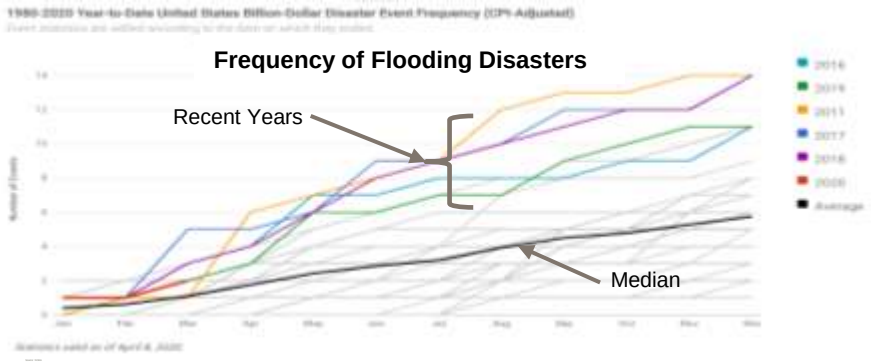
- Cities, counties
- Tarrant Regional Water District & Upper Trinity Regional Water District
- Trinity River Authority
- Texas Department of Transportation
- Special districts (municipal utility districts, groundwater conservation districts)
- Non-profits (land trusts, universities)
- Private Sector (developers, homebuilders, contractors, etc.)

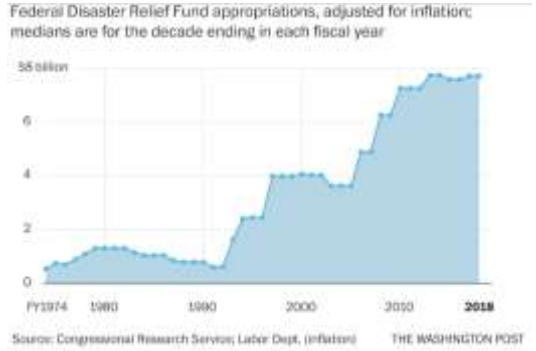
PROJECT CONCEPT INITATIED DUE TO INCREASING IMPACTS OF FLOODING DISASTERS

Flooding Disasters are Impactful

- Flooding has impacted 99% of counties in USA, (1996 to present)
- Increasing frequency of events
  - 160 of 224 fatalities in TX occurred 2015-2017
- Increasing cost of flooding events
  - ~$150B in Texas, (2015 to present)
  - Response: Increasing U.S. appropriations from $1B to $8B annually







REACTIVE APPROACH TO MANAGING FLOOD RISK AND ENVIRONMENTAL IMPACTS

As development occurs, planning occurs for:

- Transportation infrastructure
- Wastewater infrastructure
- Water supply infrastructure
- Solid waste infrastructure

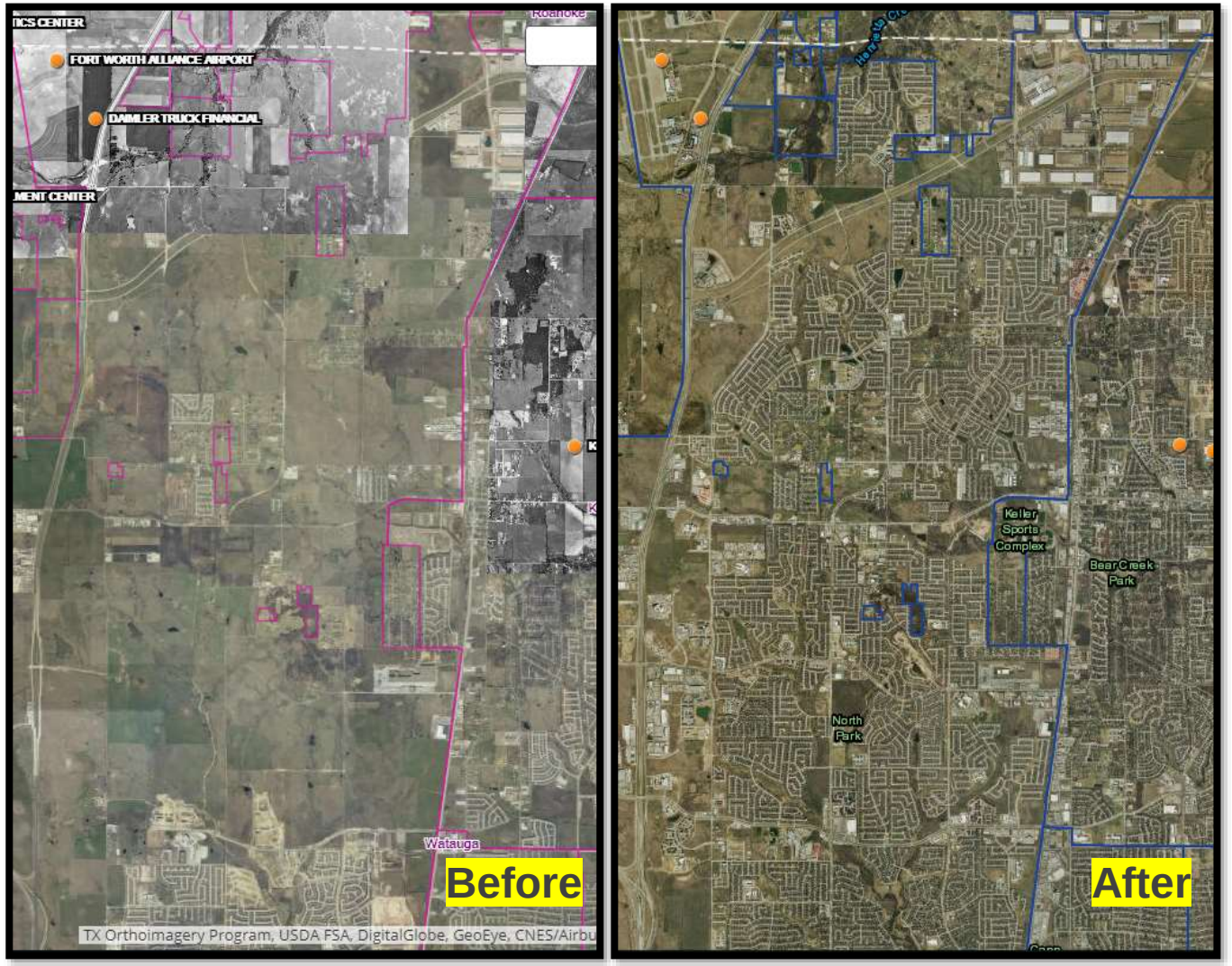
But what about stormwater infrastructure:

- Spotty requirements to mitigate increased impervious area
- Minimal requirements to mitigate loss of storage
- Minimal requirements to look at cumulated watershed scale impacts
- Questionable standards, e.g. 100-year

What about environmental infrastructure:

- Negotiated impact by impact
- Frustration and misunderstandings
- Piece-meal rather than comprehensive

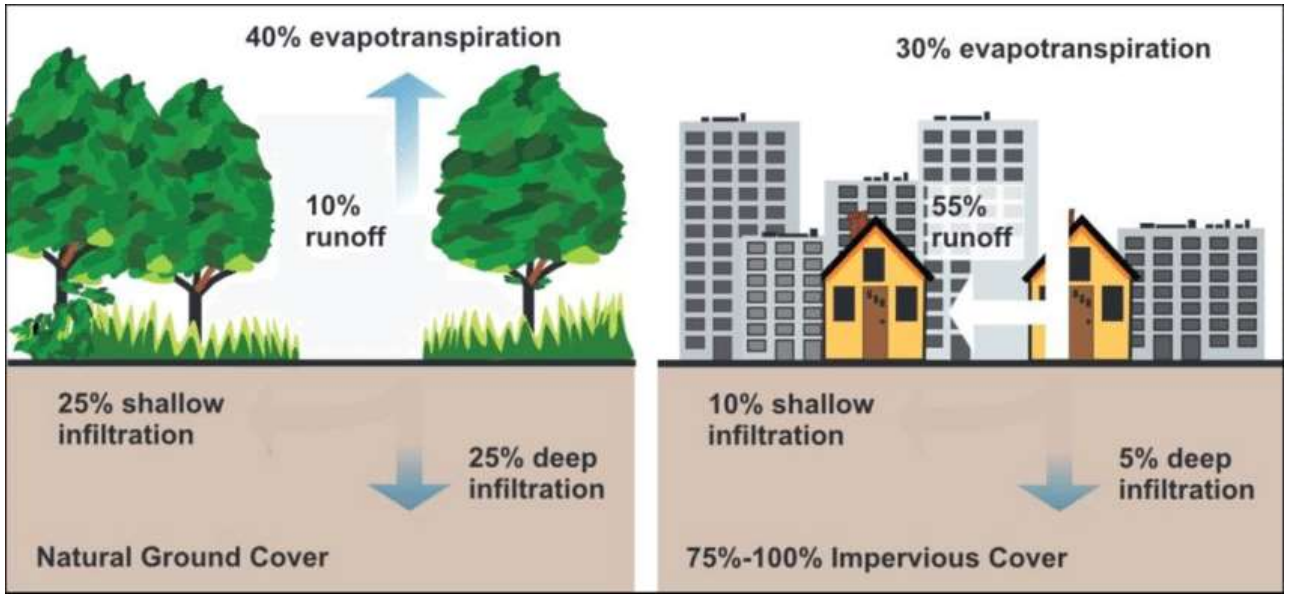
Case Study: Developing Area In North Fort Worth, Texas

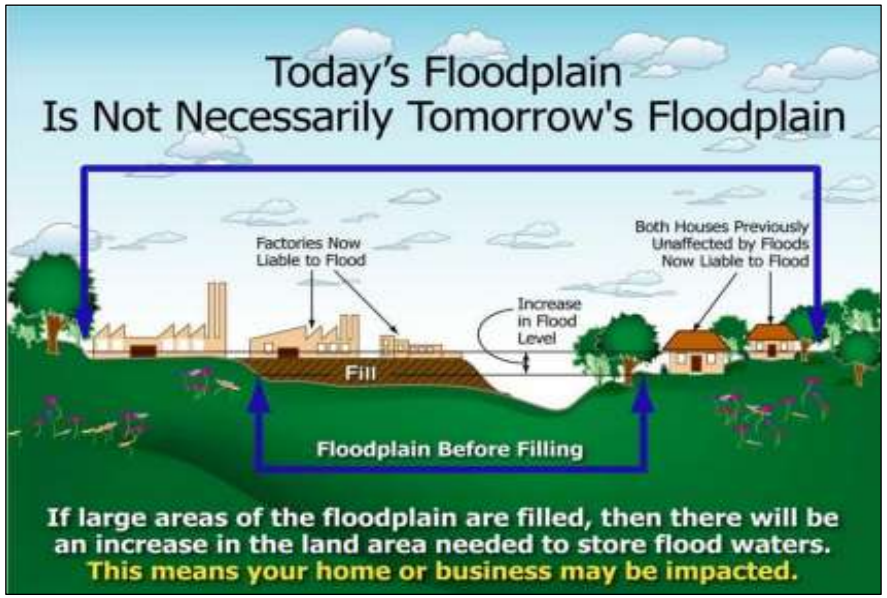


WHY: GROWTH AND DEVELOPMENT INCREASES FLOODING

Technologies to understand impacts of growth and development

- Floodplains are among the most valuable ecosystems on earth, they are also one of the most threatened
- Growth and development increases impervious cover and runoff
- Growth and development depletes storage
- Flooding is increased with negative societal impacts
- Further research for impacts of detention associated with development ordinances





Kazemi, Hamidreza (Kasra. (2014). Evaluating the /effectiveness and hydrological performance of green infrastructure stormwater control measures. 10.18297/etd1744

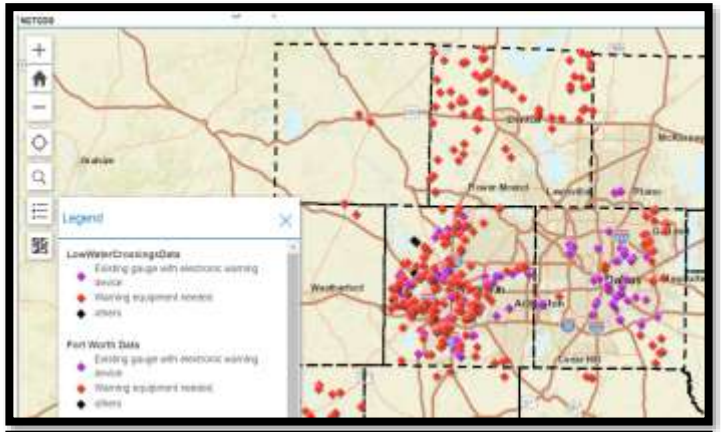
REACTIVE PLANNING IMPACTS

Growth and development, when unmanaged, effectively establishes debt for future generations in the form of environmental, stormwater, and infrastructure maintenance and re-build costs.

- Increase in Impervious Surfaces
- Impacts to Downstream Neighbors
- Stream Corridor Degradation
- Outdated Data and Maps
- Inadequate Infrastructure Design
- Threat to Health, Safety, and First Response

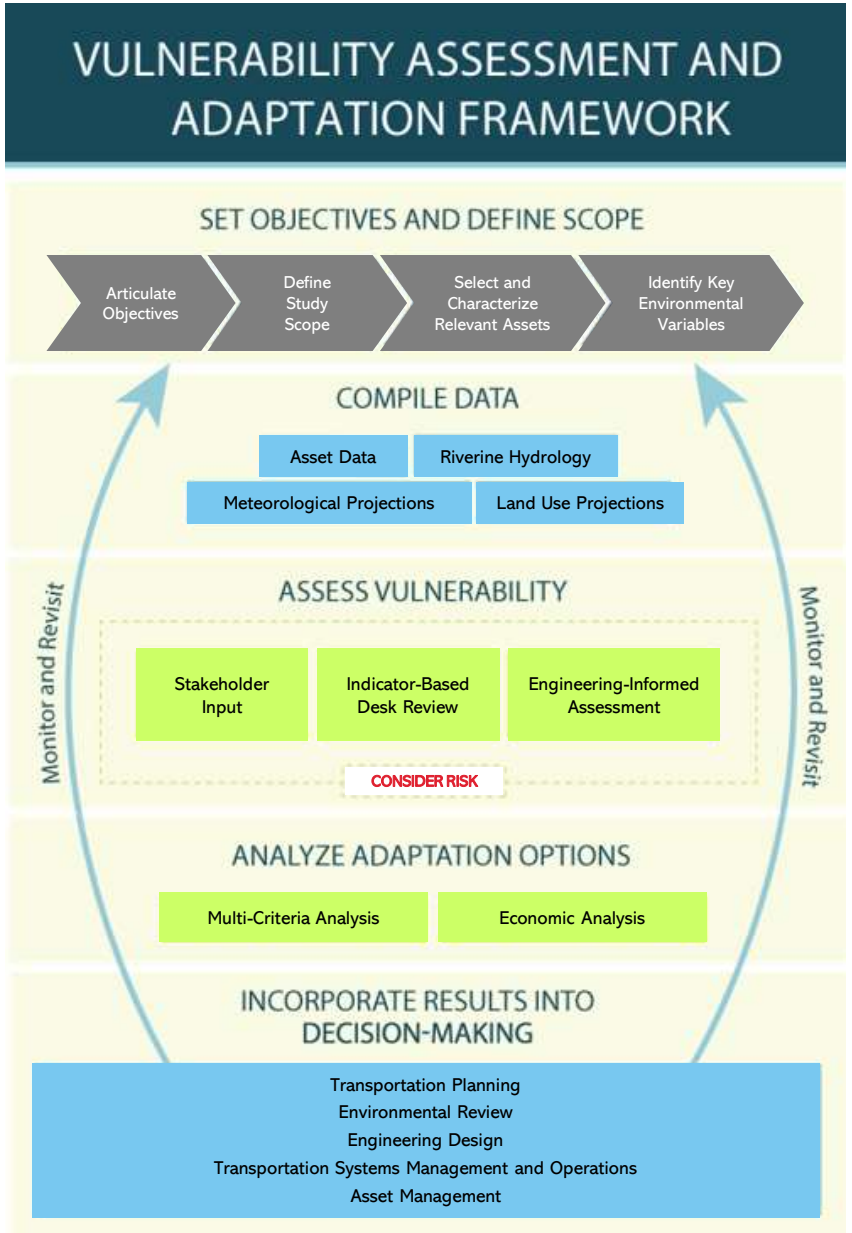
TRANSPORTATION AND STORMWATER ARE CLOSELY LINKED

- Development of transportation infrastructure precedes urban growth and development
- Existing and needed low water crossings indicates a need for better analysis and data for transportation infrastructure
- Experiencing significant flood related damage to transportation infrastructure
- Strong relationship between development and road construction
- Experience non-stationarity of flood potential from growth and development
- Transportation infrastructure expenditures are some of the most significant
- Transportation infrastructure has a well established 5 year planning cycle
- **Shouldn’t we consider planning stormwater and environmental infrastructure?**

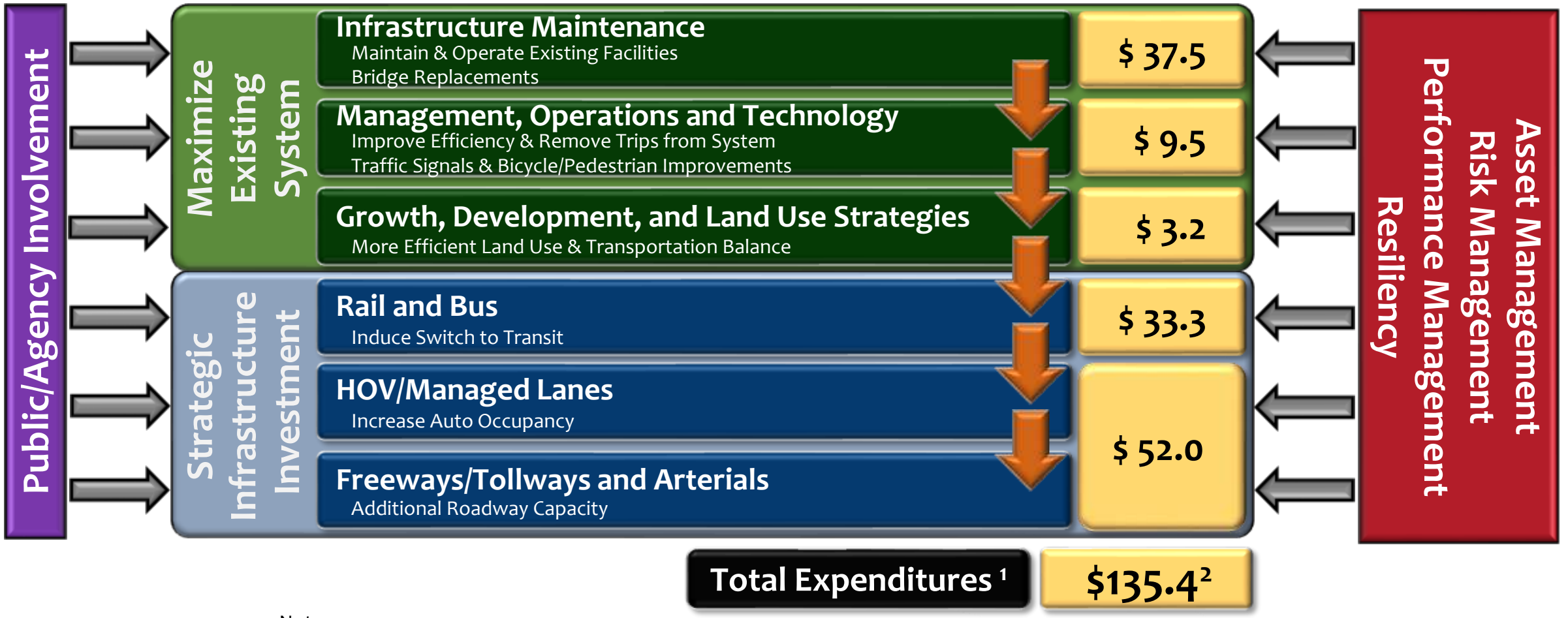


ANALYZING ASSET CONDITION, NEEDS, AND PERFORMANCE

- **Fixing America's Surface Transportation (FAST) Act** requires States and Metropolitan Planning Organizations (MPOs) to consider resiliency in the transportation planning process
- Asset management, risk management, and performance management serve complementary roles relating to resiliency
- As State DOTs, MPOs, and local governments assess and report on asset status and condition targets, it is clear needs vastly outweigh resources and goal attainability is difficult:
  - **– City of Dallas (2019) – Pavements (11,775 lane-miles)**
    - 2006 City Council goal – 87% overall satisfaction rate; > 80% all districts
    - November 2018 condition rating – **77%**
    - FY 2019-23 Infrastructure Maintenance Program (IMP) – **63%**
    - **"Zero Degradation" – $1.66 billion shortage over 10 years**
- *Asset management plans provide the foundation for strategies to address infrastructure condition targets, as well as addressing lifecycle risks/stressors (e.g. flooding) at lowest practicable cost*
- Federal Highway Administration's (FHWA) Vulnerability Assessment and Adaptation Framework is an existing reference to guide and encourage comprehensive proactive planning



MONITORING SYSTEM PERFORMANCE AND SUSTAINABILITY: MOBILITY 2045 PLAN – ESTABLISHING INVESTMENT PRIORITIES



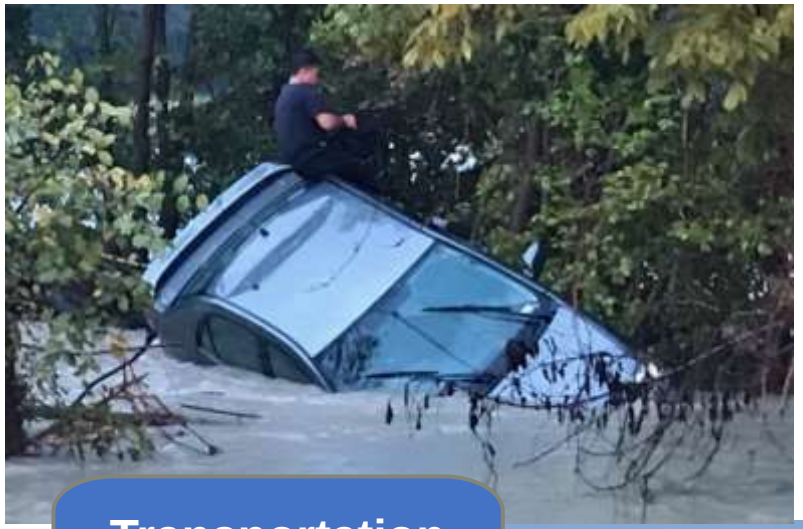
Notes:

[1] Actual dollars, in billions. Values may not sum due to independent rounding.

[2] Balances to reasonably expected revenue, demonstrating financial constraint.

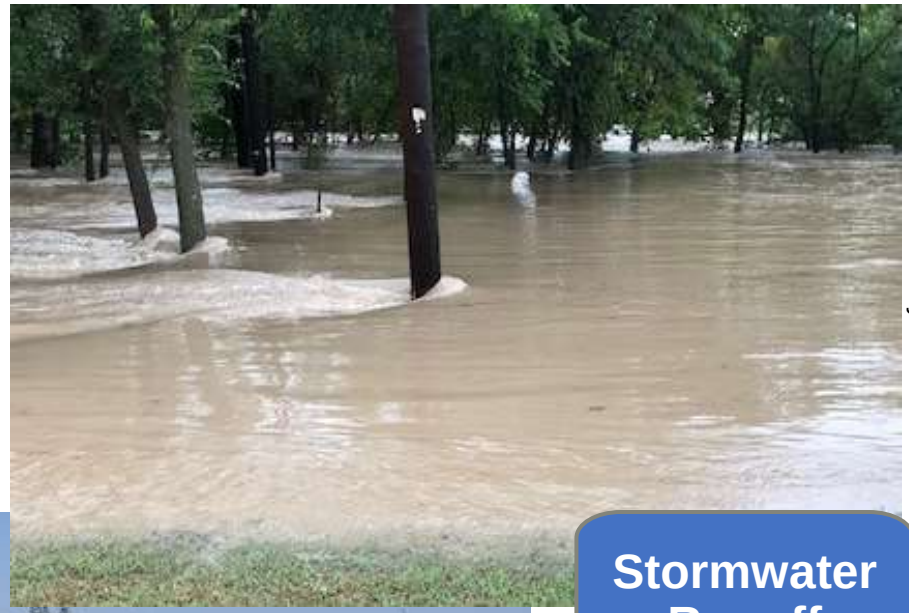
PROACTIVE PLANNING

Planning *before* expected population growth makes addressing these issues more cost-effective in the long-run



DeSoto Fire Rescue

Transportation Infrastructure and Safety



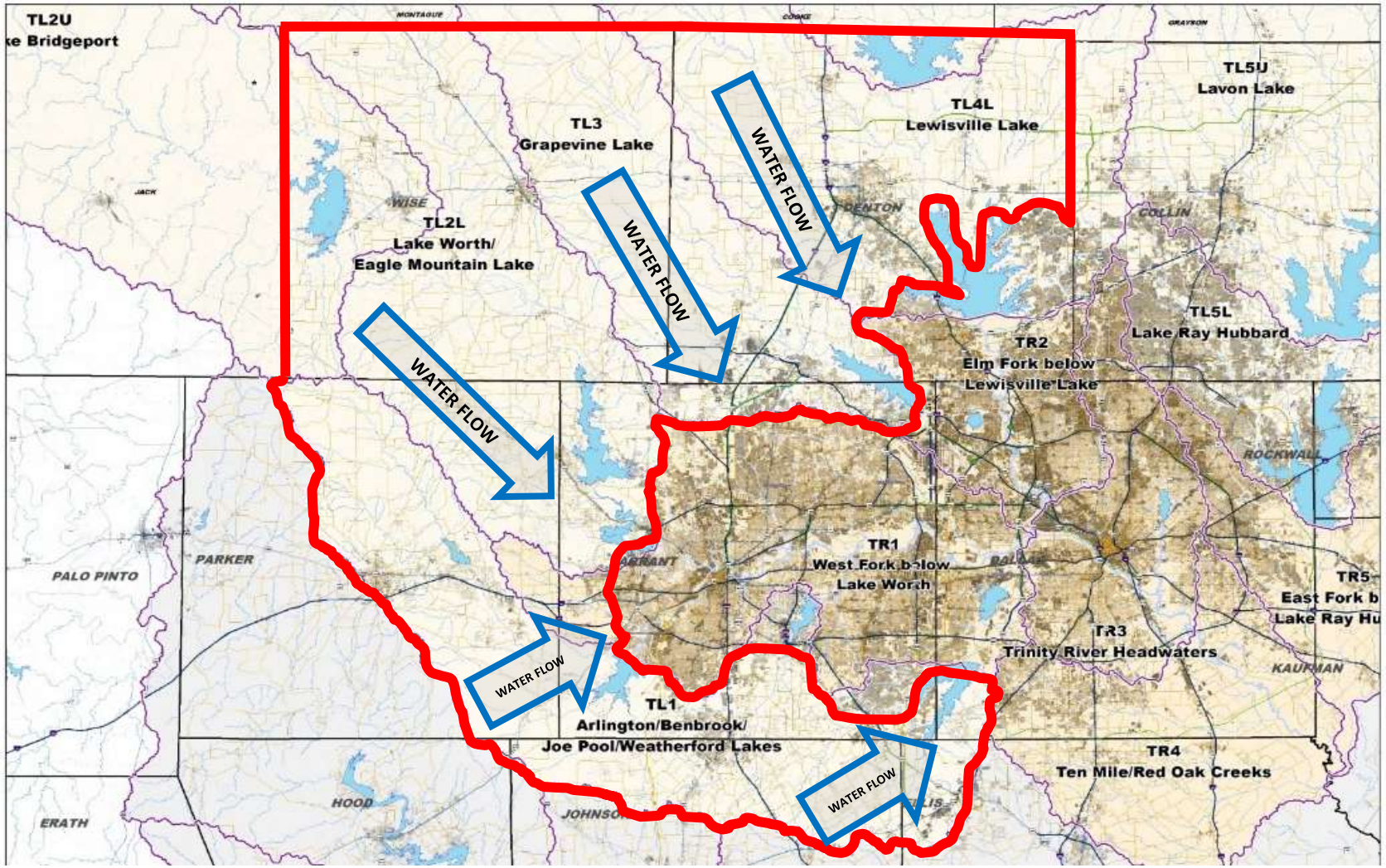
City of Waxahachie

Stormwater Runoff

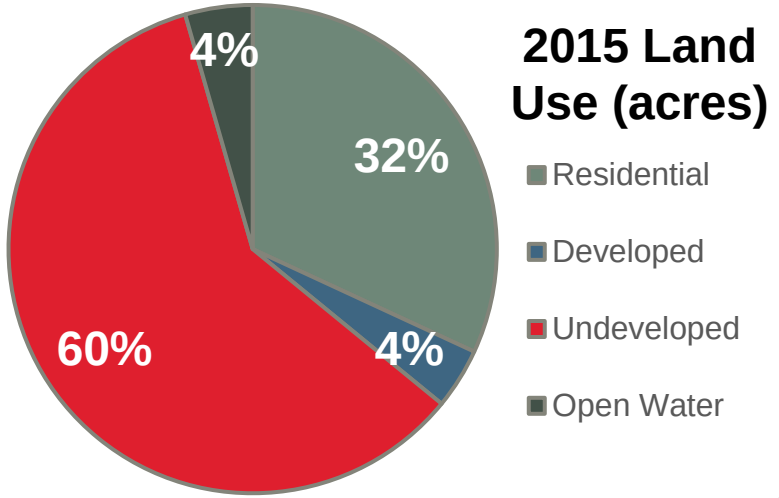
Teague Nall and Perkins, Inc.

Environmental Features and Tools

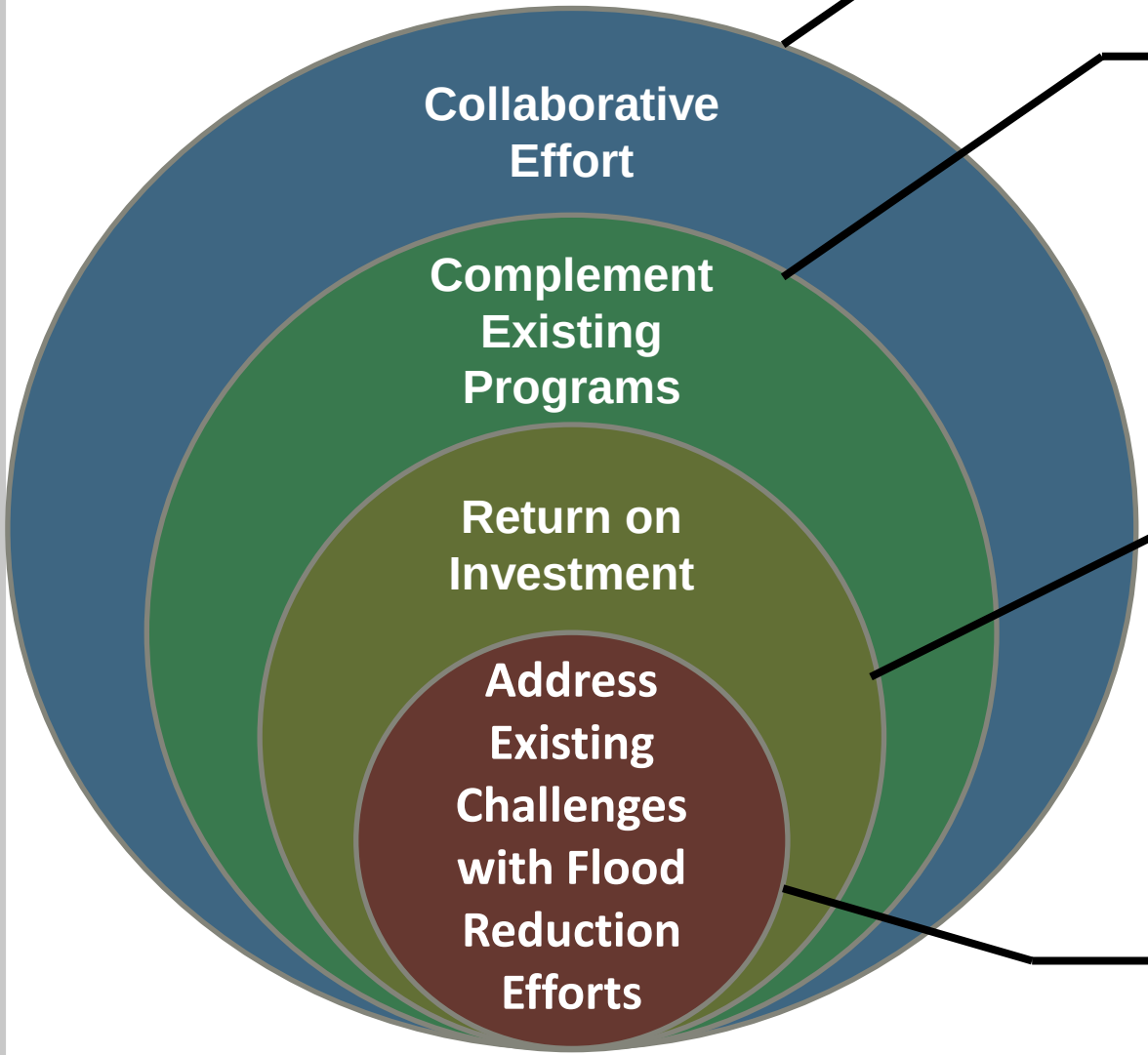
PROJECT AREA STATISTICS



- **126%** increase in population between 2020 and 2045
- **7,183** miles of stream
- **274,121** acres of FEMA 100 year floodplain (including lake area)
- **19%** increase in impervious surface from 2006 to 2016
- 86 cities, 8 counties, 2 water providers, 1 regional wastewater provider



BENEFITS OF PARADIGM SHIFT



Comprehensive Planning

- Dissolve silos
- Improve delivery of consolidated, adaptive infrastructure *before* expected population growth
- Minimize duplication and providing resources

Complementing Existing Regional Programs

North Central Texas Council of Governments Common Vision Program

- Community management of Trinity River through DFW
- Limit impact of development through Corridor Development Certificate (CDC)
- Flood warning systems
- Enhanced state-of-the-art modeling tools

Long-Range Transportation Planning Process Compliance with State Laws

Creating Positive Financial Outcomes

- **Investment in stormwater infrastructure returns $5 to $7 for every $1 invested***
- Lower community flood insurance premiums
- Provides connected open space
- Increased safety from flooding
- Human health benefits
- Recreation benefits

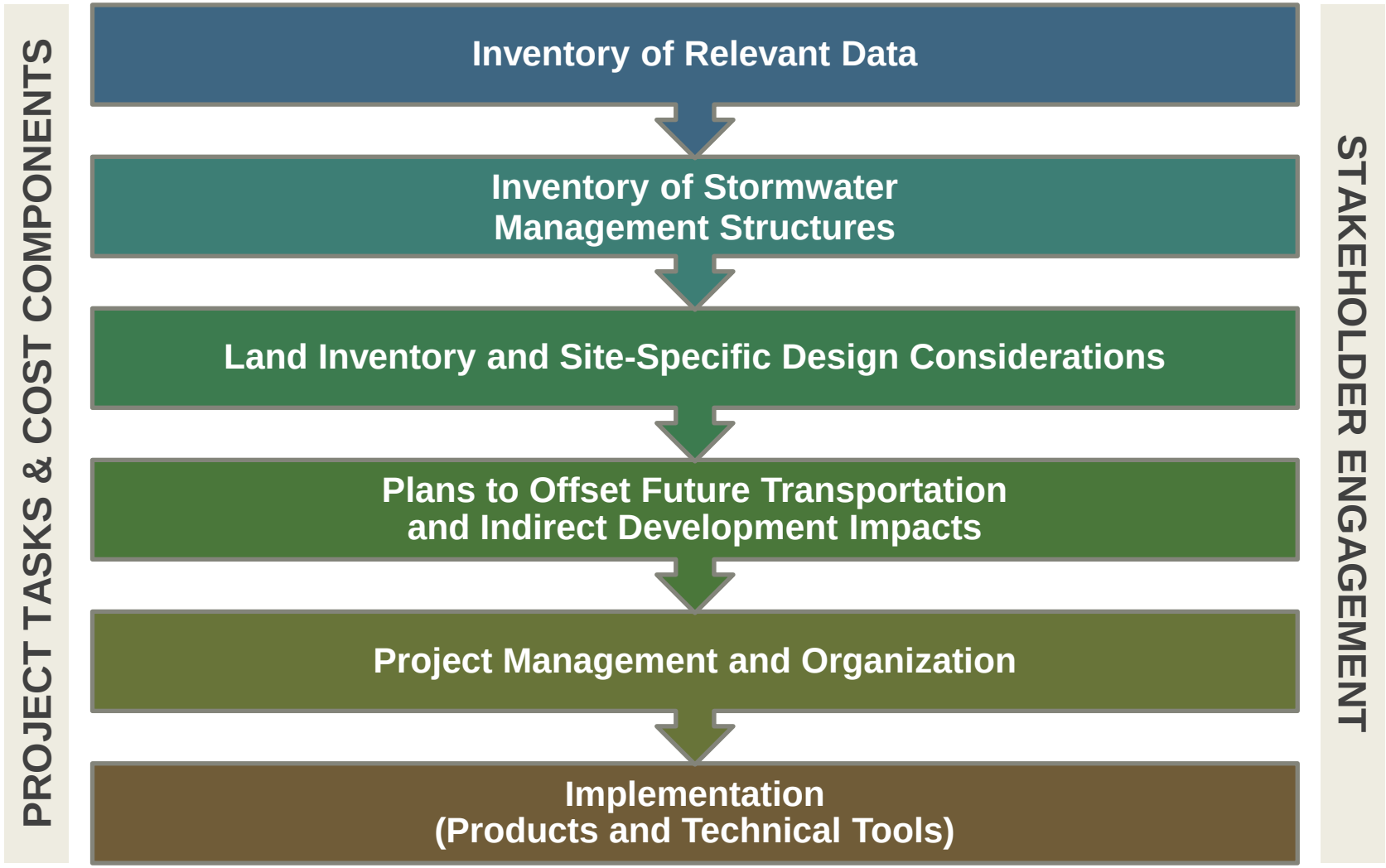
*2017 "*Natural Hazard Mitigation Saves*" (National Institute of Building Sciences Multi-hazard Mitigation Council)

Creation of Resources and Tools to Support Communities

- Limited resources, staff expertise, competing priorities, piecemeal modeling
- Develop tools that define waterways, stormwater features
- Community avoids costs of development impacts & revenue loss

PROJECT ELEMENTS

ANTICIPATED MAJOR PROJECT ELEMENTS



PROJECT PRODUCTS AND OUTCOMES

Transportation Infrastructure

- Review structure Elevation/ Culverts/ Model Growth
- Assess opportunities for “LEED” like certified transportation facilities
- Assess green parkway widths/ detention
- Safety
  - Utilize technology/ integrating routing
- Better project prioritization to address low-lying structures

Flood Reduction

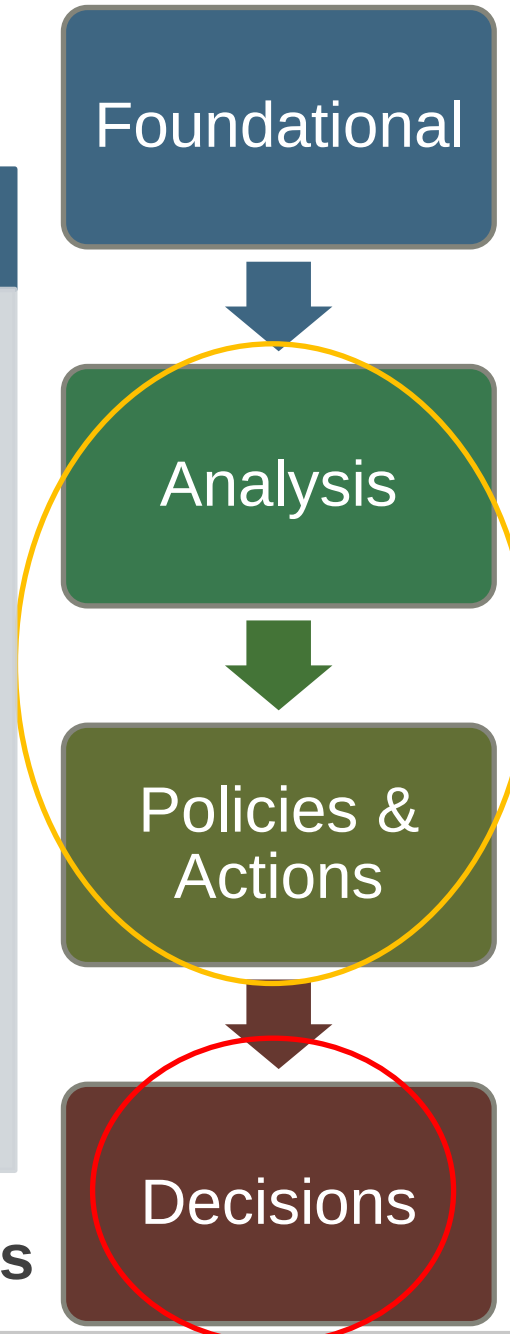
- Numerical models (meteorology, hydrology, hydraulics)
- Develop impact scenarios to assess flooding impacts through 2055
- Reduce risk
- Regulatory products for cities and counties
- Designated stormwater areas
  - Trees, wetlands, detention areas

Environmental Stewardship

- Nature based and green stormwater infrastructure plan
- Preservation of riparian and other key natural areas
- Creation of mitigation areas/ wetland banking
- Eco-tourism and recreational assets
- Restoration plans
- Web-based tools to define areas for implementation and return on investment, stormwater reduction and other benefits

Other Planning Tools to Analyze and Mitigate Risk

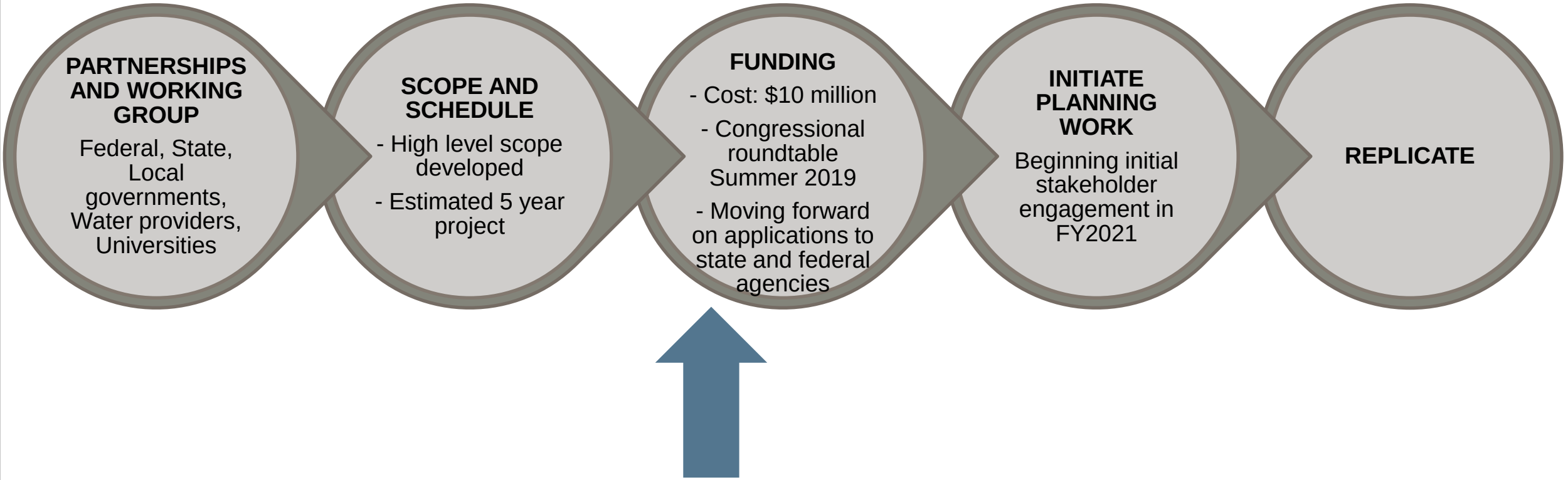
- Stormwater infrastructure plans
- Emergency planning (HazMAP integration)
- Planning integration (Comprehensive plans, open space plans, etc.)
- Open space and connected open space plans
- Web-based tools such as City of Austin’s Floodpro.com, FPTool.org, etc.
- Use of visualization tools (CHARM, EEBS, and others) to establish trade-offs
- Land management tools (planning tools, ordinances, checklists, etc.)
- Urban heat island impact tools



This Effort

Community Activities

TIMELINE AND FUNDING UPDATES



TIMELINE AND FUNDING UPDATES

2018
Concept Development

March 2019
NCTCOG Member Update at NCTCOG Offices

July 2019
Congressional Delegation on Project Concept

2019
Presentations to Various Audiences

Early 2020
Submitted Comments to General Land Office/Collaboration with Texas Water Development Board (TWDB) and Other Funding Partners/USACE Funding Request/FEMA Base Level Engineering

April/May 2020
Partner Group Developed Scope of Work
TWDB Released Flood Infrastructure Fund Abridged Application

June 15
NCTCOG Submitted Abridged Application to TWDB

TIMELINE AND FUNDING UPDATES

	SUBMITTED APPLICATIONS			ANTICIPATED/REQUESTED FUNDS OR APPLICATIONS*	
Funding Agency/ Funding Opportunity Name	TWDB (**Flood Infrastructure Fund**)	USACE (**Various Authorities**)	FEMA **(Community Outreach and Mitigation Strategies)**	Regional Transportation Council **(Transportation Planning Dollars)**	General Land Office **(CDBG MIT or Other Funding Category)**
Requested Funding	$3.0 Million	$3.0 Million	$80,000	$3.0 Million	?
Current Status	Submitting Abridged Application on June 15, 2020	Submitted to USACE Fort Worth District in March/Expect to hear June/July 2020	Submitted to FEMA in June; Phase 1 engagement to begin 01/1/2021	Included in Unified Planning Work Program	Anticipated Applications in FY2021

*Anticipate applying to additional funding opportunities as they become available (ex. FEMA BRIC, GLO, TDEM, etc.) and working with partner organizations to identify project funding.

STAKEHOLDER ENGAGEMENT

HERE NOW (June 2020)

FY2021 – FY2022*

PHASE 1
Initial Engagement Process

- Establish technical team to guide project
- Identification of stakeholders
- Project area stakeholder workshops
- Surveys to identify challenges/needs
- Begin data collection and inventories
- Training on specific topics (ex. building codes, integrating higher standards in floodplain ordinances, etc.)

FY2023 – FY2024*

PHASE 2
Maintaining Engagement

FY2025*

PHASE 3
Project Completion and Implementation

*Estimated Timeframe

NEXT STEPS AND UPCOMING EFFORTS

1) **Continue to apply for project funding**
    1) **Formal full application to TWDB (*if invited to apply*)**
    2) **General Land Office**
    3) **Others as applications open**

2) **Begin Phase 1 of engagement activities with partners (Estimated January 2021)**

3) **Begin project efforts as funding becomes available:**
    - **Data collection and inventory**
    - **Literature Review –** review many existing tools and resources, do not want to duplicate, but do want to leverage and build upon for this Project
    - **Hydrology and hydraulics will be early portion of project**
    - **Continue leading/or collaborating in existing efforts happening in the project area**
        - Texas Water Development Board – Base Level Engineering
        - Federal Emergency Management Agency – Base Level Engineering
        - NCTCOG Cooperative Technical Partnership – Flood Risk Identification Projects for Mary's Creek, Harriet Creek, and Catherine Branch (ongoing or future projects)
        - InFRM Watershed Hydrology Assessment

QUESTIONS & CONTACT

NCTCOG

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https://www.nctcog.org/envir/watershed-management