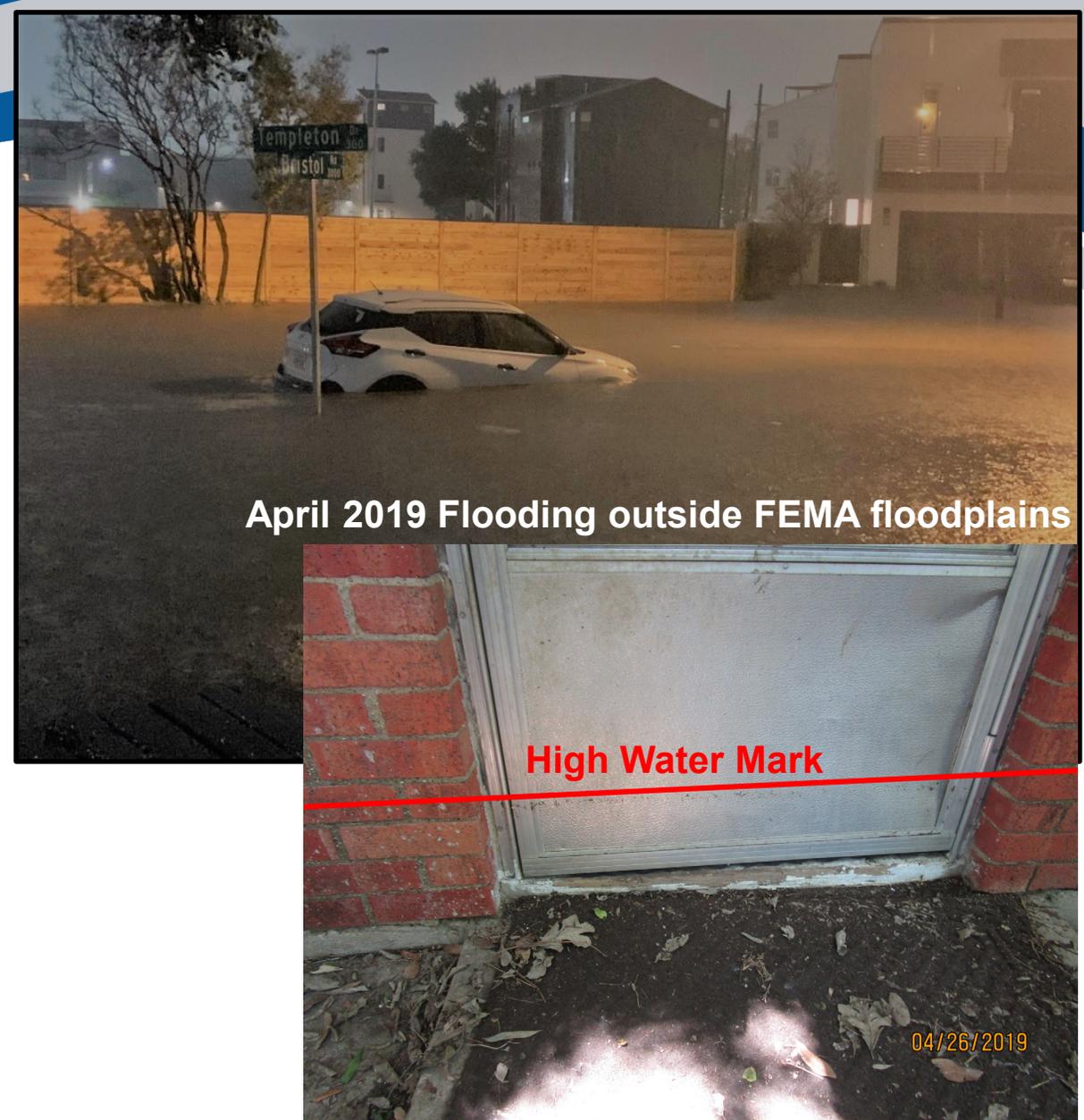


Developing a Local Floodplain Management Program in Fort Worth

**Public Works Roundup
May 21, 2019**

Jennifer Dyke, CFM, Sr. Planner, City of Fort Worth
Transportation & Public Works Department, Stormwater Program



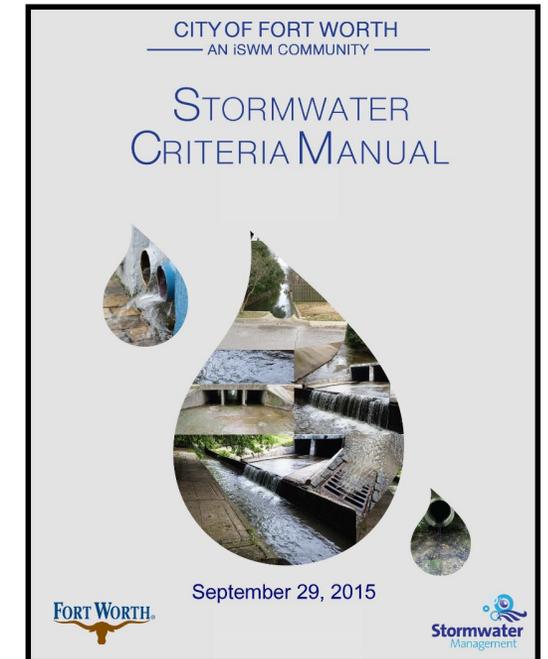
Stormwater Program Mission

Protect people and property from harmful stormwater runoff



Primary Functions

- *System Maintenance* (pipes, channels, etc.)
- *Development Review* (compliance with City standards)
- *Hazard Mitigation* (flooding and erosion)
- *Hazard Warning* (flooding and erosion)

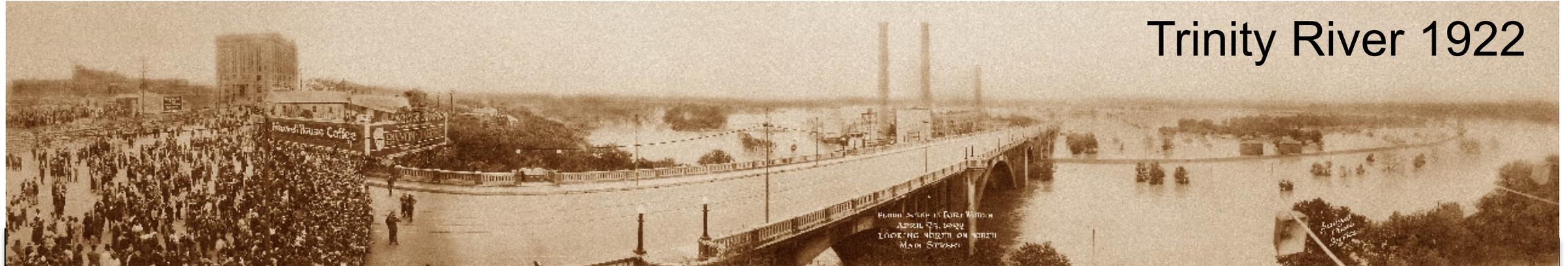


- Floodplain Management History
- Local (Non-FEMA) Floodplains
 - What are they?
 - Issues
 - Concerns
 - Benefits
- Policy Development Process
- Stakeholder Engagement
- Wrap Up



Floodplain Management History

Fort Worth Flooding Past



Trinity River 1922



Marine Creek 1938



May 17, 1949



Marine Creek 1942

Figure 1.--FLOOD SCENES ON MARINE CREEK

Upper photograph shows damaging results of April 1942 flood in hardware store on North Main Street. Lower picture shows debris piled up near East Exchange Avenue and North Main Street after April 1942 flood. (Photos courtesy of Fort Worth Star-Telegram.)



Floodplain Management History

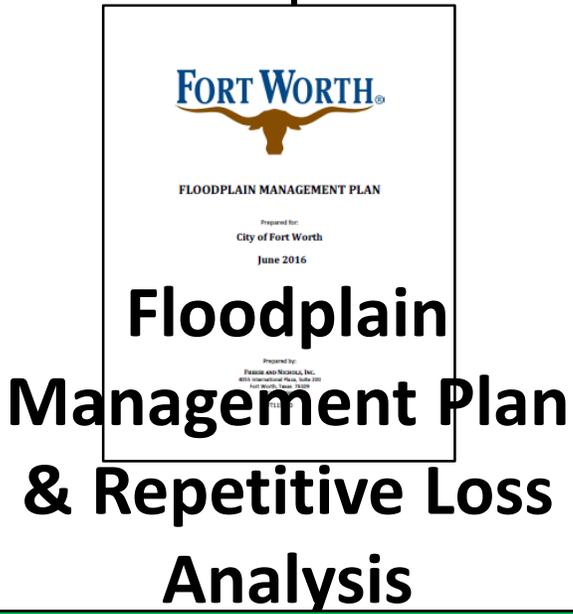
1980



2012

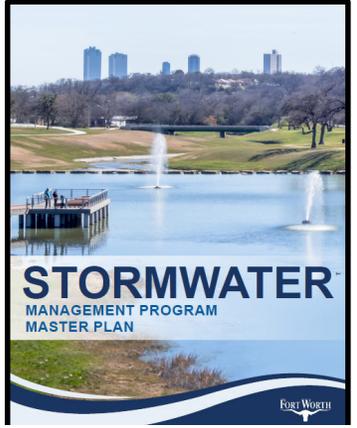


2016



May

2018



2018-2019

Local
Floodplain
Policy
Formation



***Nutshell:
In Fort Worth, there is more
flooding outside the FEMA
floodplain than inside***

In Local (non-FEMA) Floodplains:

- Nationwide- 25% of flood insurance claims
- Fort Worth- 62% of flood insurance claims
- Fort Worth ~80% of RL & SRL structures



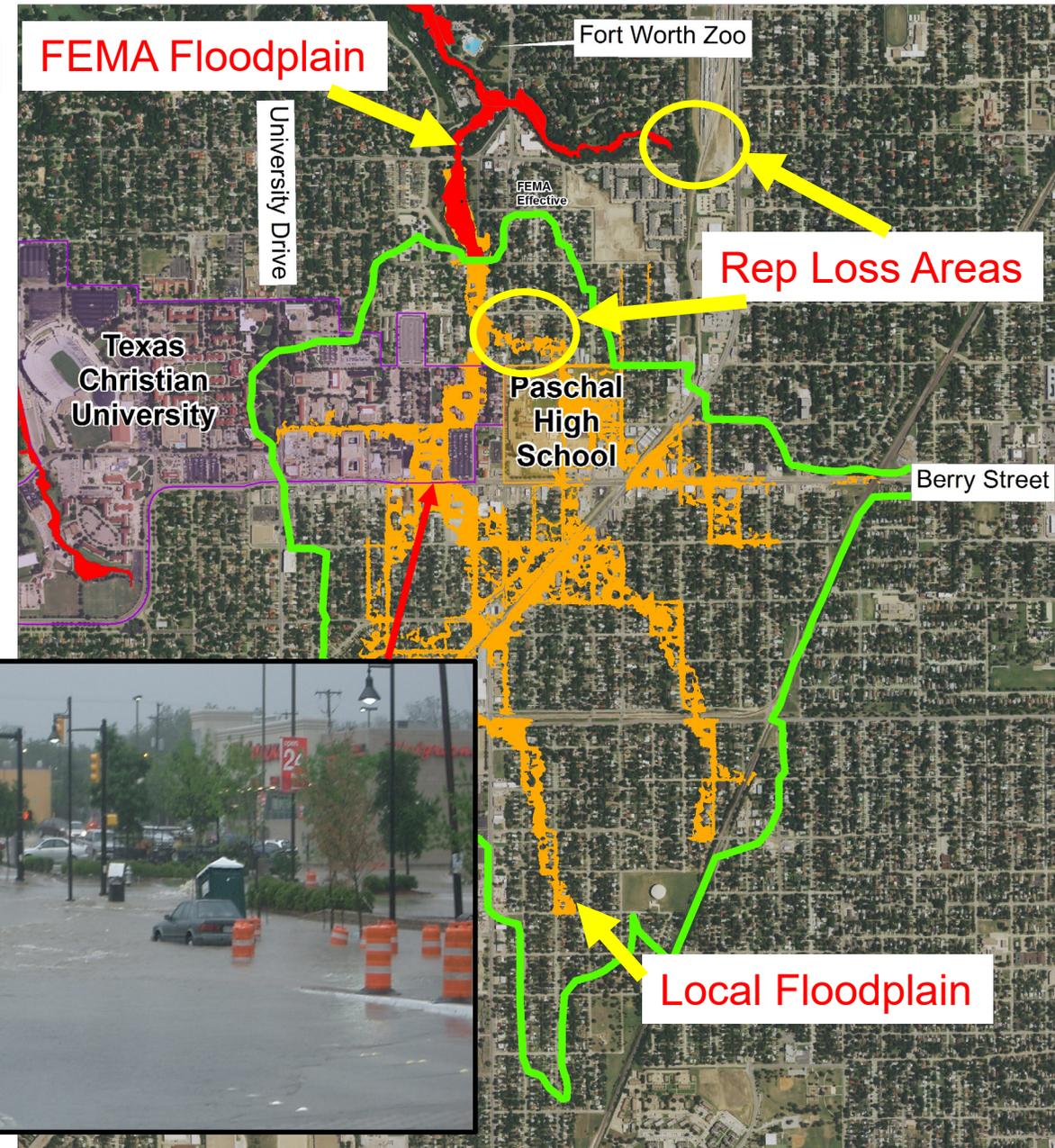
Local (Non-FEMA) Floodplains

What are Local Floodplains?

Areas of flood risk not shown on FEMA Maps

Other Names – “urban”, “residual” floodplains

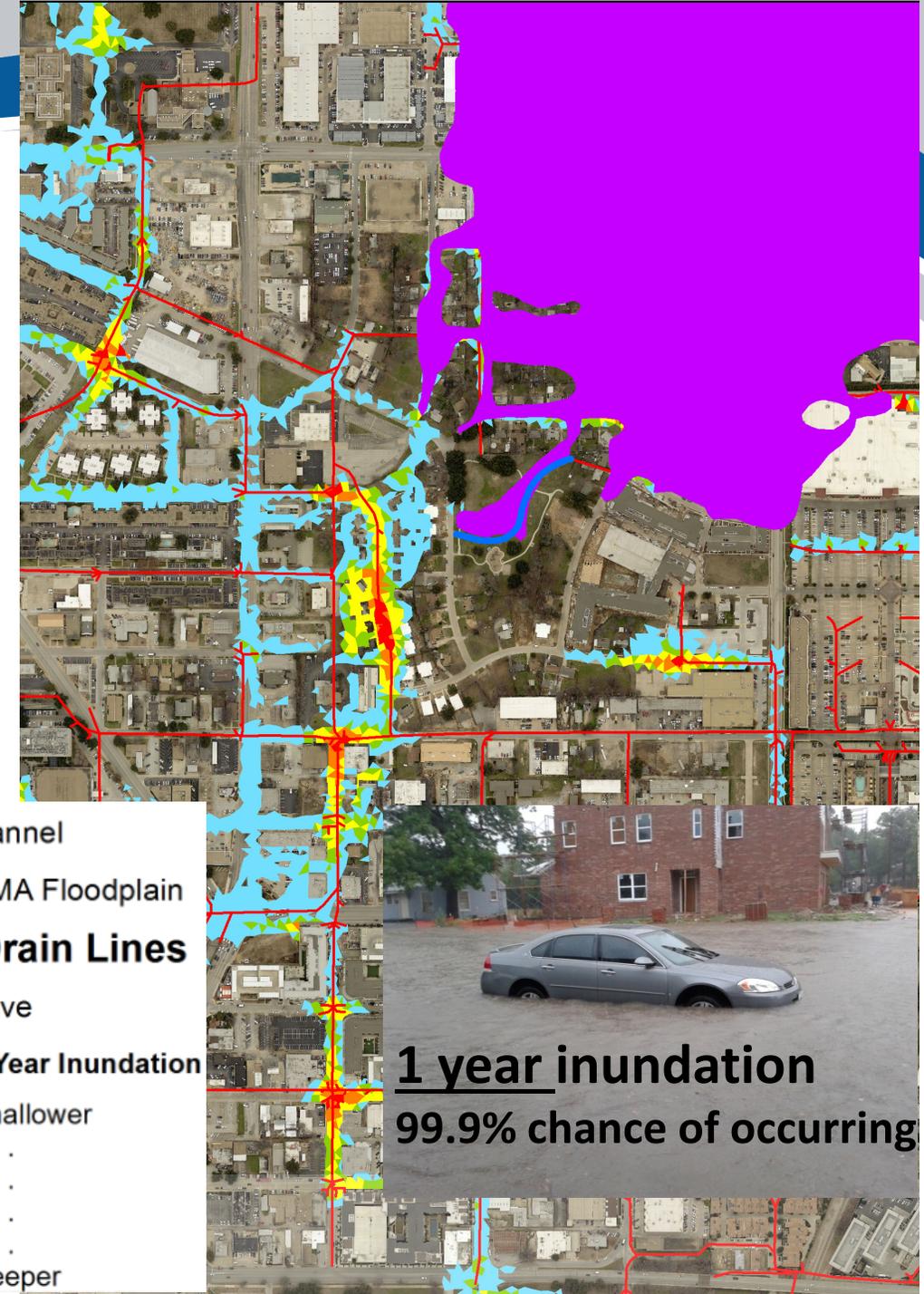
-  FEMA Floodplain
-  Local Floodplain



Just one example of local floodplains in Fort Worth

Primary Cause- Historic Loss of Natural Drainageways

- Typically very small channels or none at all
- Undersized or no storm drain pipes based on inadequate criteria
 - Many storm drain systems date to the 20's
 - 2-year design storm common
 - Development often on top of undersized systems (often older neighborhoods)
- Increased impervious surfaces
- Climate change???



Channel
FEMA Floodplain
Storm Drain Lines
Active
Estimated 1-Year Inundation
Shallower
.
.
.
Deeper

1 year inundation
99.9% chance of occurring

Perspectives

Increasing frequency of people surprised by flood events/risk



Developers & Builders



Property Holder
(long term owner)



Property Seller



Property Buyer



Risks

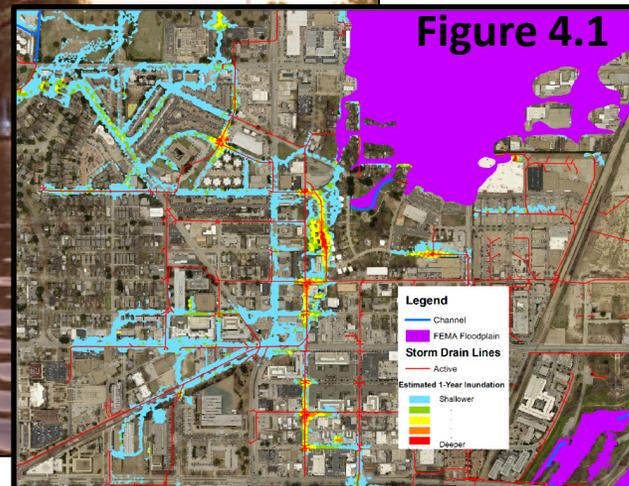
- Life safety
- Structure Damage
- Vehicle Damage
- Property Damage
- Emergency Response



**Often times no obvious risk of flooding
Residents often think the stormwater infrastructure in place will protect them**

FRAMING THE CHALLENGE OF URBAN FLOODING IN THE UNITED STATES

2019



THE GROWING THREAT OF URBAN FLOODING: A NATIONAL CHALLENGE

2018



Figure 36

University of Maryland,
College Park
A. James Clark School of Engineering
Center for Disaster Resilience

Texas A&M University,
Galveston Campus
Center for Texas Beaches and Shores

Policy Issues

What Can We Do About Local Floodplains?

- Status Quo
 - Existing regulations do not address flood risks outside FEMA floodplains
 - Consequences of status quo
- Capital Projects aren't an option
- Draft Recommendations
 - Mapping
 - Communication
 - Regulation



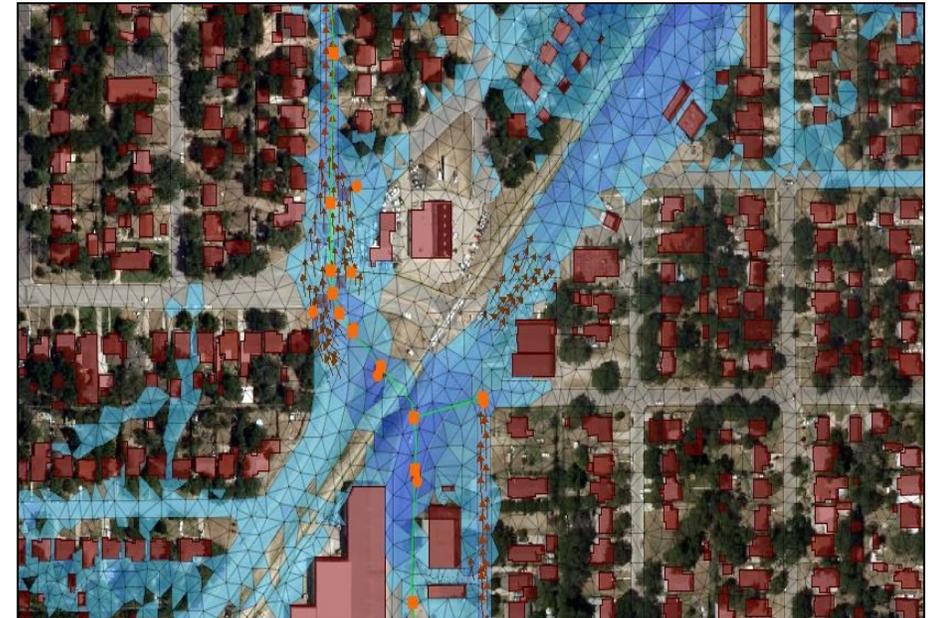


Key Questions- Communication

- Should we do more to alert the public to the location and extent of flood risk areas?
- If so, how should the public be alerted?
- Should local floodplains be placed on FEMA maps?
 - Flexibility
 - Insurance implications
- If not on FEMA maps, how notify/educate community (residents, developers, real estate professionals, city staff, elected officials)
 - Readily available data?
 - Level of detail?

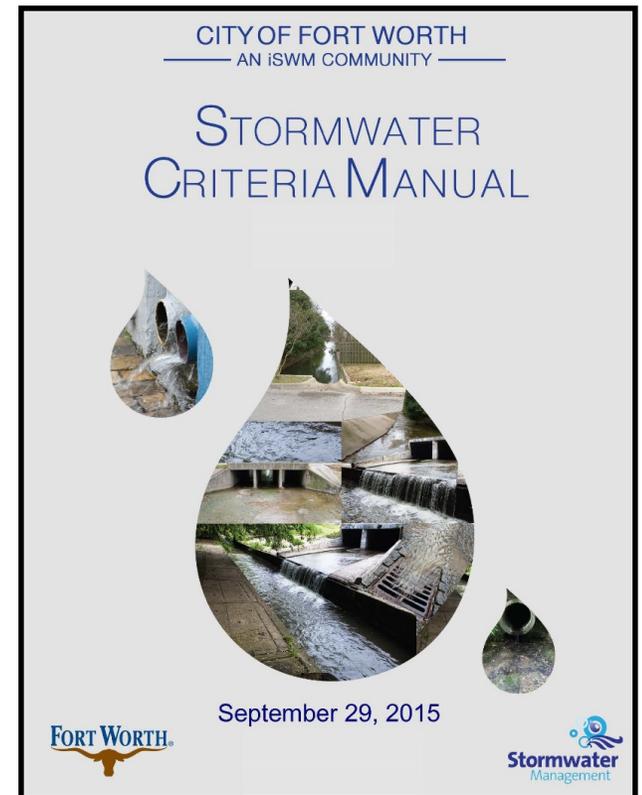
Key Questions- Mapping

- How detailed does the engineering need to be to map levels of flood risk?
 - Detailed mapping can take time and be costly
 - Complex 2D modeling may be necessary and difficult for some to use
 - Advisory vs. regulatory
 - Should maps cover both property and roads
 - Local standards for studies and mapping
 - Nationwide consistency?



Key Questions- Regulation

- Should we apply existing standards in local floodplains?
 - Floodplain Development Permit
 - iSWM
- Impact on development < 1 acre
 - Permitting & costs
 - ADA issues
- Impact on City development review resources
 - Process
 - Timeframe



Key Concerns

- Communicating local flood risk maps could potentially impact property values
- Application of existing flood protection development standards to local floodplains could potentially impede development
- Mapping of local flood risk areas could increase the time and cost of real estate transactions
- Unintended consequences

Benefits

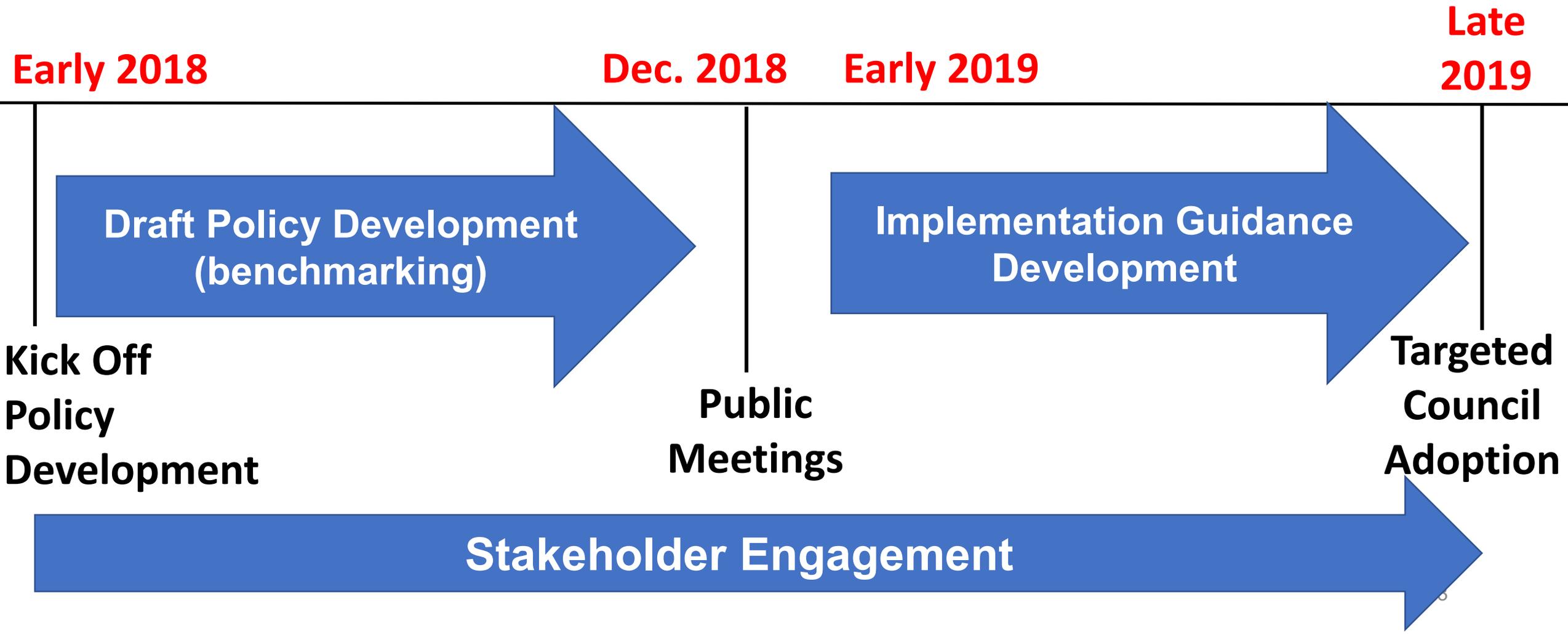
More informed decision making

- Less risk to life and emergency responders
- Property purchase & improvements
- Decision to purchase flood insurance
- Resiliency / Improved recovery from flooding
- Potential cost savings in development process if requirements are known upfront
- Safer, more sustainable development
- Improved quality of life



Policy Development Process

Policy Development Timeline



Stakeholders

- Residents
- Developers & Builders & Engineers
- Civic/Economic Development
- FEMA
- Real Estate Professionals
 - Appraisers
 - Lenders
 - Title Company
 - Surveyors
 - Insurers
 - Real Estate Agents



Engagement

- **Focused Stakeholder Working Groups**
 - Policy Development Working Group
 - Real Estate Guidance Group
 - American Council of Engineering Companies
- **Public Meetings**
- **Interested Groups Meetings**
 - Builders Association
 - Greater Fort Worth Association of Realtors
 - Real Estate Council
 - Texas Society of Professional Engineers
 - Development Advisory Committee & Liaison Committee
- **City**
 - Management & Staff, Council, Plan & Zoning Commissions



Wrap Up

Conclusions

- Public protection benefits of communicating flood risk mapping and consistently applying regulation outweighs the concerns, especially if...
- Concerns can be minimized with stakeholder involvement to develop:
 - Communication Plan / Strategy
 - How to let the community know?
 - Reflecting local flood risk in city policies & plans
 - Implementation Plan / Workbook
 - Internal resources to enforce regulation vs. advisory mapping
- Community consensus for change

Questions?



What is your community doing about non-FEMA flood risks?