



City of Fort Worth Master Drainage Planning

Public Works Roundup

May 23, 2018

Presented by:

Jennifer Dyke, CFM

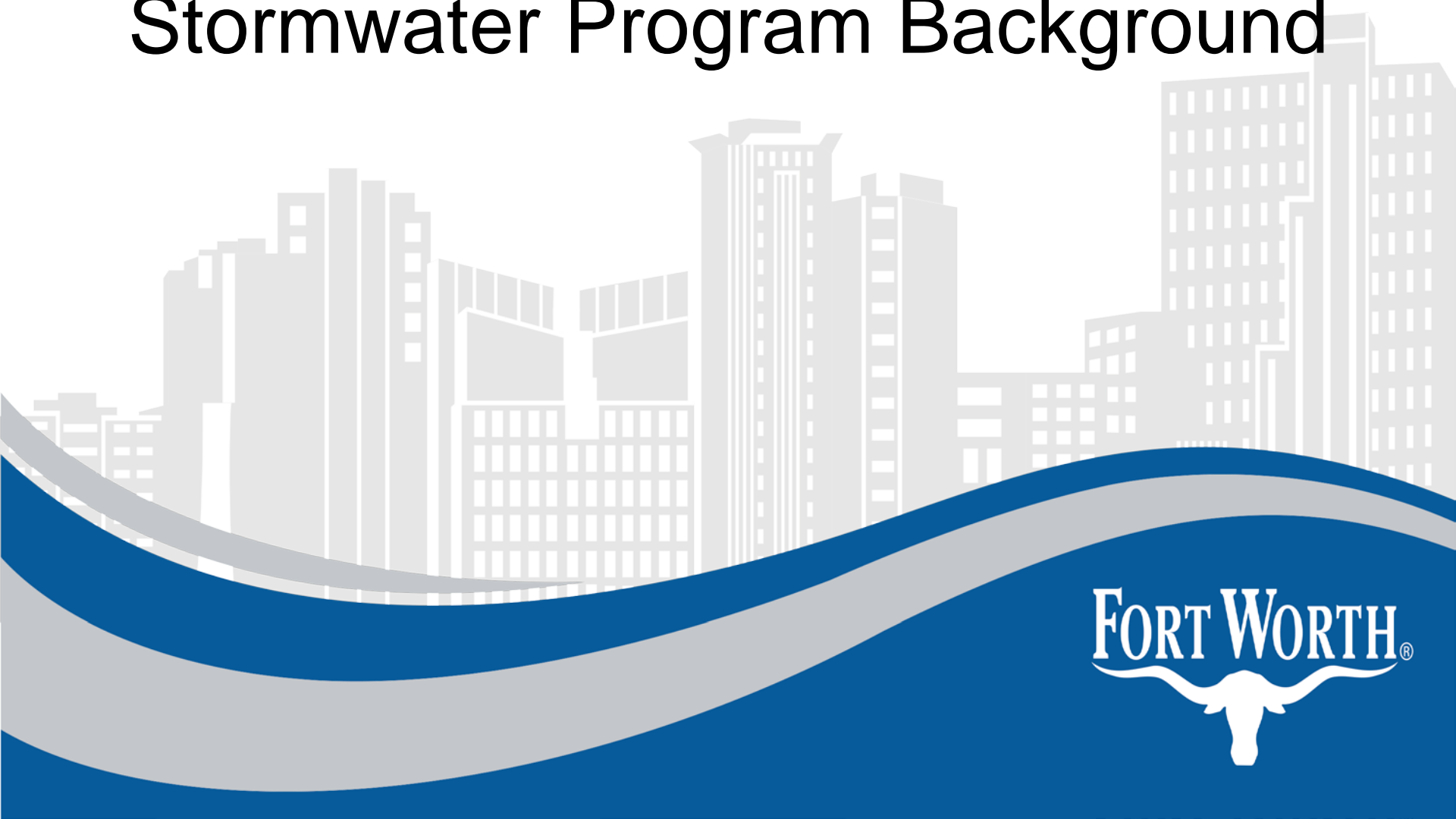
Transportation & Public Works Dpt. / Stormwater Division, Sr. Planner

Agenda

- Program Background
- Drainage Master Planning
 - Master Plan Update
 - Prioritization Tools



Stormwater Program Background



Fort Worth Strategic Goals

- Be the Nation's Safest City
- Improve Mobility and Air Quality
- Create and Maintain a Clean & Attractive City
- Strengthen Economic Base, Develop Workforce, Create Quality Jobs
- Promote Orderly and Sustainable Development



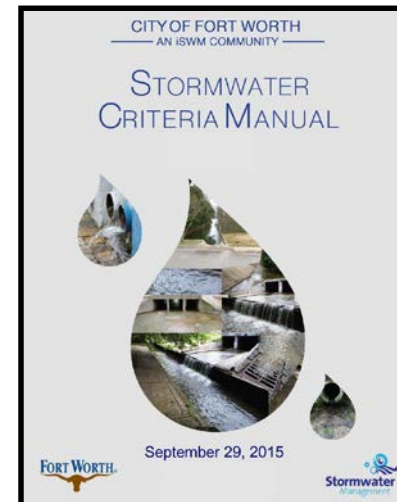
Stormwater Mission

Protect people and property from harmful stormwater runoff



What We Do

- Maintain system such as pipes, channels, etc.
- Mitigate hazards through capital projects
- Warn community of hazards
- Review development for compliance with City standards



Drainage Master Planning



FORT WORTH®


Understanding Citywide Drainage Needs

- What does the community need?
 - City perspective
 - Community perspective
- How do we prioritize community needs?

Internal Assessment of Community Needs

- Stormwater Program Staff
 - Lessons learned & gaps/needs assessment
 - Evaluate current situation, roles & objectives
 - Identify major unknowns/drivers of change
- Other City Departments
- Perform internal assessment
- Look at what others are doing

Peer Community Review

- ~100 Questions
- Validated our internal assessment
- Learn from others
- Informed the planning process



Understanding Community Perspective

What Does the
Community
Want?



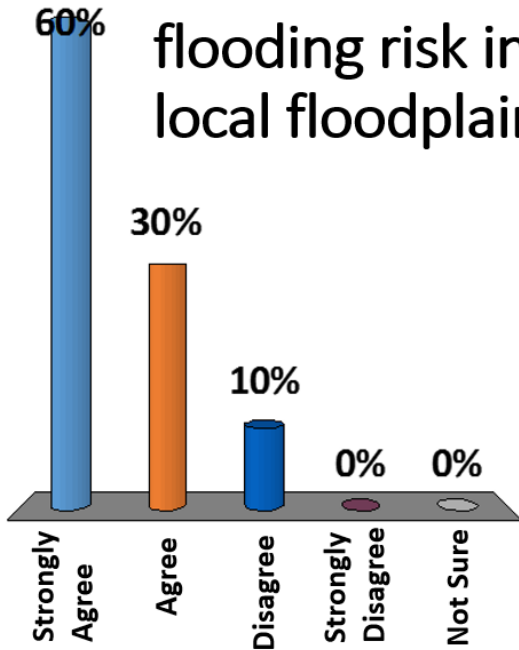
Master Plan Stakeholder Engagement

- Council Appointed (9 members)
- Ad Hoc Members (8 members)
- Formal Meetings with Polling Questions
- Informal Meetings
- Phone Calls
- Emails

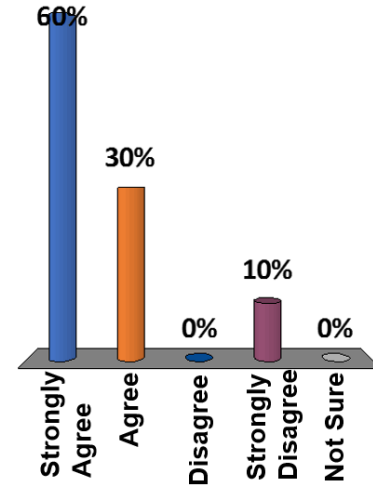


Master Plan Stakeholder Polling

Fort Worth should address issues of flooding risk in local floodplains.



Fort Worth should have a voluntary buyout program for flood prone or erosion threatened properties.



Before this meeting, did you know the City of Fort Worth had a stormwater fee?

- 0% 1. No, unfamiliar with the fee
- 67% 2. Yes, but do not know the amount
- 33% 3. Yes, I know the exact fee that I pay

Master Plan Public Engagement

- Open stakeholder meetings
 - Verbal & written comments
- Website
- Notification via emails, electronic newsletters & NextDoor social media



Stormwater Management Program Master Plan Update

Purpose and Objectives

This update to the Stormwater Management Program Master Plan will assess the progress and lessons learned from the first 10 years of the program.

Opportunities for efficiencies and improvements will be objectively evaluated to ensure the City of Fort Worth is in line with representative communities. Strategies, priorities, and policies will be refined to optimize the use of resources to best meet the stormwater related needs of the City of Fort Worth community over the next 10 years. This initiative will include significant stakeholder engagement and input with the updated Master Plan ultimately being submitted for adoption by City Council.

About the Update

Expected Completion
End of 2017

Goal
Update the Stormwater Management Program's Strategic Master Plan to gather feedback, refine policies and optimize resource distribution.

Calendar

Stormwater Master Plan Stakeholder Meeting
6 p.m. Oct. 19, 2017
Hazel Harvey Peace Center for Neighborhoods
818 Missouri Ave.
Stakeholder meetings are open to the public.

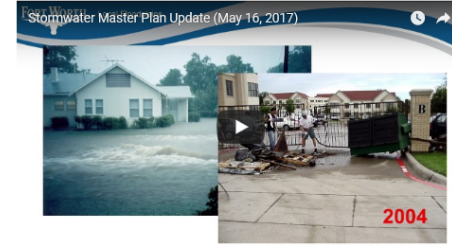
Public Hearing at the Plan Commission Meeting
1:30 p.m. Feb. 28, 2018
Council Chamber At City Hall
200 Texas St.

OneAddress

Find data about your home address, including if your address falls within a floodplain or in a potential high water location.

Contact

Jennifer Dyke
Senior Planner
Transportation & Public Works
817-392-2714



This video is a modified version of the May 16, 2017, stakeholder meeting presentation, which provides an overview of the peer review communities and a focused discussion on four specific that we wanted feedback on: non-FEMA local floodplains, private property channel erosion, voluntary buyout, and development oversight.

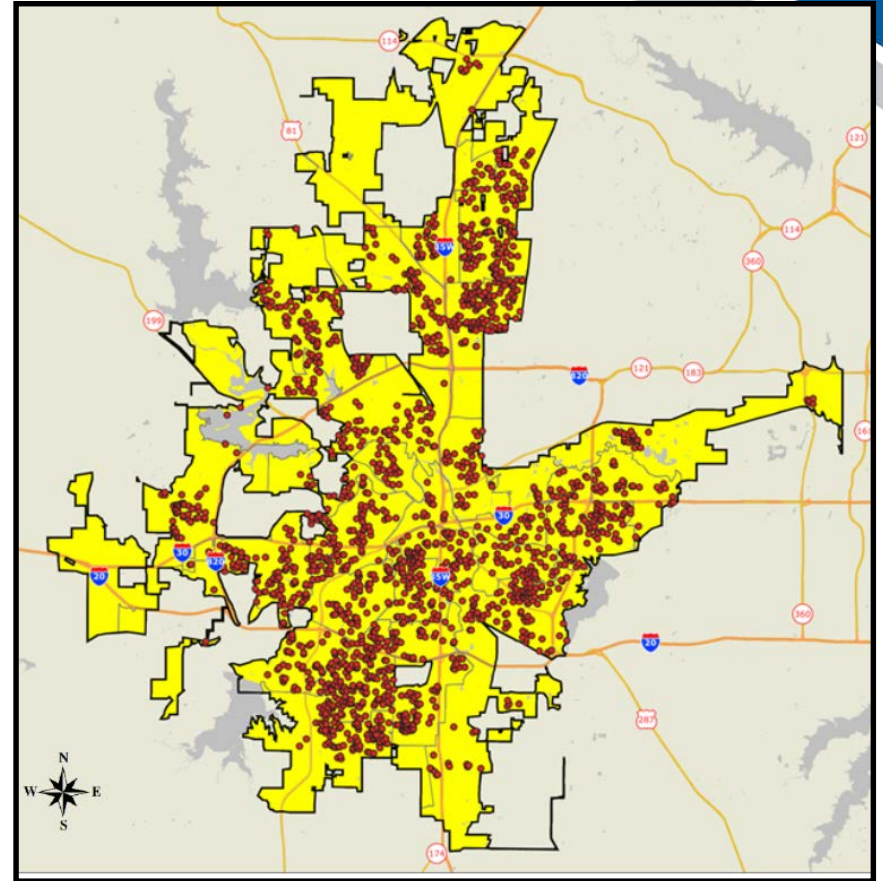
[View the draft strategic Stormwater Management Program Master Plan report](#)

Adoption Schedule Overview



Community Assessment

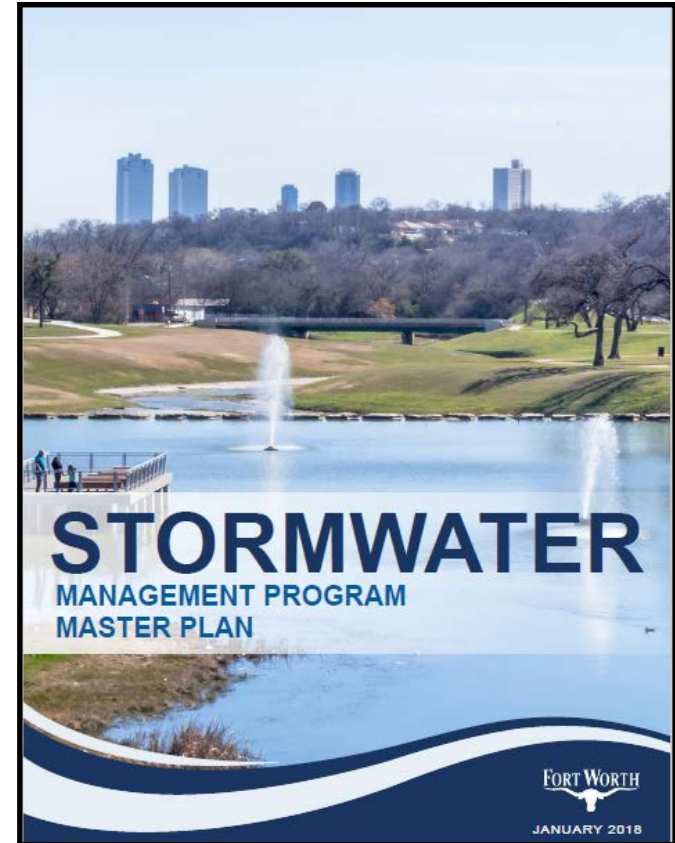
- ~2,000 completed surveys
- Stormwater is in the middle in terms of overall city service satisfaction
- Traffic, streets, & public safety (fire & police) are the most important city services



**June 2017 City of Fort Worth
Community Survey Respondents**

Master Plan Update Major Outcomes

- Maintenance Program
- Mitigation Program
- Warning Program
- Development Review Program
- Policy Needs



Maintenance Program Major Outcome

- Increase emphasis on storm drain rehabilitation



Mitigation Program Major Outcomes

- Refine project prioritization
- Emphasize smaller project execution
- Seek partnerships and evaluate phaseability for larger projects



Multi-Use Detention Basin & Athletic Field at Eastern Hills Elementary School- Partnership with Fort Worth ISD

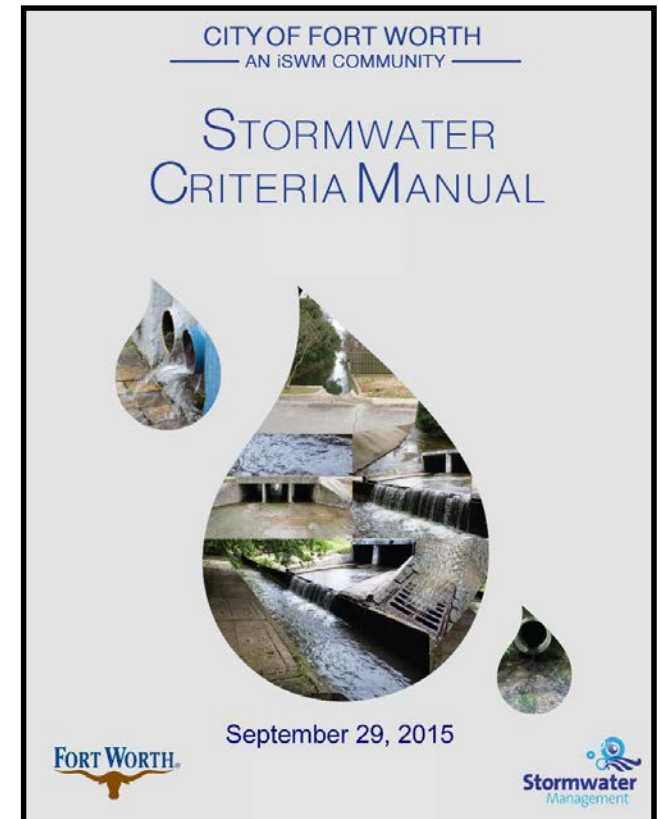
Warning Program Major Outcomes

- **Flood hazard warning**
 - Real-time and reliable warnings
 - Public awareness of flood threat
 - Timely information for response
 - Post-flood assessment
 - Refine our Standard Operating Procedure
- **Erosion hazard warning**
 - Educational tool to avoid highly erosive areas



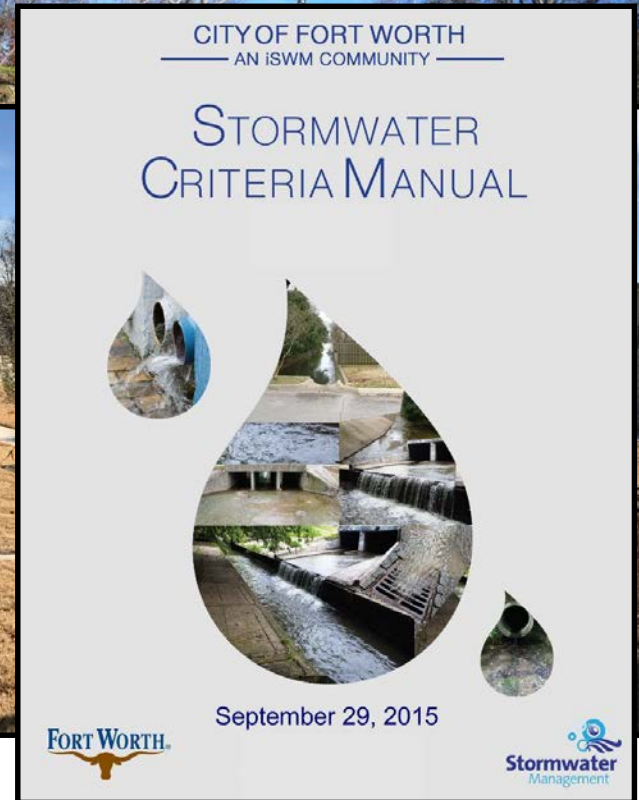
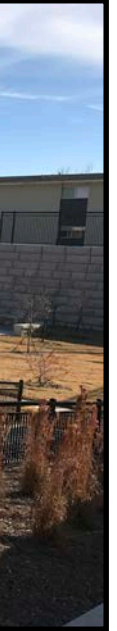
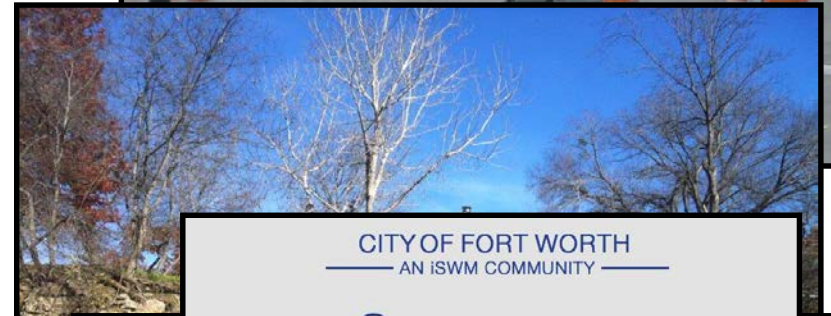
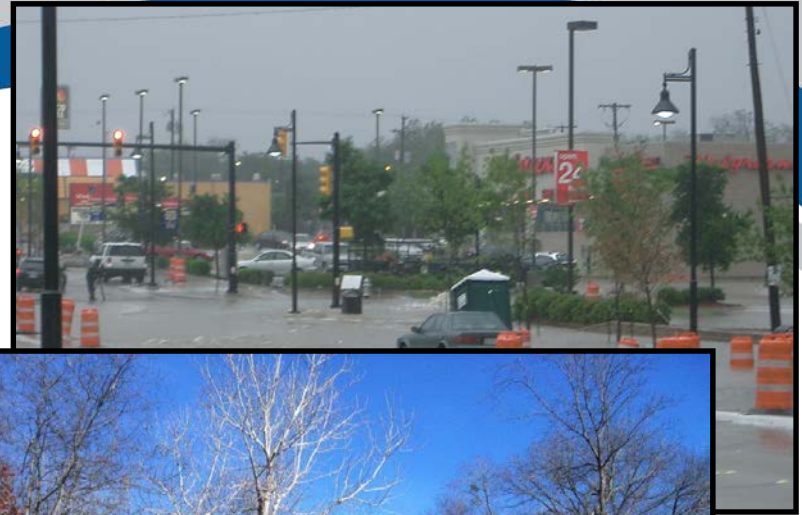
Development Review Program Major Outcomes

- Maintain the current level of review
- Evaluate potential regulation revisions for flood prone areas



Key Policy Needs

- Local Floodplains
- Private Property Channel Erosion
- Voluntary Buyout Program
- Level of Review for Private Development



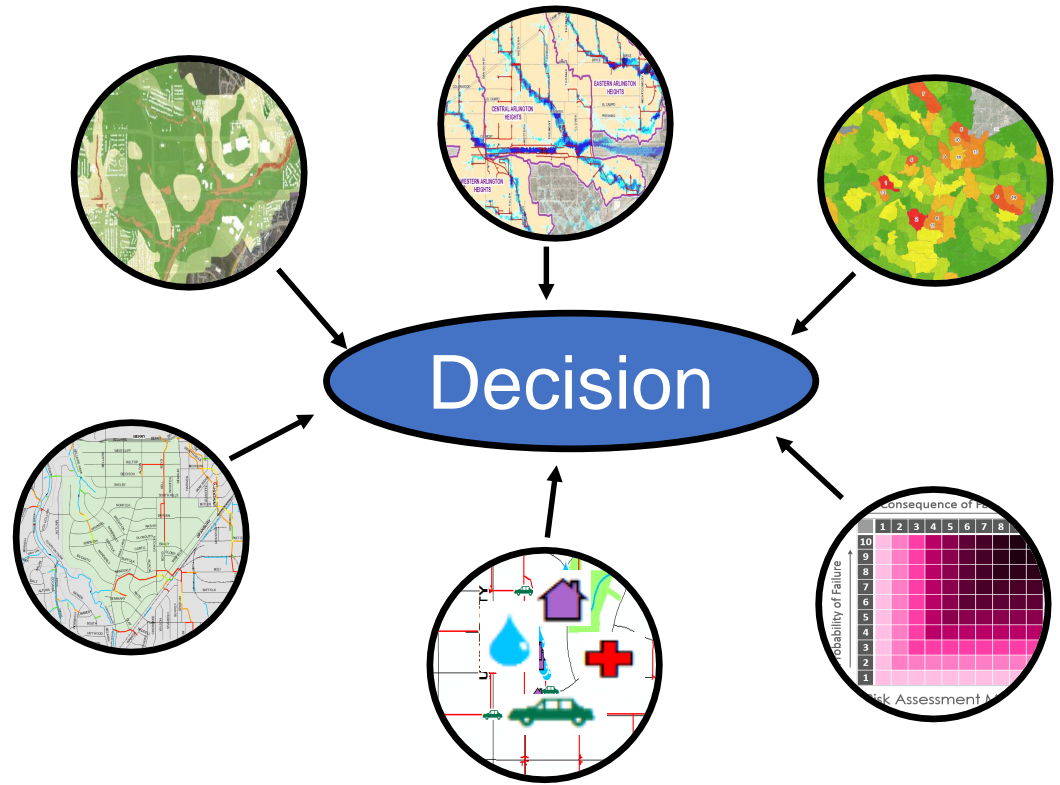
Local Floodplain Policy

For flood hazards that exist beyond the limits of FEMA floodplains:

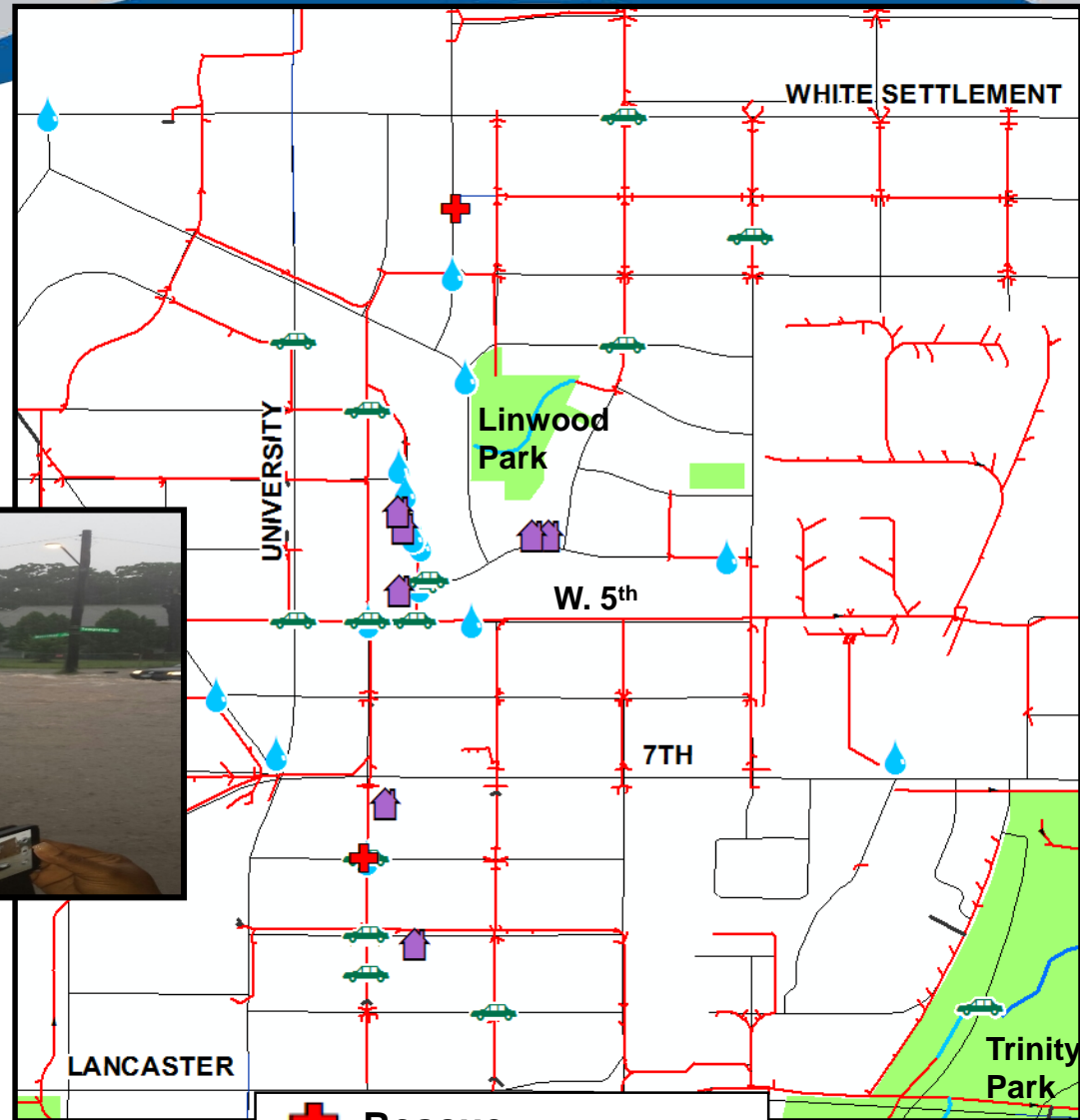
- Mapping
- Communication
- City's regulatory stance





How Do We Prioritize Community Needs?





Documented Flooding Incidents Tool

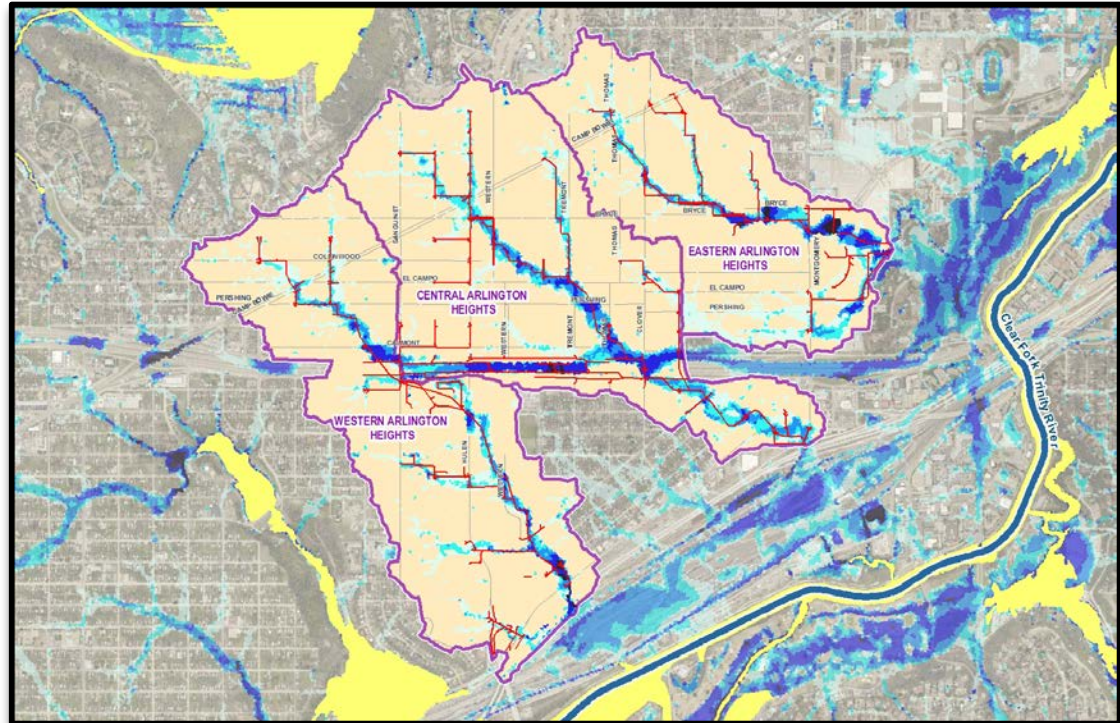


-  Rescue
-  Structure Flooding
-  Car Stalled
-  Road Overtop

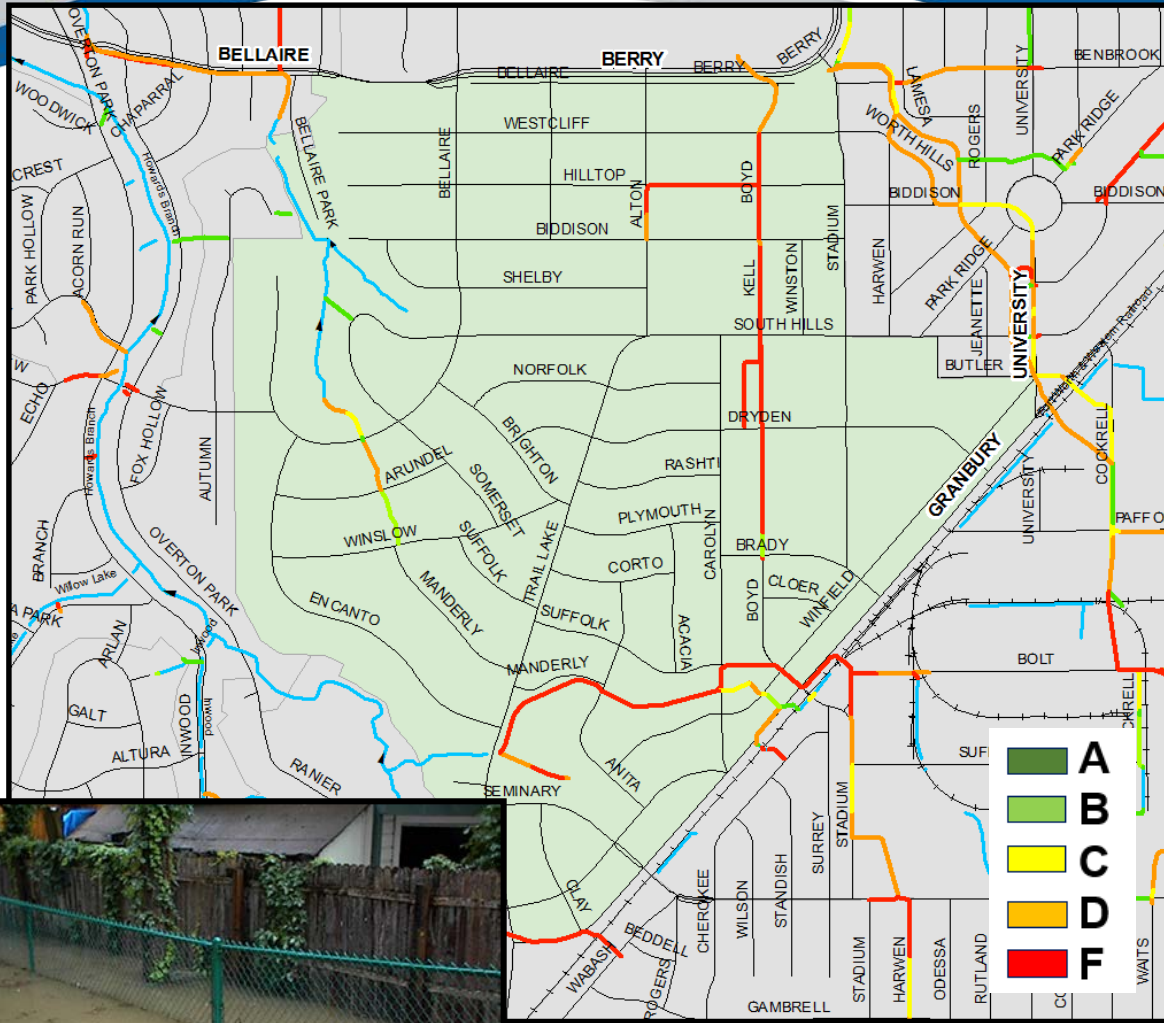
Citywide Areas of Potential High Water Tool



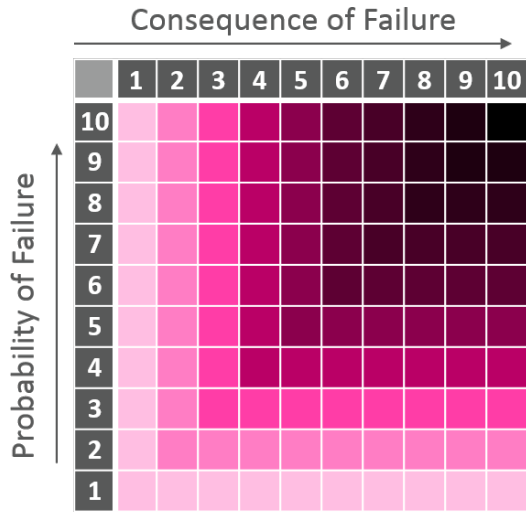
-  FEMA Floodplain
-  Potential High Water



Citywide Pipe Capacity Tool



Infrastructure Criticality Tool



Risk Assessment Matrix

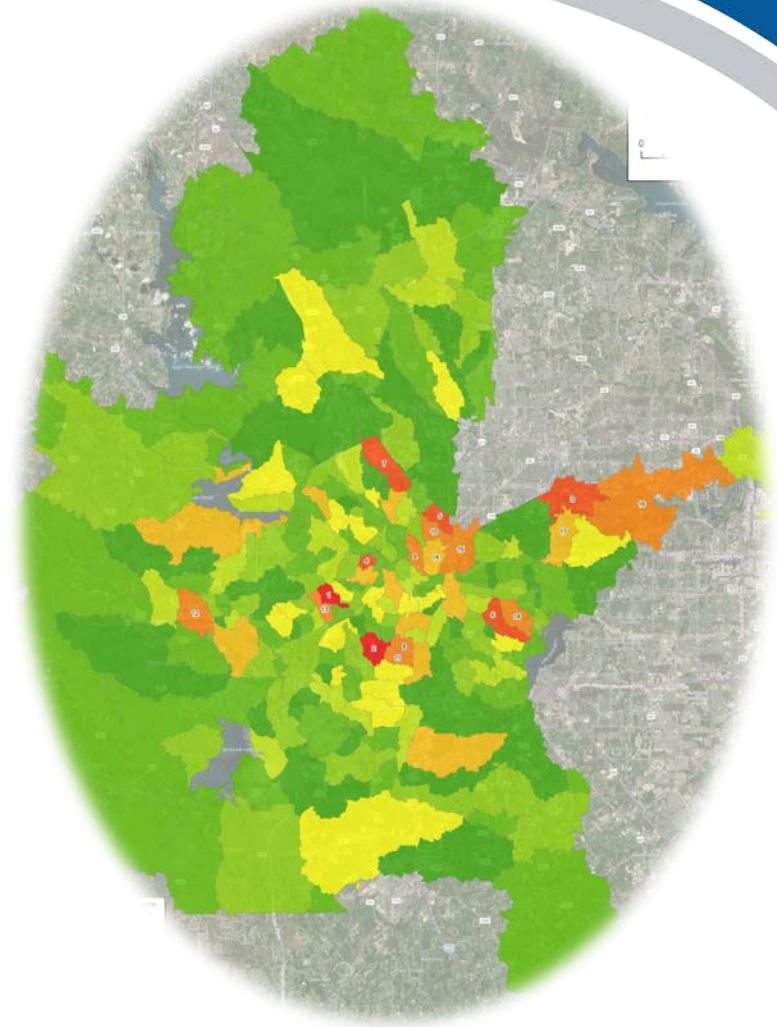


Stormwater System

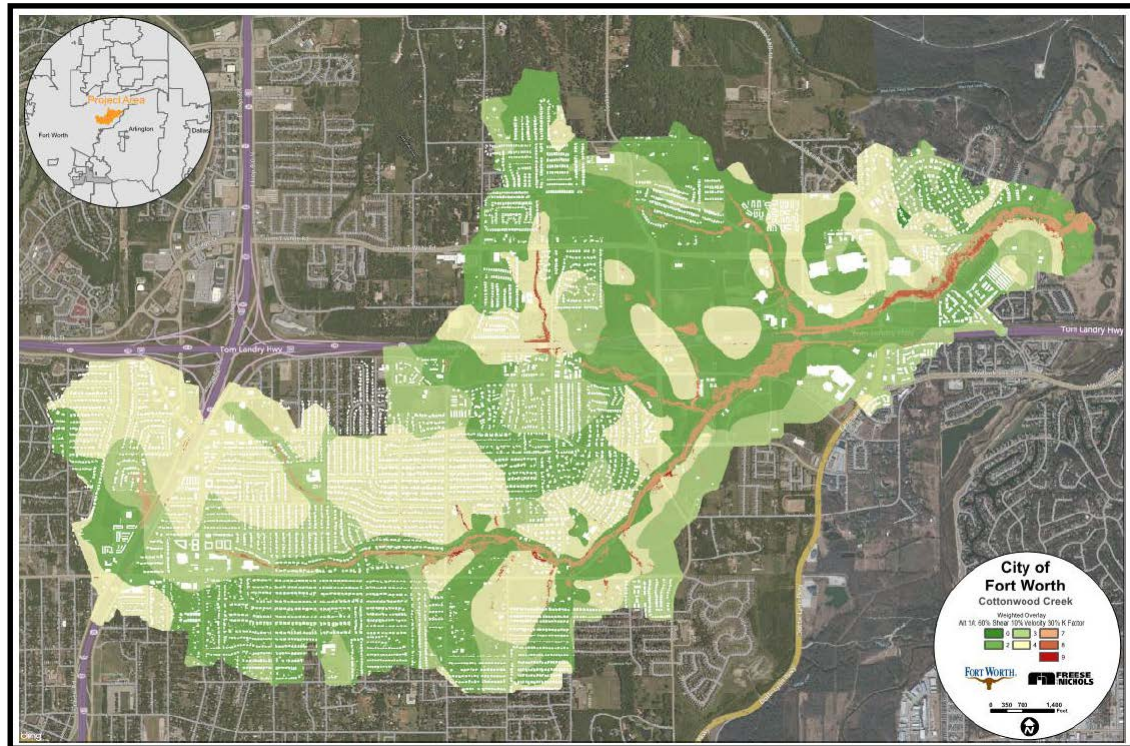
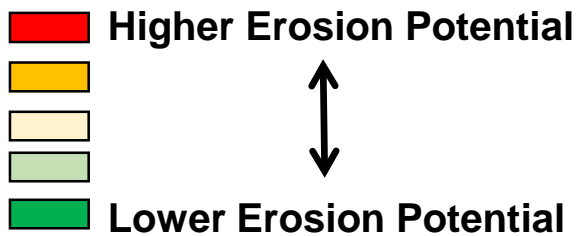


Consequence of Failure x Probability of Failure = Criticality

Drainage Area Prioritization Tool



Citywide Erosion Hazard Potential Tool



Erosion Potential in the Cottonwood Creek Watershed

Stream Crossing Inventory / Roadway Hazard Assessment Tool

~300 crossings reviewed



ROADWAY FLOOD HAZARD INFORMATION SHEET

TO BE COMPLETED AT SITE DURING SITE OBSERVATION

I. SITE INSPECTION SUMMARY

BY: KED DATE: _____

<p>A. ROADWAY DESCRIPTION</p> <p><input type="checkbox"/> (1) CURBS AND GUTTER WIDTH: _____</p> <p><input checked="" type="checkbox"/> (2) BORROW DITCHES: WIDTH: <u>8</u> DEPTH: <u>21</u> UNDEFINED</p> <p>(3) MATERIAL: CONCRETE <u>ASPHALT</u> GRAVEL</p> <p>(4) NO. LANES: _____</p> <p>B. PAVEMENT CONDITION</p> <p><input checked="" type="checkbox"/> GOOD</p> <p><input type="checkbox"/> FAIR</p> <p><input type="checkbox"/> POOR</p> <p>C. EXISTING SAFETY FEATURES</p> <p><input type="checkbox"/> (1) SIGNAGE <u>NO</u> GAUGE FLASHER</p> <p><input type="checkbox"/> (2) RAILING RAILING GUARD RAIL/RAILROAD RAIL/FARAPET</p> <p><input type="checkbox"/> (3) OTHER _____</p>	<p>D. EXISTING STORM INFRASTRUCTURE</p> <p><input type="checkbox"/> (1) BRIDGE: SPANS WIDTH: _____ HEIGHT: _____</p> <p><input type="checkbox"/> (2) PIPE CULVERT: NO. DIAMETER/MATERIAL: <u>1/1</u> HEADWALLS: YES NO</p> <p><input type="checkbox"/> (3) BOX CULVERT: SPAN/HEIGHT: <u>9/9</u> HEADWALLS: YES NO</p> <p><input type="checkbox"/> (4) INLETS: NO. SIZE: _____ DIST. FROM LOW POINT: _____</p> <p><input type="checkbox"/> (5) UNMADE OPEN CHANNEL</p> <p>E. VEGETATION</p> <p>(1) LIGHT: <u>MODERATE</u> HEAVY</p> <p>(2) DESCRIPTION: _____</p> <p>F. SEDIMENT BUILDUP</p> <p>(1) HEIGHT: _____</p> <p>(2) CULVERTS AFFECTED: <u>NO</u></p> <p>(3) VEGETATION: YES <u>NO</u></p> <p>G. EVIDENCE OF EROSION</p> <p><u>ON HDWL. THREATENED POINT.</u></p> <p>H. VISUAL EVIDENCE OF FLOW DEPTH</p> <p><u>NO</u></p>	<p>I. NATURE OF FLOODING</p> <p><input type="checkbox"/> (1) PONDING</p> <p><input checked="" type="checkbox"/> (2) WATER OVER TOPPING ROAD / FLOWING ACROSS ROAD</p> <p><input type="checkbox"/> (3) WATER FLOWS OVER AND ALONG ROAD</p> <p><input type="checkbox"/> (4) STREET FLOODING</p> <p><input type="checkbox"/> (5) OTHER _____</p> <p>J. NOTED SAFETY ISSUES</p> <p><u>HDWL & SIDESLOPE CLOSE TO POINT.</u></p> <p>K. MAINTENANCE REQUIRED</p> <p><u>HDWL & SLOPE PROTECTION FOR POINT.</u></p> <p>L. FLOOD HAZARD ASSESSMENT</p> <p><input type="checkbox"/> (1) NON-THREATENING</p> <p><input checked="" type="checkbox"/> (2) HAZARDOUS</p> <p><input type="checkbox"/> (3) LIFE THREATENING</p> <p>(4) DESCRIPTION _____</p>
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PLAN VIEW (or attach aerial photo)

CROSS SECTIONAL VIEW (or attach photo)

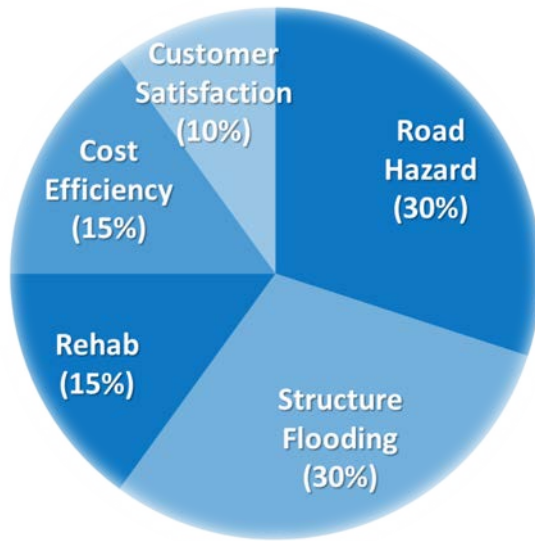
STREET ADDRESS: Keller-Hicks Rd

CONTRIBUTOR NAME: _____

FORT WORTH
 TRANSPORTATION AND PUBLIC WORKS DEPARTMENT

4500 KELLER-HICKS
SITE 9.2

Capital Project Prioritization Tool



- Objective decision-making
- Transparent decision-making
- Risk-based metrics
- Database improves information access



Data Entry | Results | Project Assessment Form | Funding Request Criteria

Report Number: SWS-017 Report Name: SWS-017 Wildcat Branch
 Alternative Name: Alternative 2B - Lower Channel Improvements and Culvert Replacements

Date Identified: 5/1/2016 Consultant: Halff Associates Source Informant: [dropdown]
 Related Report Number: [dropdown] Related Report Name: [dropdown]

Report Type: Planning Analysis Type: InfoWorks Project Type: Roadway Crossings
 Status: Planning Planning Stage: Strategic
 Phase: [dropdown] Related Alternative DBID: 225 Relationship Type: Alternate
 Related Alternative Name: Alternative 2C - Lower Channel Overbank Cuts

Council District: 5 Mapshed Number: 138 Planning Sector: Southeast Source of Flooding: Wildcat Branch

Land Acquisition Needs: [checkbox] Count of flood prone parcels acquired: 0 Count of properties taken out of FEMA floodplain: 66

Description: Channel improvements from Village Creek Drive to the existing channel drop near Candace/Burger. The alternative also includes culvert improvements at Dillard Street and Stalcup Road. Increased conveyance would need to be mitigated with additional culvert capacity at IH-820 or improvements to the frac pond. A Corps permit and mitigation would be required.

Comments: [text area]

Longitude (X): -97.2402538277 Photo 1 Link: Pictures\Photos\224.jpg Photo 2 Link: Pictures\Photos\224_2.jpg Map Link: Pictures\Maps\DBID_224.jpg
 Latitude (Y): 32.70980625244 Photo 1 Description: Downstream face of Dillard Street culverts Photo 2 Description: Upstream face of Dillard Street culverts Area Map Link: Pictures\Area Maps\ODBD_224.jpg

Recommended (Report) Viable Alternative Include in Ranking Data Mining Data Class: 3 Filter Tag: [dropdown] Clear All Filter Tags

STRUCTURE FLOODING		ROAD HAZARD	
Count of flood prone structures pre-project:	76	Count of hazardous crossings/sumps pre-project:	6
Count of structures with reductions in structural flooding:	66	Count of improved crossings/sumps post-project:	2
Lowest return event at which structural flooding begins pre-project:	100	Pre-project level of service:	2
Lowest return event at which structural flooding begins post-project:	Greater than 100-yr	Post-project level of service:	25
Count of affected repetitive loss structures:	0	Road classification:	Neighborhood/Local
Count of affected critical facilities:	0	Comments:	Page 35, Page 45
Cumulative length-times-BRE for existing system:	18657.17	Benefit (from report):	\$549,600
Community response:	Unknown	Cost (from report):	\$5,822,000
Count of reported drainage issues:	4	Cost (Updated OPC):	\$5,851,745
Updated OPC Date:	5/1/2017	Updated OPC Date:	5/1/2017
SW Share:	100%	SW Share:	100%
Figure 2.1		Potential Funding Partners:	

Grouped Rank: 11 Rank: 13
 Last Modified: 6/28/2017 12:20:44 PM

Scoring Guidelines

Buttons: Apply Filter/Sort, Remove Filter/Sort, One Page Report Current Project, One Page Report Filtered Projects, Input Report Current Project, Input Report Filtered Projects, Combined Report Current Project, Combined Report Filtered Projects, Ranked List All Projects, Ranked List Filtered Projects, Export to Excel All Data, Export to Excel Ranked List, Add Project, Update Rankings

Maintenance Project Prioritization Tool



TPW STORMWATER CHANNEL RATING FORM



Channel Name:
Address:

Council District:
MapSCO:

Date: 01/24/2017
Inspected By: Karla Morales

CATEGORY	SCORING				
	LOW				HIGH
	1	2	3	4	5
SEDIMENTATION					
Sedimentation condition			2		
Sediment movement			2		
Blockage/Clogging			2		
Trash/Debris			3		
EROSION					
Erosion Bank & Channel stability			3		
Bank cutting			4		
VEGETATION					
Vegetation condition			2		
Vegetative Bank protection			1		
PROPERTY DAMAGE					
Flooding roads			1		
Flooding of Private structures			1		
Utility Asset Damage			4		
Structural Components (Channel concrete condition)			1		
Scoring Total					26
CHANNEL TYPE					
Earthen Maintained			✓		
1.1					
Concrete					
1.25					
Earthen Unmaintained					
1.6					
					1.1
LOCATION (adjacent property)					
Undeveloped					
0.5					
Service Road					
1.25					
Commercial					
1.5					
Residential			✓		
2.0					
					2

Notes:

Recommendation:

Total Score 57.20

Formula:

Scoring Total*Channel Type*Location=Total Score

Priority Level Scale

- > 50 High Priority Work Order
- >30 and <50 Low Priority Work Order
- >28 and <30 Reactive Maintenance
- <27 Routine Maintenance

Condition Rating Scale

- 1 = Good
- 2 = Okay
- 3 = Fair/Degrading Condition
- 4 = Poor/In need of Attention
- 5 = Failure/Worst Condition

Wrap Up



Drainage Master Planning- Wrap Up

- Have an adopted/approved plan in place!
- Utilize Master Plan & Tools to Prioritize Decision Making
 - Planning, Projects, Initiatives
- Continue Community Engagement to Understand Community Wants
 - Stakeholder Group
 - Small Policy Implementation Working Groups

Position the program to more effectively respond in the future

Questions

For More Information:

Jennifer Dyke, CFM

Sr. Planner

Jennifer.Dyke@FortWorthTexas.Gov

817-392-2714

