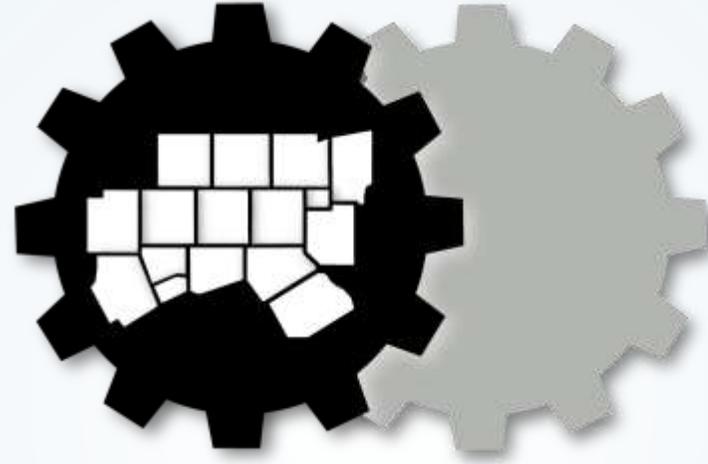


Trinity Common Vision Steering Committee

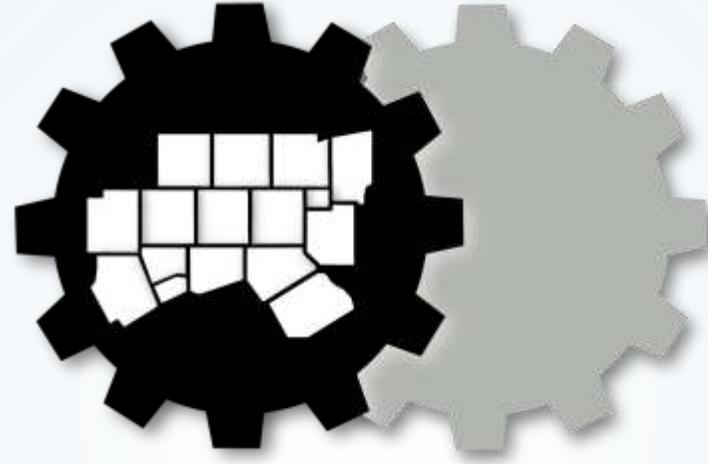
September 13, 2018





WELCOME & INTRODUCTIONS





DISCUSSION ITEMS

Trinity Common Vision

Trinity River Corridor Interlocal Agreement - 1989

NINE CITIES

Arlington	Farmers Branch
Carrollton	Fort Worth
Coppell	Grand Prairie
Dallas	Irving
	Lewisville



THREE COUNTIES

Dallas County
Denton County
Tarrant County

PROGRAMMATIC PARTNERS

NCTCOG Environment & Development
U.S. Army Corps of Engineers
Federal Emergency Management Agency
Texas Water Development Board

TWO SPECIAL DISTRICTS

Tarrant Regional Water District
Trinity River Authority

Trinity River Common Vision Program

Timeline & Background

1990 Upper Trinity River Basin Reconnaissance Report

Interlocal Agreements signed by member cities & Congress authorizes the Upper Trinity River Feasibility Study (UTRFS). These studies by the Corps of Engineers simulated the cumulative impacts of flooding in the Dallas-Fort Worth area based on different levels of floodplain development.

1990 Flood Management Task Force

Flood Management Task Force formed and CDC criteria developed based on ROD

\$11B

Record of Decision

Results suggest that damages from a major flood could total more than \$11 billion if floodplain development is unregulated. A comprehensive floodplain management program could cut losses to \$4 billion.

Corridor Development Certificate (CDC) Manual

1st Edition of the Corridor Development Certificate (CDC) Manual was produced in **1991**. We are currently on the 4th edition

Almost 200 projects have been permitted along the Trinity River in the Dallas/Fort Worth Metroplex using the CDC process. Models are continuously being refined and updated to reflect new construction and redevelopment.

CDC Program Goals

Corridor Development Certificate Program



Limits Impact

Limits (but does not eliminate) the impact of floodplain encroachments for regulated streams on downstream areas



Review Process

Establishes a consistent regional criteria and review process



Funding Stream

Provides a funding stream for updates and state-of-the-art models and modeling tools

CDC Program Goals

Corridor Development Certificate Program



Provides Oversight

Provides oversight for projects constructed in the 100 year floodplain



Allows Development

Allows development in the floodplain



Project Review

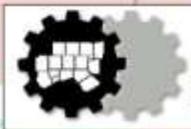
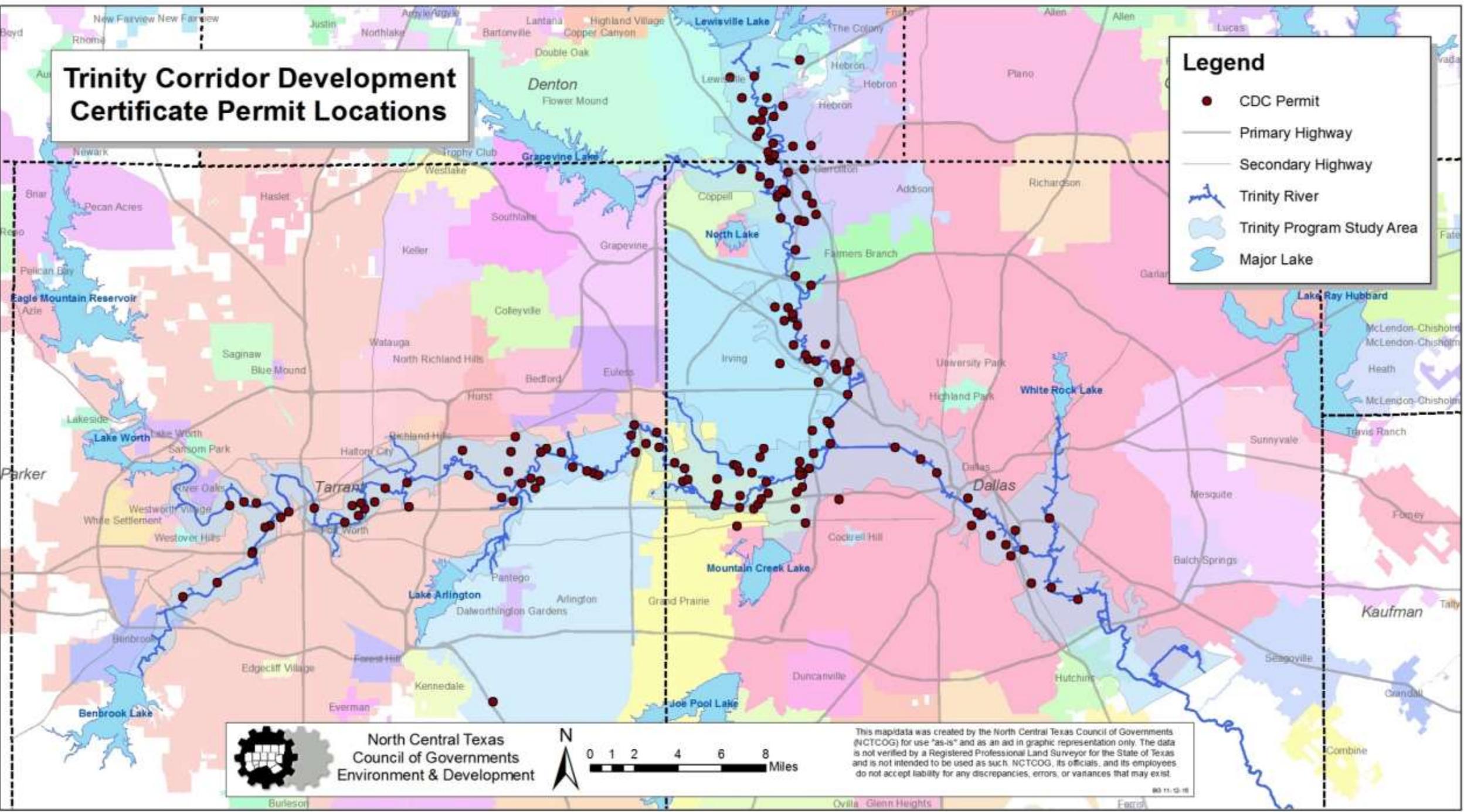
Allows all Flood Management Task Force (FMTF) members to review projects for the entire regulatory footprint



Trinity Corridor Development Certificate Permit Locations

Legend

- CDC Permit
- Primary Highway
- Secondary Highway
- Trinity River
- Trinity Program Study Area
- Major Lake



North Central Texas
Council of Governments
Environment & Development

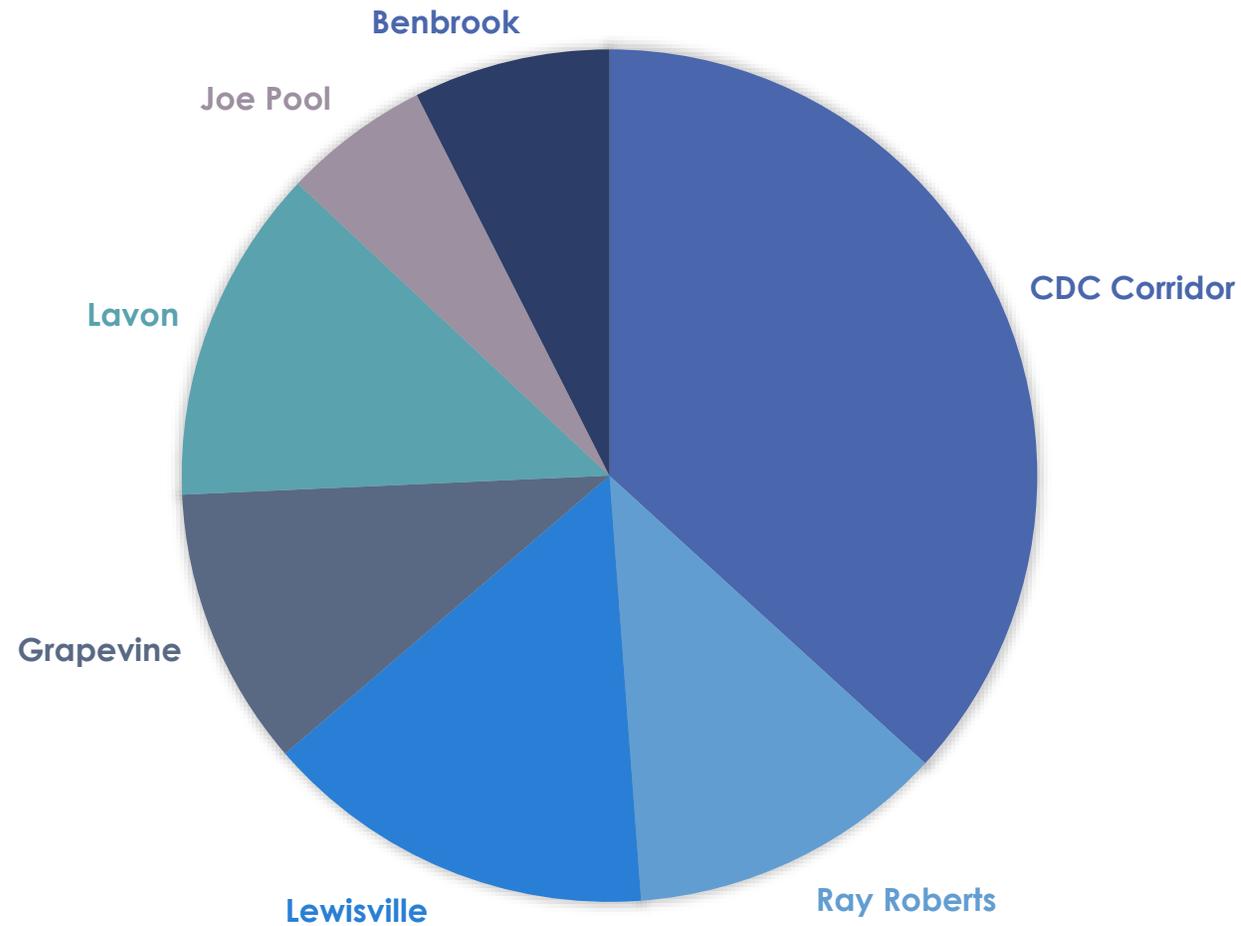


0 1 2 4 6 8 Miles

This map data was created by the North Central Texas Council of Governments (NCTCOG) for use "as-is" and as an aid in graphic representation only. The data is not verified by a Registered Professional Land Surveyor for the State of Texas and is not intended to be used as such. NCTCOG, its officials, and its employees do not accept liability for any discrepancies, errors, or variances that may exist.

Why is the Trinity River Corridor So Important to Flood Prevention?

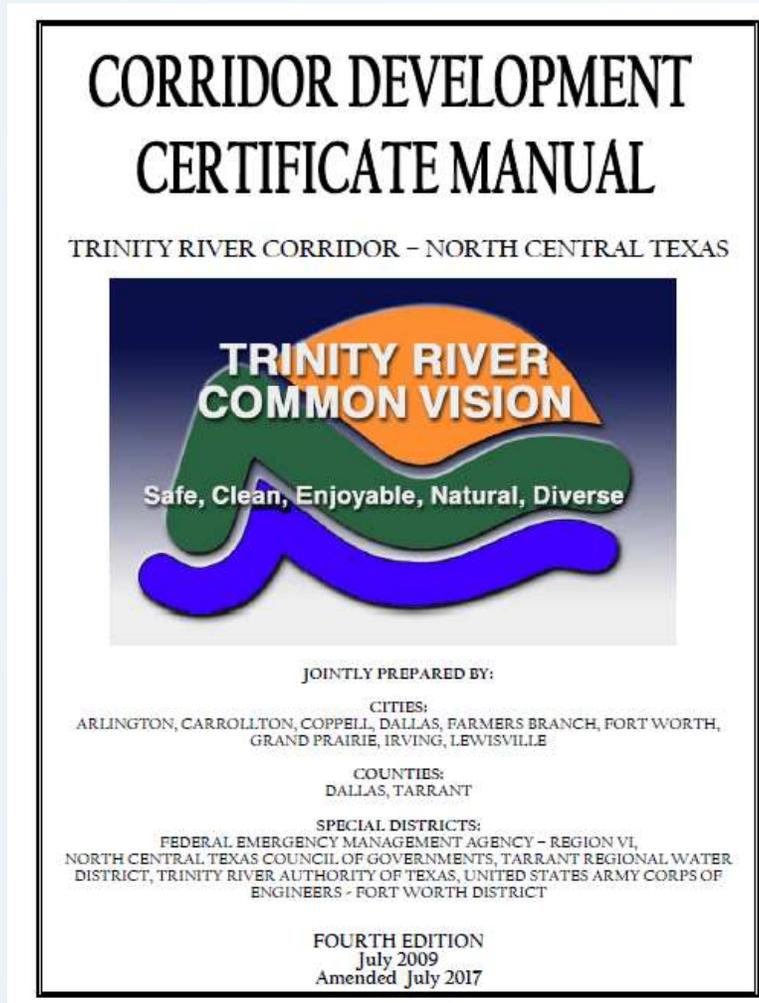
ACTIVE FLOOD STORAGE



Common Vision Work Program and Activities Update

- CDC Permitting
- FEMA I-273 Four Day Course
- Elected Officials Seminar
- FY18 Work Program – Additional Technical Item Outcomes

CDC Permits in Fiscal Year 2018



- 11 Applications Received This Fiscal Year
- 206 Total Applications Since CDC Inception

L-273 FEMA NFIP Course and the Elected Officials Seminar

Floodplain Management through the NFIP

22nd annual Class held November 2017 – Class was full with a wait list!

23rd Annual Class to be held November 26-29th. Registration opened last week.

Annual Combined Elected Officials Seminar/CRS Users Group

Held July 18, 2018.

Guest speakers from USACE and FEMA's Resilience Action Partners

FY 18 Work Additional Work Program Items: NFIP-CDC Model Consolidation Update

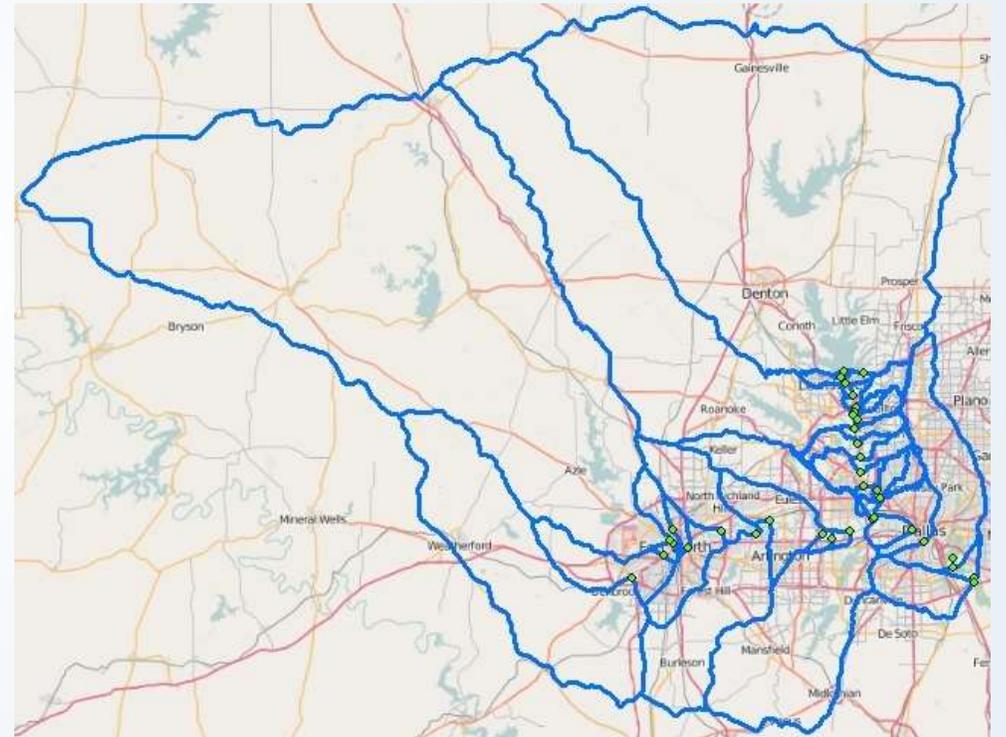
Modeling Summary – Jake Lesue, Dewberry

- ▶ What Was Done?
 - ▶ Hydrology
 - ▶ Georeferencing
 - ▶ Hydraulics
- ▶ Long-term Goals

What was done?

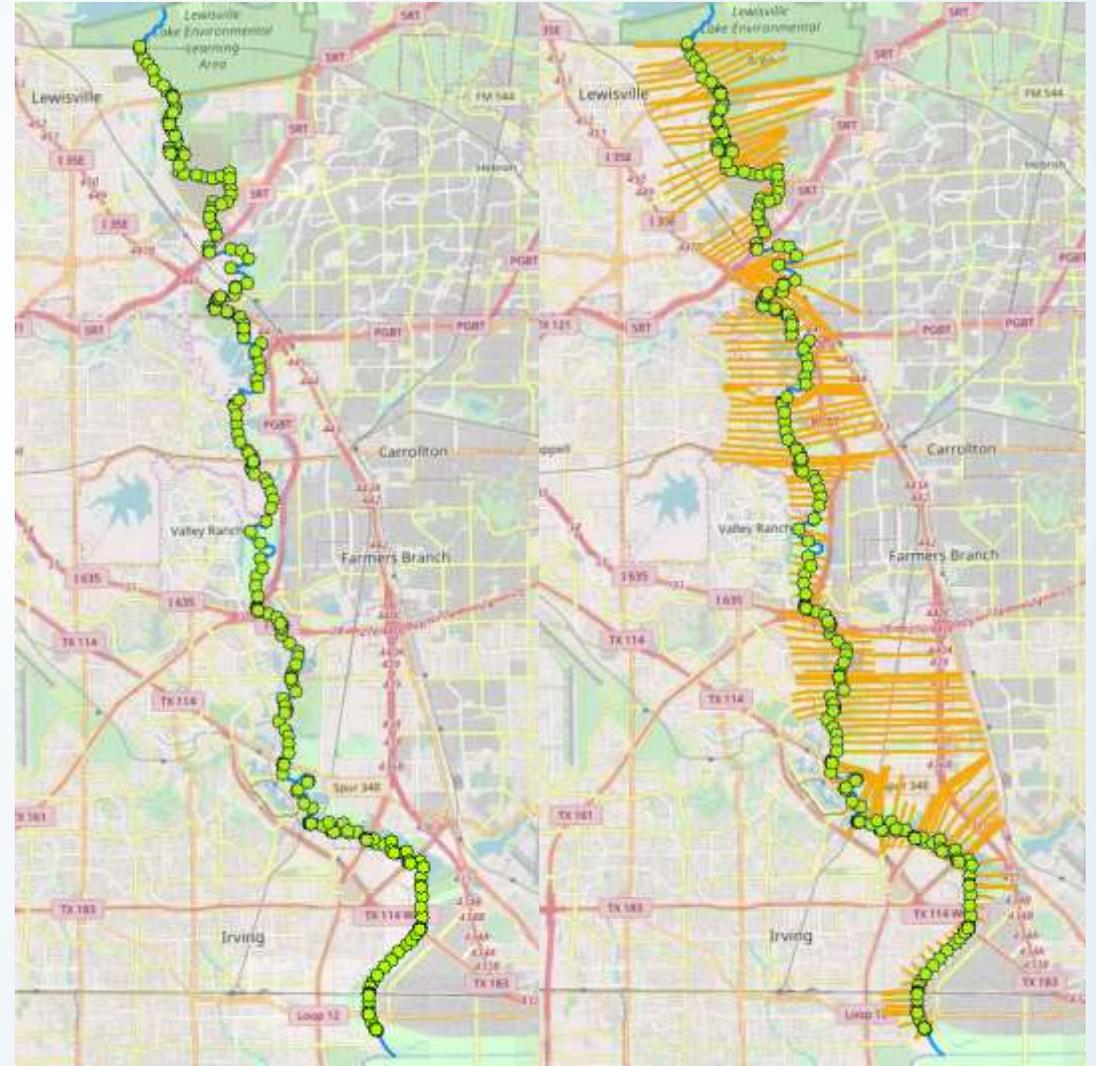
Hydrology

- ▶ Received HEC-HMS models from USACE with 2005 land use data
 - ▶ Upper Trinity (2012)
 - ▶ Elm Fork (2012)
- ▶ RAMPP delivered Hydrology package using FEMA standards and specs to MIP
- ▶ Special Considerations
 - ▶ Local rainfall runoff vs spillway releases
 - ▶ Dallas Floodway removed



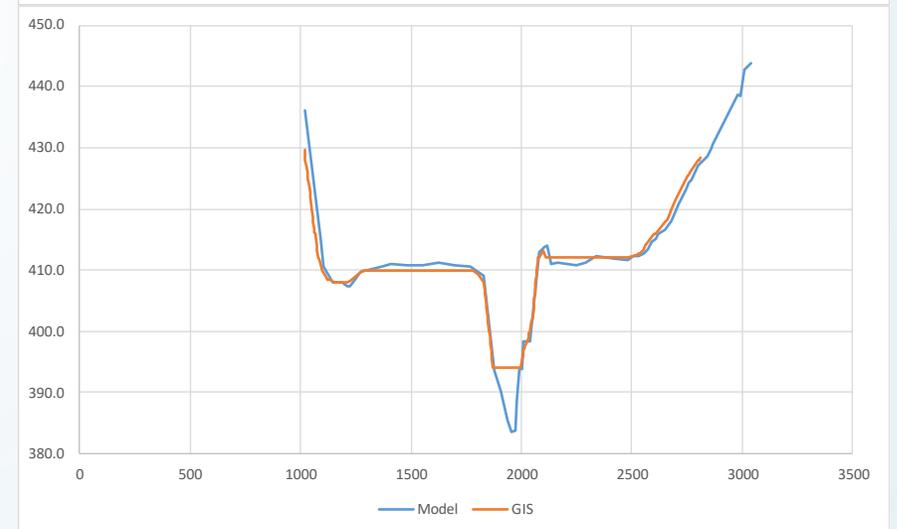
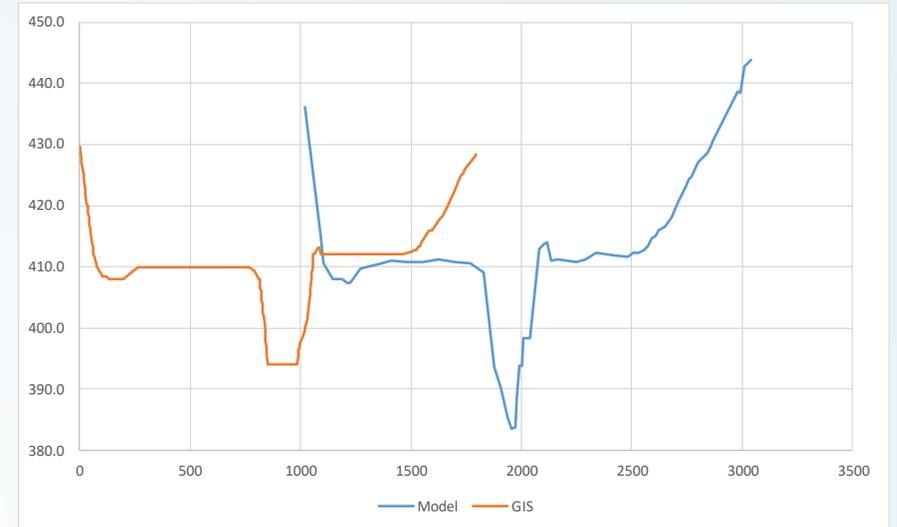
What was done? Georeferencing

- ▶ Imported USACE DGN files
- ▶ Identified:
 - ▶ Missing sections
 - ▶ Reach length mismatches with river stationing
 - ▶



What was done? Georeferencing

- ▶ Cross section profiles generated from 1991 topography
- ▶ Compared model sections to 1991 topography
- ▶ Shifted station data to align with USACE spatial section coordinates
- ▶ Truncated or extended spatial sections where necessary to match model sections
- ▶ Model sections extended to capture entire inundation



What was done?

Hydraulics

- ▶ Received HEC-RAS model (UT_CDC_RAS_2014) for the Upper Trinity dated 2014
- ▶ Added revised flood flows
- ▶ Georeferenced all stream centerlines and cross sections
- ▶ Updated cross section reach lengths based on georeferenced section locations
- ▶ Delivered Hydraulic package to MIP in FEMA standards and specifications
- ▶ Only existing development flows entered into model, CDC flows not used
- ▶ Removed approved CDC projects not constructed

Long-term Goals: Future CDC Considerations

- ▶ Leverage bathymetry from TRA or additional channel survey completed
- ▶ Update cross sections to recent LiDAR
- ▶ Combine plans/geometries between FEMA/CDC?
- ▶ Add SPF and CDC flows

FY 18 Work Additional Work Program Items: NFIP-CDC Model Consolidation Update

CDC/NFIP Model Consolidation Team Update –
Stephanie Griffin, City of Grand Prairie and Team Chair

- Background
- Goals and Objectives
- Team Membership
- Scope of Work
- Deliverables

Background

- ▶ Only applies to FEMA LOMCs within CDC corridor
- ▶ CDC model looks at current and future conditions
- ▶ NFIP looks at current conditions only
- ▶ FEMA, NCTCOG and USACE partnership to combine and geo-reference the CDC and NFIP HEC-RAS models
 - ▶ Dual purpose models to administer both programs
 - ▶ Maintain current models

Team Members

- ▶ Stephanie Griffin, Team Chair - City of Grand Prairie
- ▶ Jim Keith - Freese and Nichols
- ▶ Amy Cannon - City of Arlington
- ▶ Kim Dewailly - City of Dallas
- ▶ Clair Davis - City of Fort Worth
- ▶ Craig Ottman - TRWD
- ▶ Mike Danella - USACE
- ▶ Landon Erickson - USACE
- ▶ Alan Johnson – FEMA
- ▶ James Pittman – AECOM
- ▶ Jacob LeSue - Dewberry
- ▶ Mia Brown - NCTCOG

Additional Members

- ▶ Subject Matter Expert
 - ▶ Gary Brunner, USACE

- ▶ Advisory Group
 - ▶ Edith Marvin, NCTCOG
 - ▶ Ron Wanhanen, FEMA
 - ▶ Jerry Cotter, USACE

Team Goals and Objectives

- ▶ Establish policies and procedures to keep both models simplified and in sync with permit actions for each program
- ▶ Incorporate policies and procedures into the CDC Manual and the NFIP LOMC instructions
- ▶ Identify resources and funding needs

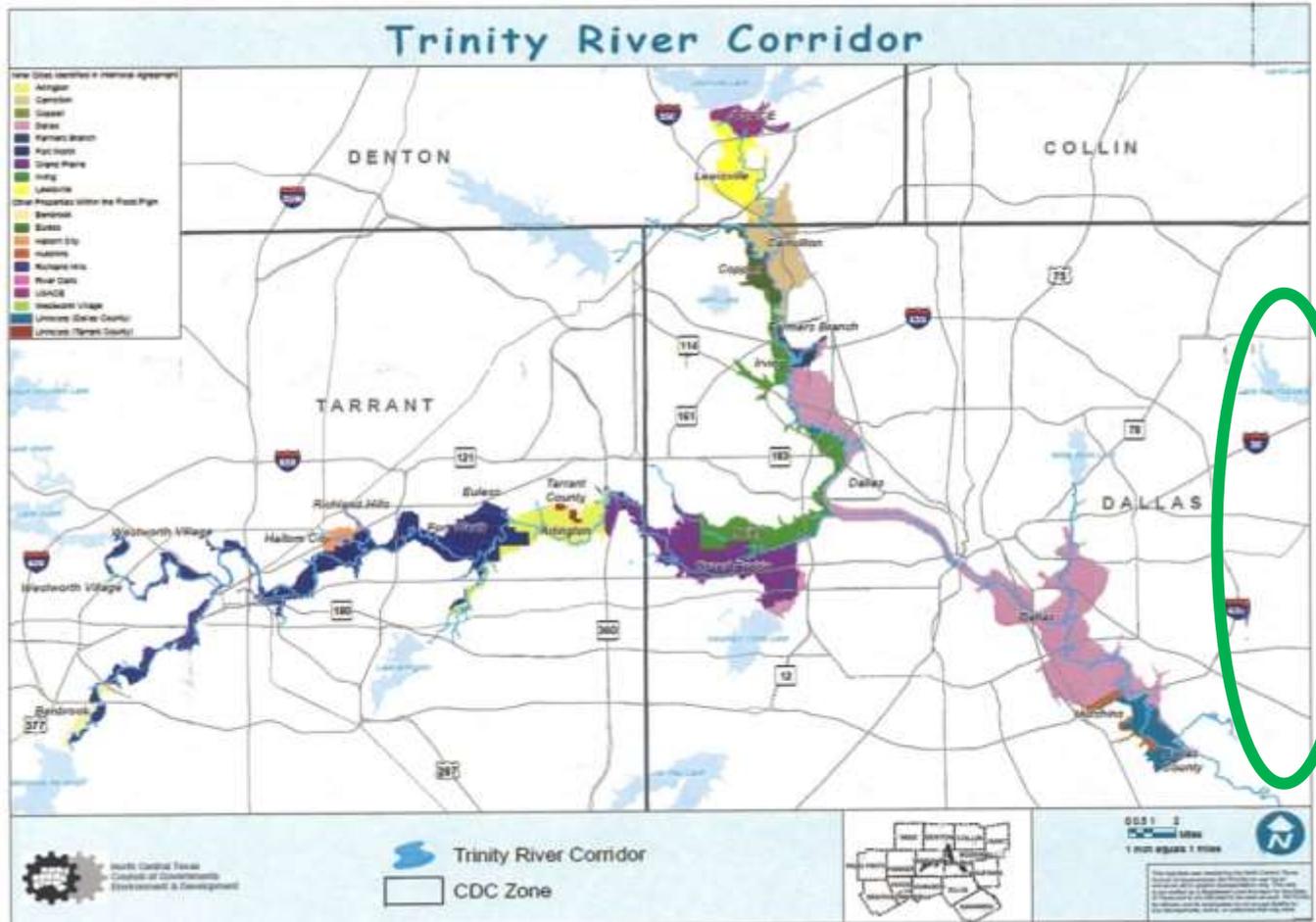
Scope of Work

- ▶ Includes 20 tasks
 - ▶ 5 have been completed
 - ▶ 7 are in progress
 - ▶ 8 to be done pending results of “in progress” tasks
- ▶ Team has met 4 times since *May 21, 2018*
- ▶ Current topics
 - ▶ Putting proposed processes into flowcharts
 - ▶ Model check in/out process and location for files to be stored
 - ▶ Developing letter to FEMA requesting that the agency begins using new consolidated model for CLOMRs and LOMRs

Deliverables

- ▶ Develop draft recommendations
- ▶ Define workflow and file storage diagrams/charts for each program
- ▶ Present recommendations to impacted agencies
- ▶ Develop final recommendation report
- ▶ Provide documentation to be incorporated into NFIP and CDC program documents

FY 18 Work Additional Work Program Items: East Fork Integration



- Mesquite
- Sunnyvale
- Crandall
- Combine
- Forney
- Seagoville
- Balch Springs
- Kaufman County
- Ellis County

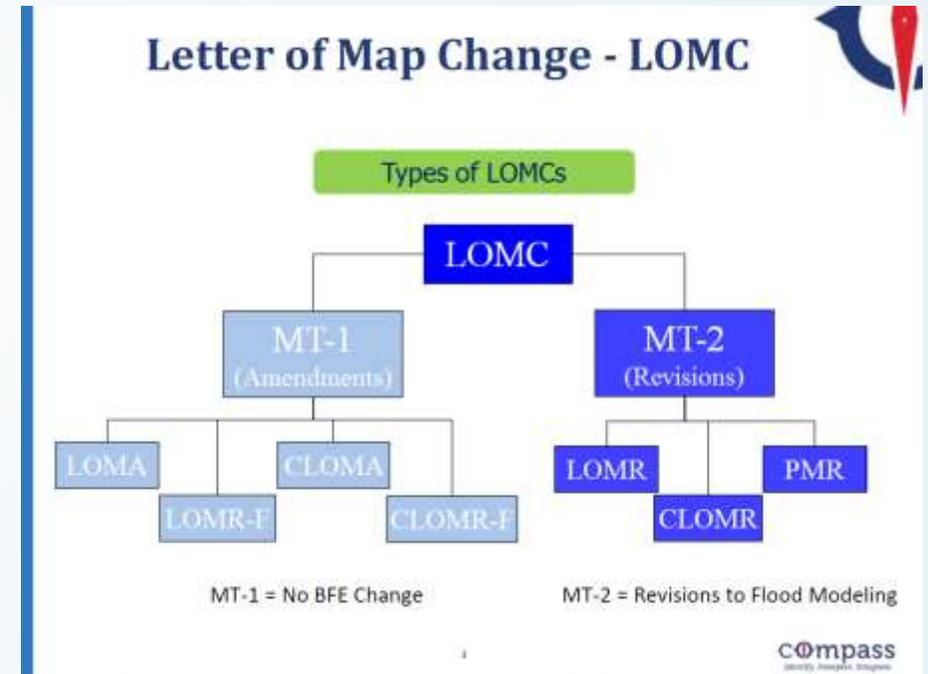
FY 18 Work Additional Work Program Items: East Fork Integration

- **April 2016-January 2017:** Four interest meetings held at Dallas County's Request.
- **September 14, 2017:** TCV Steering Committee votes to approve the continued pursuit of the East Fork Addition.
- **June 22, 2018:** Meeting in Kaufman County to review the program and collect comments on a draft resolution.
- **September 19, 2018:** CDC Manual/Application training will be held in Mesquite at the communities' request.
- **FY2019:** NCTCOG staff will provide support to communities as they consider passing the resolution. FEMA's study on the East Fork Trinity is scheduled for completion. Input and final approval by FMTF and TCV Steering Committee for entrance into the program will be sought.

FY 18 Work Additional Work Program Items

LOMR Process Improvements

- ▶ FEMA Region 6 staff and contractors have visited with FMTF to begin addressing concerns regarding LOMR processing times and communication regarding current models.



FY 18 Work Additional Work Program Items

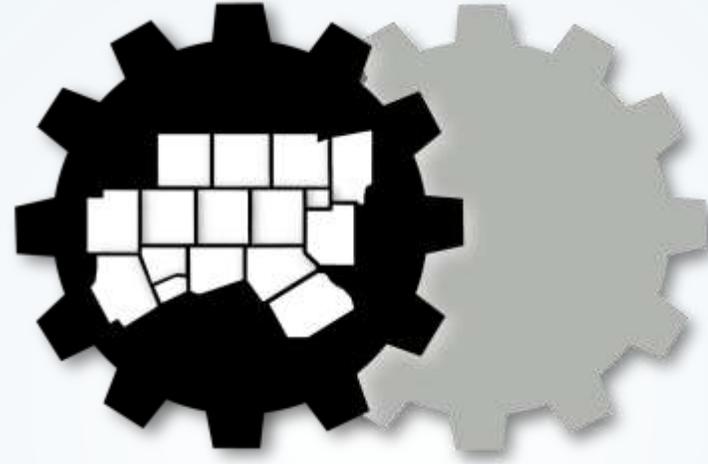
Regional Flood Warning Software



OneRain Price List

System (Annual Fees)	Pricing
StormData Services	\$ 4,950.00
GARR (Gauge-Adjusted Radar Rainfall) Includes: <ul style="list-style-type: none"> OneRain's real-time rainfall estimates; Calibrates Radar rainfall estimates to gauges Produces rainfall custom overlays within maps 1km x 1km, 5-minute resolution 5-minute update of estimates 	Included
Customer Contrail Administrative Support NCTCOG Managed Services/Support Model (Annual Cost)* Includes: <ul style="list-style-type: none"> Website administrative support Managed Homepage and Dashboards Assistance with Member Entity 	Included
Implementation/Technical/Learning Services (One-Time Fees)	
Implementation Services – Client Setup and Configuration	\$ 1,500.00
Implementation Services - Hardware: OneRain Custom Serial to IP Connection Kit <ul style="list-style-type: none"> Digi 4-Port Server custom configured Customized serial cable assembly 	\$ 1,500.00
Implementation Services - Custom Dashboards and Control Widget Configuration <ul style="list-style-type: none"> Enable control for external devices such as warning lights, automated barricades, sirens, etc. Manual test dashboard 	\$ 1,000.00
Technical Services - Historical Data Load	OneRain to quote
Technical Services - Custom Data Feed	OneRain to quote
Technical Services - DataSight Data Analysis Software License <ul style="list-style-type: none"> Supports offline data analysis 	OneRain to quote
Learning Services - Contrail ALERT2 TDMA Manager Training	OneRain to quote

- ▶ Communities can see each other's gauge readings and better prepare for storms
- ▶ Contract was awarded to OneRain, Inc. for the use of their Contrail software.
- ▶ The cooperative contract for communities launched on North Texas SHARE in August 2018.
 - ▶ First 10 communities to sign up get a \$500 discount off the annual subscription fee.



Action Items

2017 Trinity Common Vision Steering Committee Meeting Summary

- ▶ NCTCOG staff are seeking approval of the 2017 Trinity Common Vision Steering Committee Meeting Summary.



North Central Texas Council of Governments

SUMMARY

Trinity River COMMON VISION Steering Committee
Thursday, September 14, 2017
9:30 AM, Metroplex Conference Room
NCTCOG Offices, CPII
616 Six Flags Drive, Arlington, TX 76011

1. Welcome and introductions (Mia Brown)

The meeting began with introductions of all present.

DISCUSSION ITEMS

2. Presentation on COMMON VISION

a. Overview of COMMON VISION and the Corridor Development Certificate (CDC) Program (Mia Brown)

Mia Brown presented an overview of the Trinity COMMON VISION program history and the goals of the program.

b. FEMA/USACE Consolidated Regulatory Model Update (Jerry Cotter)

Jerry Cotter gave an overview of the partnership with FEMA to produce a consolidated model, the advantages a consolidated model would provide, and an update on the creation of the Consolidated Model Team.

3. COMMON VISION Work Program Overview and Activities Update. NCTCOG staff will provide an overview and update of the listed activities of the Trinity River COMMON VISION Program:

a. CDC permitting and changes to the 4th Edition CDC Manual (Mia Brown)

Mia Brown told the committee that 15 CDC applications were received during the fiscal year. This is more than twice the applications in the prior year, and brings the total applications since the beginning of the program to 195. She also informed them that Michael Danella, USACE, clarified some language regarding valley storage in Section 2.1 of the 4th Edition CDC Manual, but did not make any changes to the requirements or process of the CDC.

616 Six Flags Drive, Centerpoint Two
P.O. Box 5888, Arlington, Texas 76005-5888
(817) 640-3300 FAX: 817-608-2372
www.nctcog.org



North Central Texas
Council of Governments
Environment & Development

FY 2019 Trinity Common Vision Work Program

- ▶ **NCTCOG staff are seeking approval of the FY 2019 Trinity Common Vision Work Program.**
- ▶ Additional Technical Activities for 2019 (page 2):
 - ▶ Continued Participation in the Model Consolidation Committee
 - ▶ Continued support of the East Fork Integration
 - ▶ Process Improvements for LOMR Submissions
 - ▶ Administrative Coordination of the Flood Warning Software Contract
- ▶ No change to the cost shares.

**Fiscal Year 2019
NCTCOG REGIONAL WORK PROGRAM
The Trinity River COMMON VISION Program**

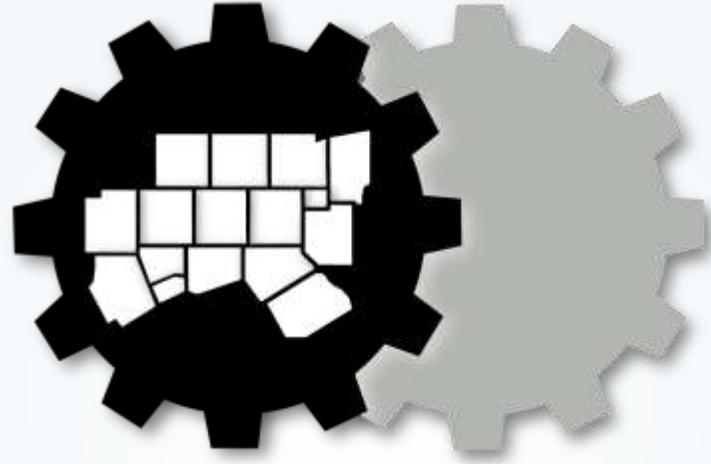
INTRODUCTION: The Trinity River COMMON VISION Program continues to focus on the goals outlined in the Regional Policy Position on Trinity River Corridor – 1989 and the commitment expressed in Interlocal Agreements among the participating communities. Toward the continued goal of maintaining this important cooperative program among the COMMON VISION communities, NCTCOG is proposing a work program of the following ongoing support and technical components.

We propose to maintain the program at a \$100,000 level of support, continuing the cost breakout among the participants as per the previous traditional method based on SPF 1995 Baseline.

SUMMARY OF FY 2019 PROGRAM ELEMENTS

Ongoing support activities:

- **Ongoing Trinity River COMMON VISION Information and Task Force Committee Support:** Continued service and support of the Trinity River Program committees (Common Vision Steering Committee and Flood Management Task Force), as well as distribution of important general Corridor information to the public and to regional delegates at the State and Federal levels.
- **Ongoing Corridor Development Certificate (CDC) Process and mapping support:** Administrative support of the CDC process, technical/procedural assistance to local government participants, coordination with US Army Corps of Engineers (USACE) staff and addressing inquiries from interested individuals.
- **Continued sponsorship of FEMA's NFIP training courses:** Continuation of the long-running partnership with the Federal Emergency Management Agency (FEMA) Region 6 for important training opportunities to be offered in the region for the benefit of the FMTF and other floodplain management officials. The very popular "Managing Floodplain Development through the National Flood Insurance Program (NFIP)" course will be offered, marking the 22nd year that this week long class will be offered at NCTCOG. The class is offered in partnership with the Texas Floodplain Manager's Association (TFMA) who will offer testing for students to become Certified Floodplain Managers (CFMs). NCTCOG will also continue partnering with TFMA to host CFM Exams 4-5 times per year.
- **Ongoing effort to explore partnership and outreach opportunities:** Continued efforts to partner with agencies including the US Army Corps of Engineers Fort Worth District (USACE-FWD), FEMA, TWDB, TCEQ, USGS, NRCS, and TFMA for traditional projects or educational opportunities.
- **Continued exploration of regional cooperative detention/retention strategies:** Discussion and investigation of potential strategies will continue on key critical watersheds and segments throughout the Trinity Basin. Continue to research and collect information on existing management approaches in those areas.



Presentation Items

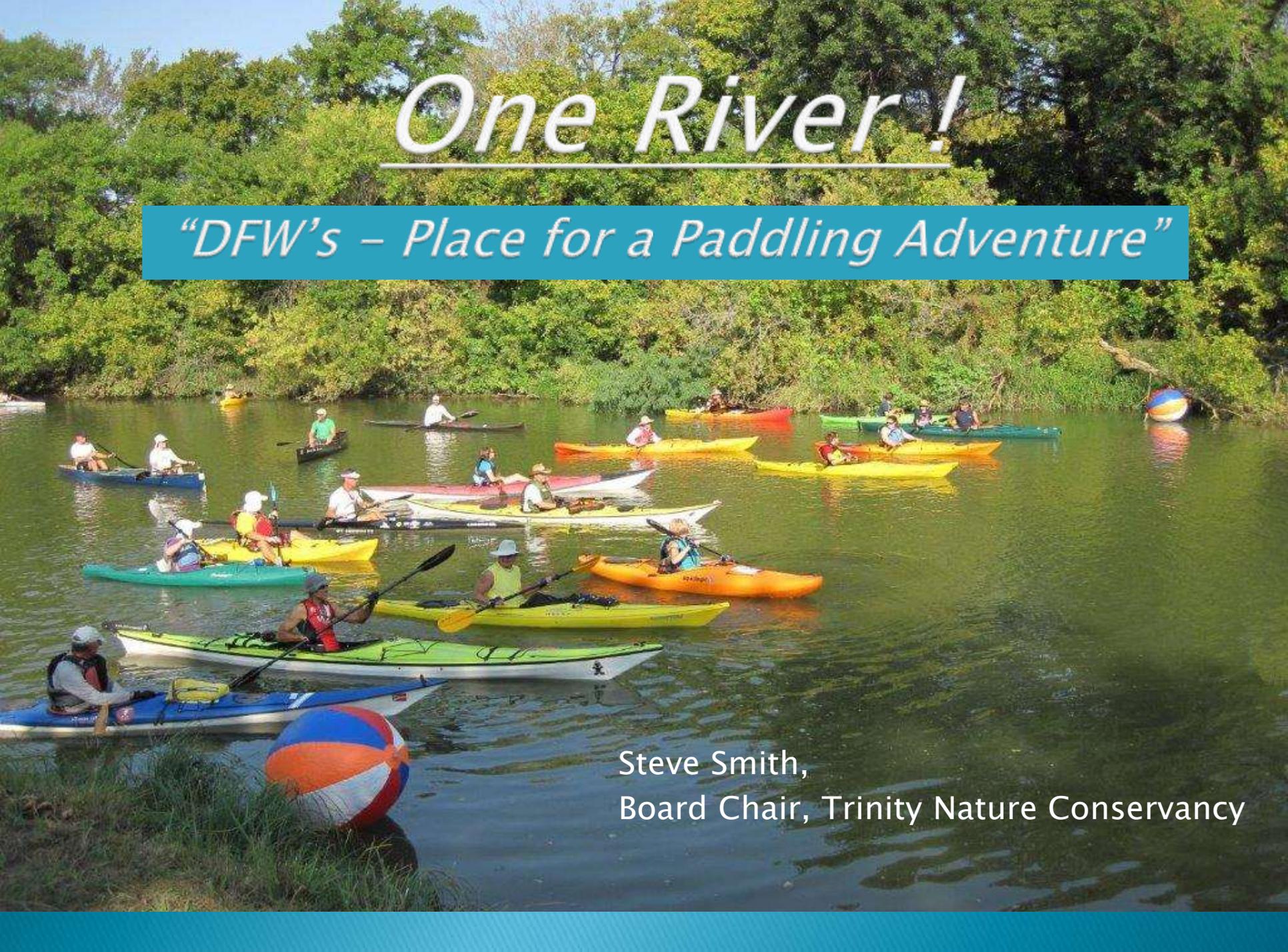
Trinity Water Trails Presentation

Steve Smith – Trinity Nature Conservancy



One River!

“DFW’s – Place for a Paddling Adventure”



Steve Smith,
Board Chair, Trinity Nature Conservancy

One River Initiative

▶ Who are we?

- Steve Smith – Trinity Nature Conservancy, Board Chair
 - Erika Pelletier – National Park Conservation Assn., Program Manager Texas Regional Office
 - Deric Salser – Trinity Nature Conservancy, Executive Director
- 

One River Initiative

▶ Purpose of Presentation

- Inform the Steering Committee of an initiative to enhance the recreational value of the Trinity River in North Texas
 - Receive feedback to improve the initiative
 - Solicit written support for the possibility of bringing the National Park Service brand to the Trinity River
- 

Why Are We Presenting Today

- ▶ Your Group has a history of regulating segment of this river for what we are proposing
- ▶ The 1989 Common Vision Regional Policy for the Trinity River Corridor designated your group as Stewards of the river corridor.
 - Which means we need your Support to Move Forward
- ▶ The Policy in 1998 included
 - Initiate a World-Class Trinity Green way Strategy for active and passive recreation linked to the regional trails system

A Goal our Proposal would Help Facilitate



One River Initiative

▶ Goals of the One River Initiative

1. Unite the North Texas paddling community into a single cohesive organization
2. Aggregate all North Texas Trinity River canoe launch sites into a single paddling trail of over 100 miles
 - ▶ Help establish additional sites
 - ▶ Maintain the river for safe paddling
 - ▶ Market the Trinity River as a single paddling trail
3. Receive National Park Service designation as a “National Recreation Trail”

Goal #1

- ▶ **Unite the North Texas paddling community into a single cohesive organization**

One River Initiative

- ▶ Who is the North Texas Paddling Community?
 - Paddling Clubs – Currently at least 6, with over 12,000 members
 - Businesses – Currently at least 17 that conduct paddling excursions and instructions and/or sell canoes/kayaks/rafts
 - Public Officials – Organizations, such as members of this task force, with a public-sector stake in the Trinity River

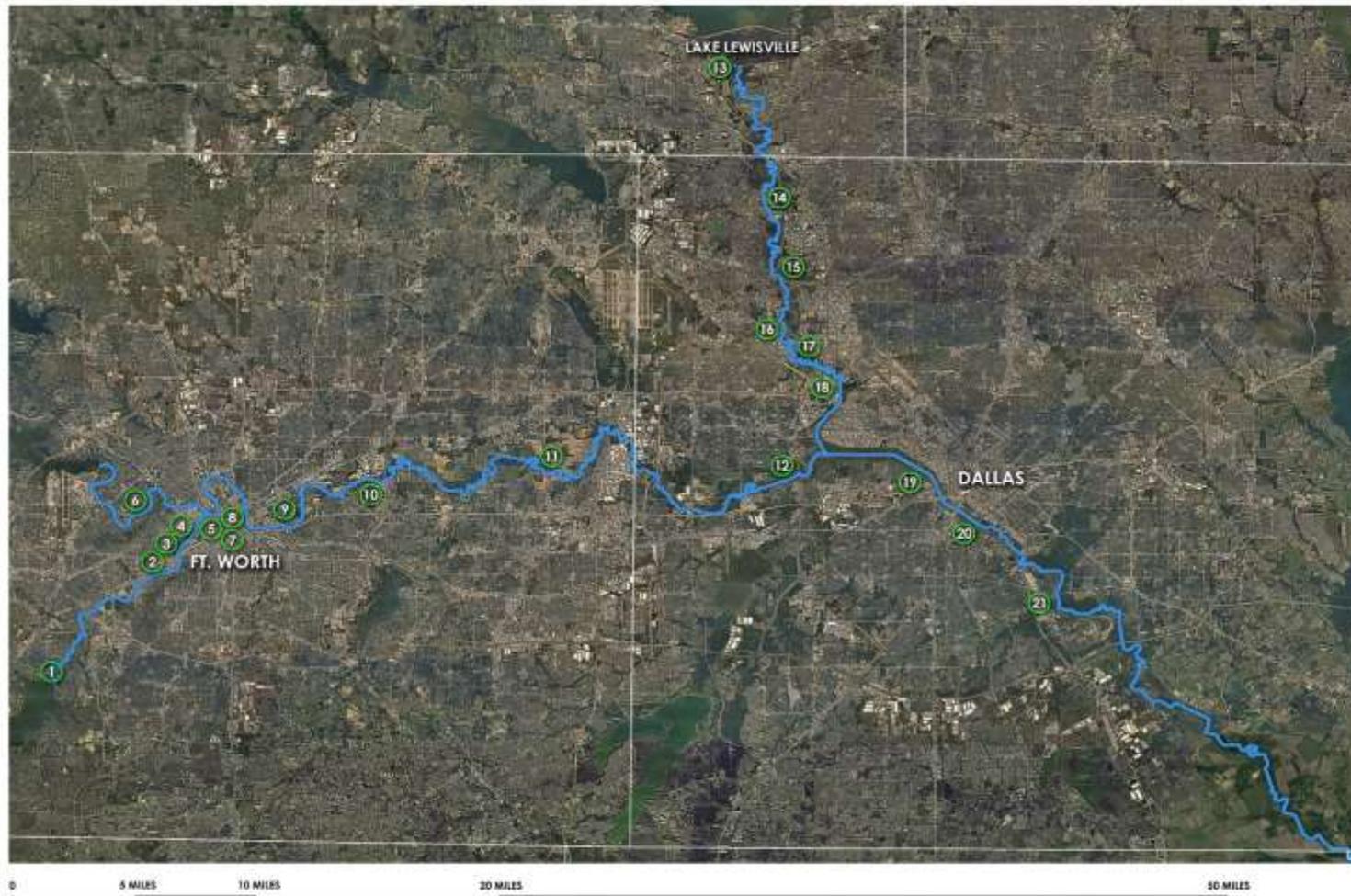
One River Initiative

- ▶ **Proposed Organization – Trinity River Runners Council**
 - **Mission – To help transform the Trinity River into a nationally recognized, high quality recreation asset**
 - **Governance – Establish a board of directors with members from all the stakeholder groups**
 - **Corporation type – Initially a task force of the Trinity Nature Conservancy (an existing 501c(3)) and eventually with its own 501c(3) designation**

Goal #2

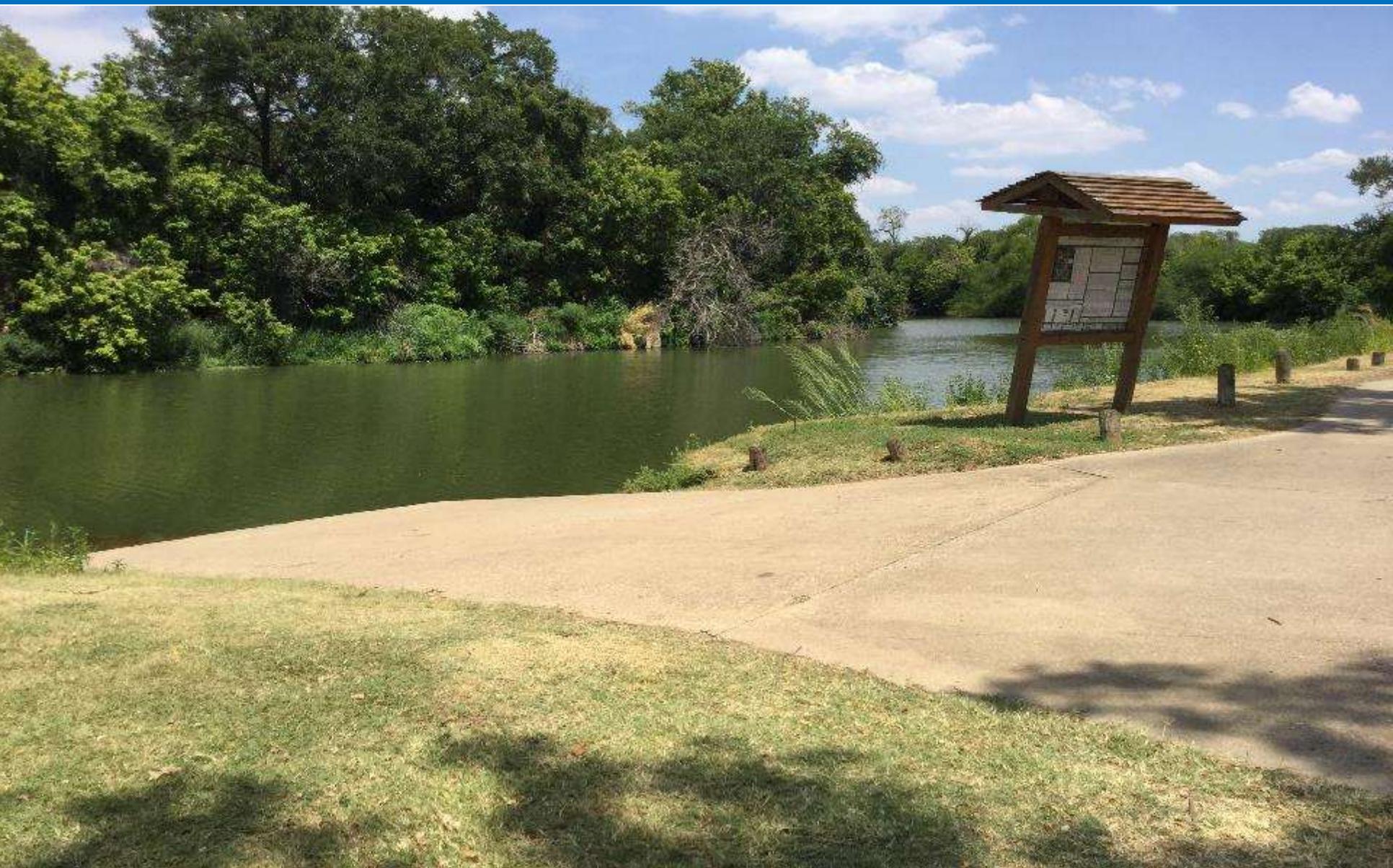
- ▶ **Aggregate all North Texas Trinity River canoe launch sites into a single paddling trail of over 100 miles**

One River Initiative – Current Launches



LEGEND				
LAUNCH LOCATION	DISTANCE (MILES)	CITY	COUNTY	
CLEAR FORK				
1. PICAS VALLEY RD. (LAKE NEWBROOK DAM)	START	FT. WORTH	TARRANT	
2. ROGERS ST.	0.4			
3. TRINITY PARK - SOUTH ENTRANCE	1.2			
4. TRINITY PARK - CENTRAL PLAYGROUND	0.3			
5. FAIRBEE ISLAND PAVILION	3.3			
TOTAL CLEAR FORK	11.4 MILES			
WEST FORK				
6. WHITE SETTLEMENT RD.	START			
7. FAIRBEE ISLAND DOCK	4.2			
8. KARBACH FIELD PARK	2.3			
9. BEACH ST.	1.4			
10. KASSEY EBBSVILLE RD.	2.4			
11. RIVER LEGACY PARK	17.3	AARNDORF		
12. MOUNTAIN CREEK PRESERVE*	18.7	IRVING	DALLAS	
RIVER CONFLUENCE	2.3			
TOTAL WEST FORK	46.8 MILES			
ELM FORK				
13. JONES ST. (LAKE IRVINGVILLE DAM)	START	LEWISVILLE	DENTON	
14. AUMNER PARK	11.6	CARROLLTON	DALLAS	
15. DIMENSIONAL TRACT	1.7	IRVING		
16. BEE'S FOOT PARK	4.3			
17. CALIFORNIA CROSSING PARK	1.8	DALLAS		
18. I-35 ACCESS ROAD	2.4			
RIVER CONFLUENCE	3.5			
TOTAL ELM FORK	26.8 MILES			
MAIN STEM				
19. TRANNELL CROW PARK	2.5			
20. MOORE PARK	2.7			
21. LOOP 12	4.0			
WALLOY BRIDGE RD.	17.6	LEWISVILLE		
TOTAL MAIN STEM	21.9 MILES			
TRINITY RIVER WATER TRAIL TOTAL	119.8 MILES			

Current Launch – McInnish Park



Current Launch – California Crossing



Current Launch – Bird's Fort Park

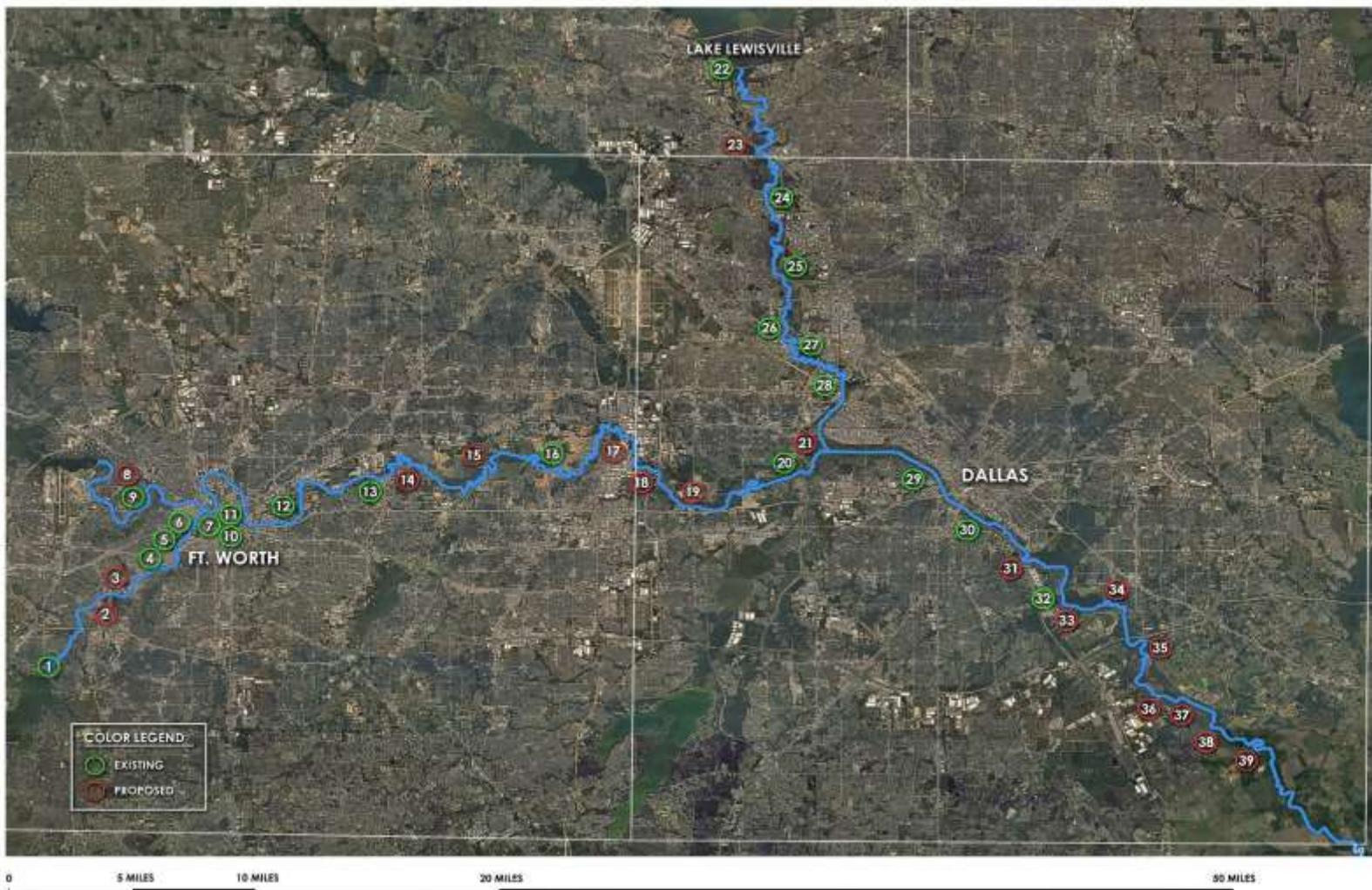


One River Initiative – Proposed Launches

LEGEND

LAUNCH LOCATION	DISTANCE (MILES)
CLEAR FORK	
1 PECAN VALLEY RD. (LAKE BIRNEDGE DAM)*	START
2 WATERCOURSE DR.	4.6
3 RIVER PARK	5.8
4 ROGERS ST.*	2.4
5 TRINITY PARK - SOUTH ENTRANCE*	1.2
6 TRINITY PARK - CENTRAL PLAYGROUND*	5.3
7 PANTHER ISLAND PAVILION*	5.3
TOTAL CLEAR FORK	11.8 MILES
WEST FORK	
8 MEANSBERG RD.	START
9 WYKE SETTLEMENT RD.*	3.7
10 PANTHER ISLAND DOCK*	4.2
11 HARMON FIELD PARK*	2.3
12 BEACH ST.*	1.4
13 HOOKEY KEEVILLE RD.*	2.6
14 MALLARD COVE PARK	6.0
15 GREENBELT RD.	7.1
16 RIVER LEGACY PARK*	4.2
17 HWY 345 (ENDER BRIDGE)	5.7
18 MIKE LEWIS PARK	3.9
19 BELTUNE (LONESTAR PARK)	3.8
20 MOUNTAIN CREEK PRESERVE*	6.1
21 RIVER CONfluence	2.5
TOTAL WEST FORK	62.6 MILES
ELM FORK	
22 JONES ST. (LAKE LEWISVILLE DAM)*	START
23 HERMON PERRY	5.6
24 McGINNISH PARK*	5.7
25 DIMENSIONAL TRACT*	1.7
26 BIRD'S FOOT PARK*	6.2
27 CALIFORNIA CROSSING PARK*	1.8
28 I-35 ACCESS ROAD*	5.6
RIVER CONfluence	2.5
TOTAL ELM FORK	28.3 MILES
MAIN STEM	
29 TRAWNELL CROW PARK*	2.4
30 MOORE PARK*	2.7
31 I-45 (ENDER BRIDGE)	3.0
32 LODOP ST*	2.0
33 SIMPSON STUART RD. (LOPPA PRESERVE)	2.0
34 MCCOMMAS BLUFF PRESERVE	1.6
35 I-20 (SOUTH OF INTERSTATE)	1.8
36 DOWDY FERRY RD.	3.2
37 GOAT ISLAND PRESERVE	2.4
38 BELTUNE RD.	2.6
39 MALLOY BRIDGE RD.	5.2
TOTAL MAIN STEM	21.9 MILES
TRINITY RIVER WATER TRAIL TOTAL	123.4 MILES

NOTE: * INDICATES THE LAUNCH IS CURRENTLY OPERATIONAL INCLUDING PARKING AND A LAUNCH RAMP TO THE RIVER. TWENTY-ONE OF THESE EXIST AND THE OTHER EIGHTEEN ARE PROPOSED.



COLOR LEGEND

- EXISTING
- PROPOSED

PROPOSED TRINITY RIVER WATER TRAIL - CURRENT AND PROPOSED CANOE LAUNCH LOCATIONS

Goal #3

- ▶ **Receive National Park Service designation as a “National Recreation Trail”**

One River Initiative

▶ National Park Service Recreation Trails

- The National Recreation Trails system was created by the National Park Service in 1968.
- In 2012, the National Recreation Trails system was expanded to include paddling trails on rivers, lakes and other water bodies.
- Most National Recreation Trails are managed by Non-Profit citizen groups, with the National Park Service only managing one, because it is a National Recreation Area

One River Initiative

- ▶ How To Achieve National Recreation Trail Status
 - Complete an application with 7 sections mostly on the river's location/features and containing a commitment to maintain the river/launch sites according to National Park Service "Best Management Practices"
 - The deadline for submitting the application is Nov. 1 of each year.
 - The National Park Service evaluates each application, works with the applicant to fine-tune the application, and seemingly awards the National Recreation Trail to the majority of the applicants.

One River Initiative

- ▶ What Do We Need From You?
 - Feedback on this 3-pronged proposal
 - Agreement to allow your part of the river to be included in the One River Initiative
 - A letter of support for our application to the National Park Service

Letter of Support

Steve Smith

Trinity Nature Conservancy
100 Crescent Court
Suite 1150
Dallas, TX 75201

Date:

RE: Letter of Support for the creation of a National Recreation Trail along the Trinity River and the Elm, Fork, West Fork and Clear Fork Branches

Dear Steve,

The [CITY OR ENTITY NAME] supports the Trinity Nature Conservancy (TNC) in its application to the National Parks Service (NPS) for the creation of a National Recreation Trail in the Dallas / Fort Worth, Texas region along the Trinity River.

Through established partnerships with local governments, water districts, the paddling community, local outfitters, local conservancies and other state and federal partners, this project will bring attention to the recreational and educational benefits the Trinity River has to offer. This project will also provide an opportunity to highlight this natural feature that traverses a highly urbanized landscape and the importance of maintaining a healthy river for future generations.

The Trinity River and the Great Trinity Forest are valuable assets that could be further leveraged by cities and counties for educational, recreational, and economic benefits. Dallas / Fort Worth and the local municipalities are focused on improving the quality of life in the DFW metroplex by adding and improving community parks and creating hundreds of miles of walking and bike trails. The creation of a national recreation trail will further enhance the outdoor quality of life for all DFW residents and is consistent with regional goals to "initiate a world-class Trinity Greenway Strategy for active and passive recreation linked to the regional trails system (NCTCOG, 1998)."

A significant benefit of establishing a National Recreation Trail for the Trinity River is the educational opportunities regarding the river. Currently a number of organizations provide environmental science education based programs at the river. For example, the Trinity River Audubon Center, located in Dallas County, currently teaches 25,000 elementary age children a year through an environmental science class, including using water-sampling techniques. Achieving National Recreation Trail status for the Trinity River will increase the opportunities for expansion of programs such as this.

The [CITY OR ENTITY NAME] supports the TNC in its submittal of an application to the NPS to achieve designation of the Trinity River as a National Recreation Trail. Upon designation of the Trinity River and its branches as a National Recreation Trail, the City of [CITY OR ENTITY NAME] will commit to further collaboration with the Trinity Nature Conservancy and other stakeholders to develop a regional initiative to define roles, next steps, and funding opportunities to continue to improve access to the river. The [CITY OR ENTITY NAME] recognizes designation of the Trinity as a National Recreation Trail by the NPS as an important piece of bringing positive long-term benefits to the participating communities and the larger region.

Sincerely,

[REPRESENTATIVE]
[TITLE]

One River Initiative

▶ Benefits To You

- You will get an army of volunteers to help maintain your section of the river and your canoe launch sites.
 - You will get the National Park Service brand and its logo associated with your area of the river.
 - The scale of the overall project should open a potential pipeline to significant private/public funding to upgrade and maintain the water trail.
- 

Cost to You

- ▶ **No expense associated with integrating all segments of the river into a single water trail**
 - ▶ **No extra maintenance expenses associated with the National Park designation**
 - ▶ **A Communication channel will be established through NCTCOG to report to this group as the project develops**
- 

One River Initiative

▶ Summary

Leaders of Trinity Nature Conservancy and Dallas Downriver Club are proposing a One River Initiative which would:

- Unite the North Texas paddling community into a single cohesive organization
- Aggregate all North Texas Trinity River canoe launch sites and the river between these sites into a single paddling trail over 100 miles long and manage it with consistent quality standards
- Seek National Park Service designation of the Trinity River as a “National Recreation Trail”

Questions / Comments

One River!



Steve Smith

Steve@smithasset.com

214-880-4601

One River!



Related Activities Update



16-County Watershed Management Effort

- ▶ Menu of Regionally Recommended Standards in Watershed Management for New Development Within County Regulated Areas.
- ▶ Developed by our counties at a March 2017 Roundtable.
- ▶ Presented to the 16-County Watershed Management Forum on July 12, 2017.
- ▶ NCTCOG Executive Board endorsed this effort in October 2017.
- ▶ Dallas, Denton, and Kaufman Counties have fully or partially adopted these standards.



Menu of Regionally Recommended Standards in Watershed Management For New Development Within County Regulated Areas

1. Design infrastructure to fully developed conditions with approved land-use maps if data is available
2. Begin protection at the most upstream end of the watershed above Federal Emergency Management Agency Limit of Detail Study
3. Maintain unfilled valley storage areas
4. Protect against and reduce erosive velocities
5. Match pre-developed site runoffs
6. Verify/require adequate downstream conveyance
7. Require freeboard from fully developed (if data is available) and changing watershed conditions
8. Define written operation and maintenance responsibilities
9. Size conveyance of street and storm systems adequately to safely convey traffic
10. Create stream buffers and preserve open space; limit clearing and grading
11. Consider regional (on or off stream) detention incentives
12. Implement Conservation and/or Cluster Development incentives
13. Encouraging low impact development techniques and/or green infrastructure

These Regionally Recommended Standards in Watershed Management were developed by the North Central Texas Countywide Watershed Management Roundtable held on March 14, 2017

Cooperating Technical Partners Grant

Federal Emergency Management Agency

2004

- Joined CTP
- Created Master Plan

2009

- NCTCOG Participates in Map Mod

2012

- West Fork Trinity and Elm Fork Trinity Discovery

2013

- Village Creek Flood Risk Project

2014

- Bear Creek Flood Risk Project

2015

- Cedar and Denton Watershed Discovery
- Lynchburg and Irving Creek Flood Risk Studies

2016

- East Fork Trinity Discovery
- Silver Creek and McAnear Creek Flood Risk Studies

2017

- Richland-Chambers Watershed Discovery
- Town Creek and Clear Fork Tributary Flood Risk Studies

2018

- Marys Creek Flood Risk Study

Integrated Stormwater Management - iSWM



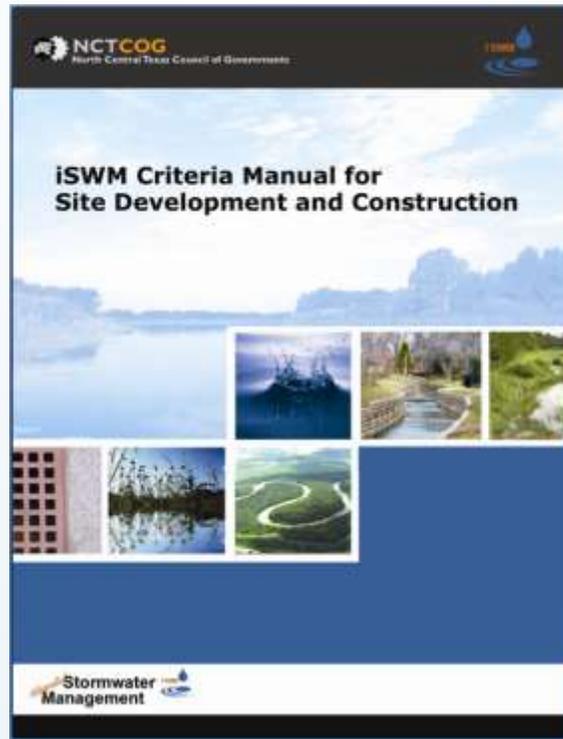
Why iSWM?

- Flooding and streambank erosion due to increased runoff
- Water quality concerns / stormwater regulations
- Loss of natural features
- Interest in green infrastructure
- Comprehensive approach needed
- Regional consistency and equity



iSWM Resources

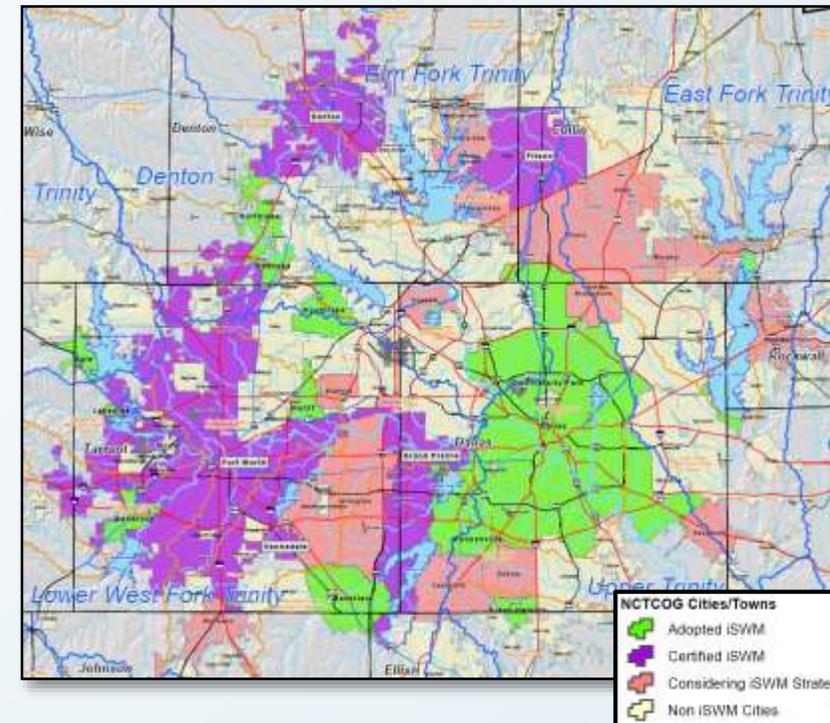
- Technical Manual
- Criteria Manual



Certified Communities:

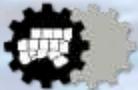
- Denton (Silver)
- Grand Prairie (Silver)
- Kennedale (Silver)
- Frisco (Silver)
- Fort Worth (Silver)
- Irving (Silver)

Founding Communities:



NOAA Atlas 14 Update

Jerry Cotter - USACE



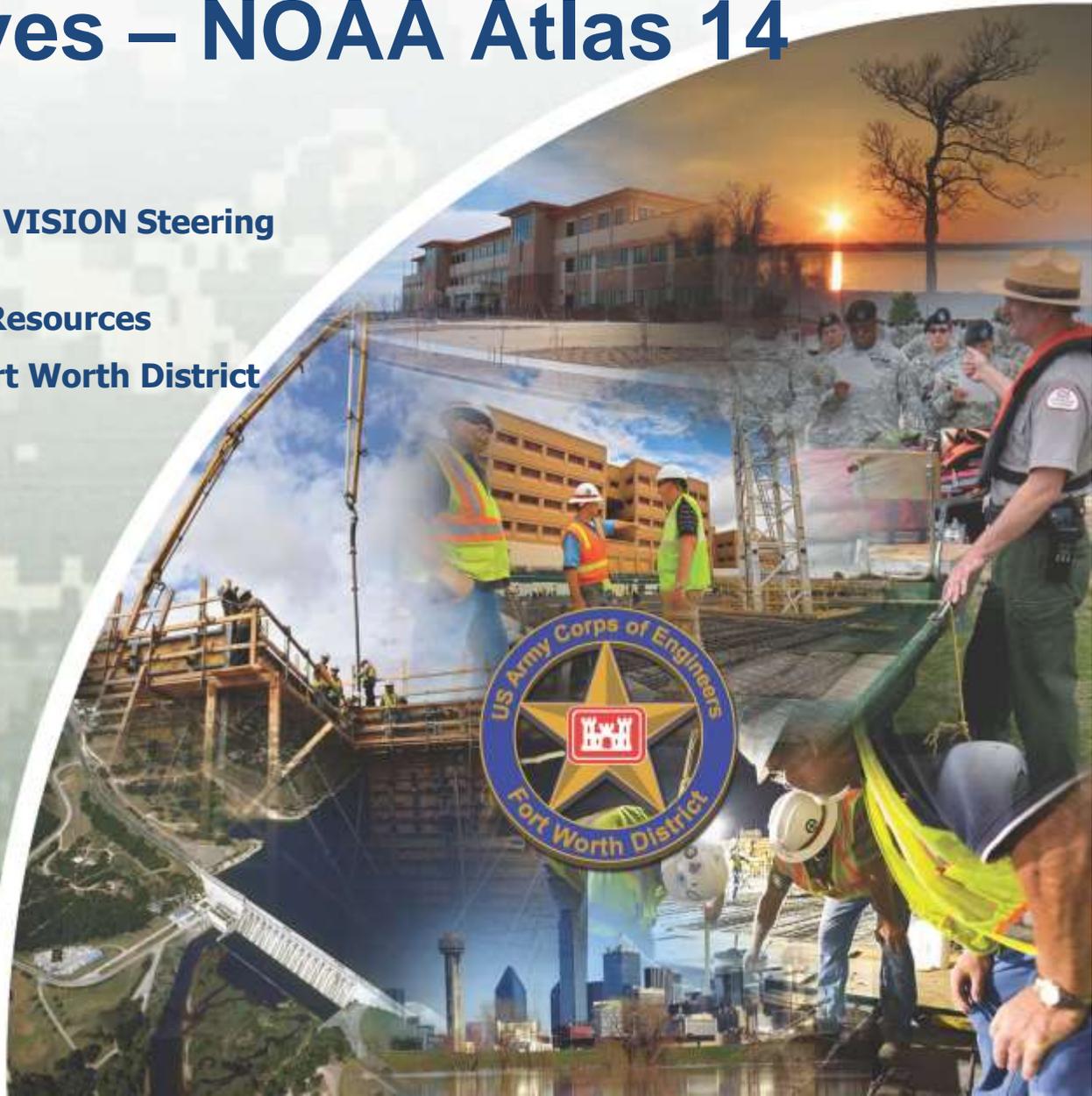
InFRM Flood Risk Management Initiatives – NOAA Atlas 14

Date: 13 September 2018

**Audience: Trinity River COMMON VISION Steering
Committee**

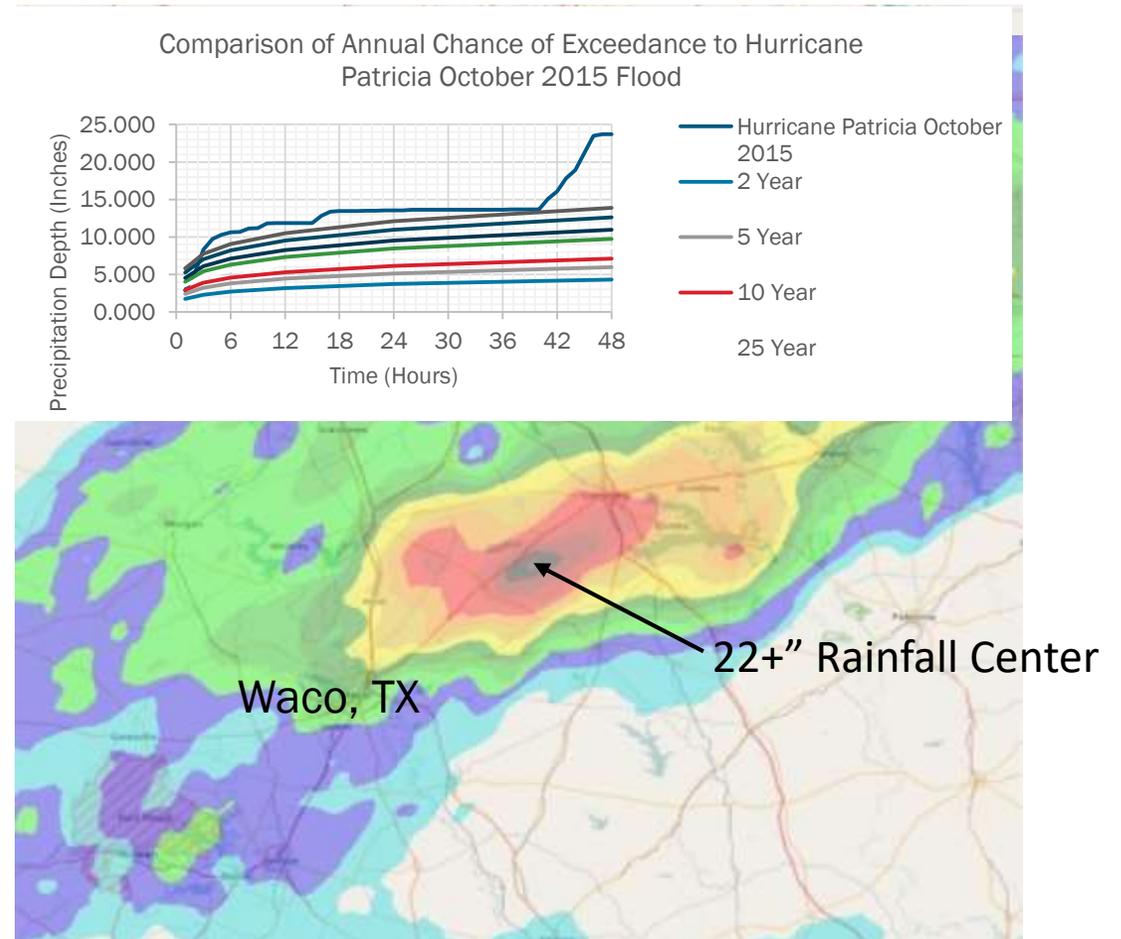
Jerry L. Cotter P.E., Chief Water Resources

U.S. Army Corps of Engineers, Fort Worth District



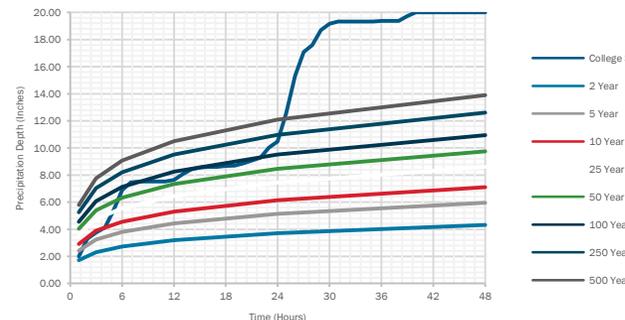
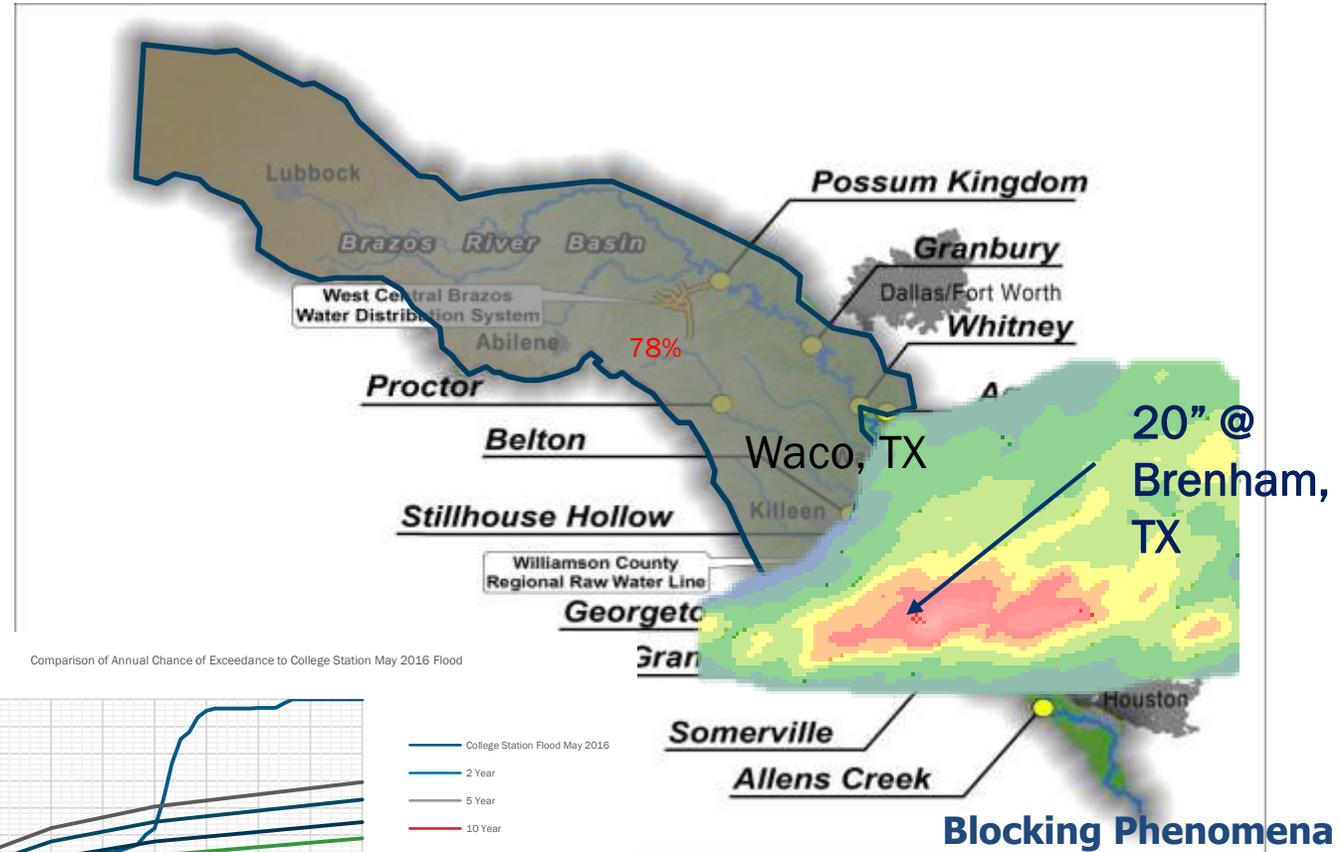
Why InFRM – Tropical Storm Patricia, October 2015

- **22+ inches**
- **Surcharge operations at Richland Chambers Reservoir (TRWD)**
- **Localized flooding and infrastructure impacts**
- **Off the charts!**



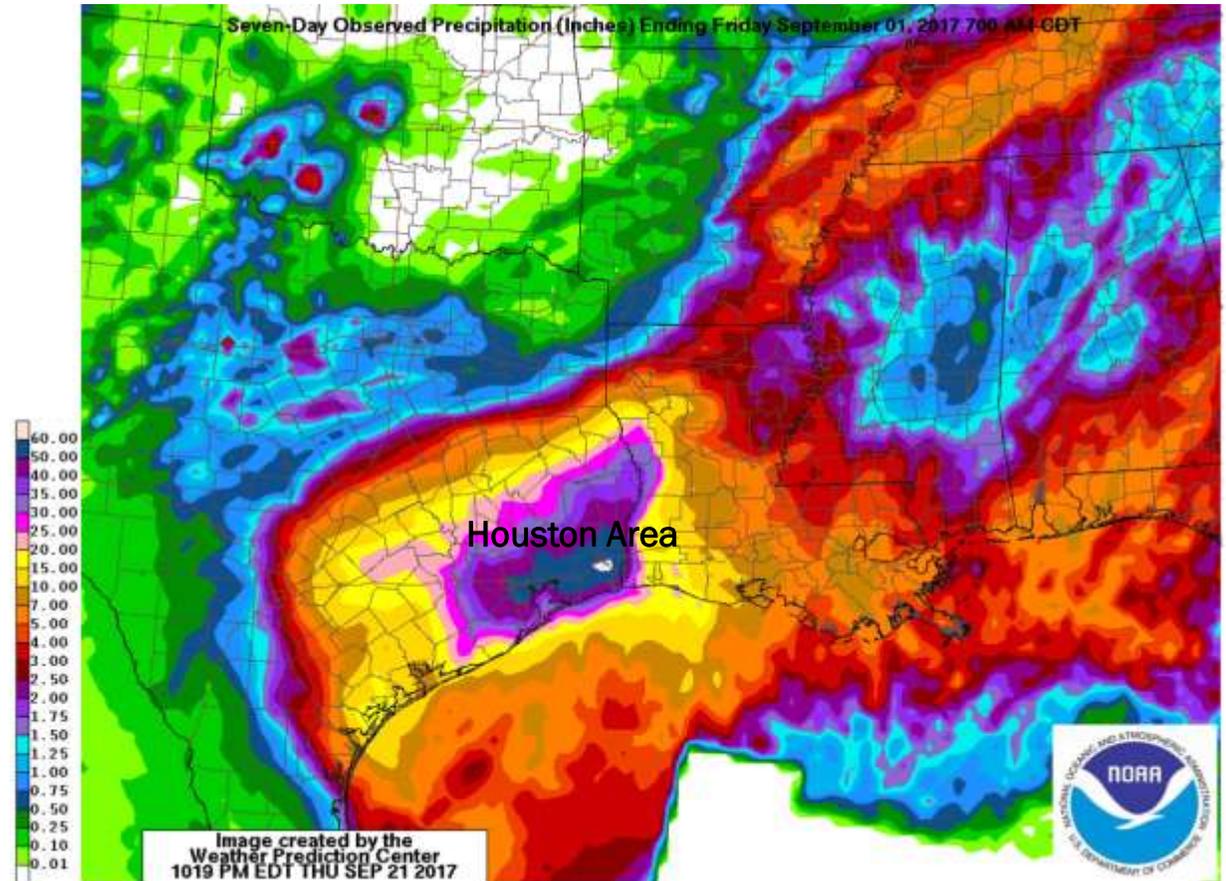
Why InFRM - Brazos River Basin Convective Storm, May 26-27, 2016

- 20+ inches
- Somerville Reservoir flood storage exhausted (USACE)
- Surcharge operation at Somerville Reservoir (USACE)
- Significant localized flooding and impact to infrastructure
- Off the charts!



Why InFRM – Hurricane Harvey Storm

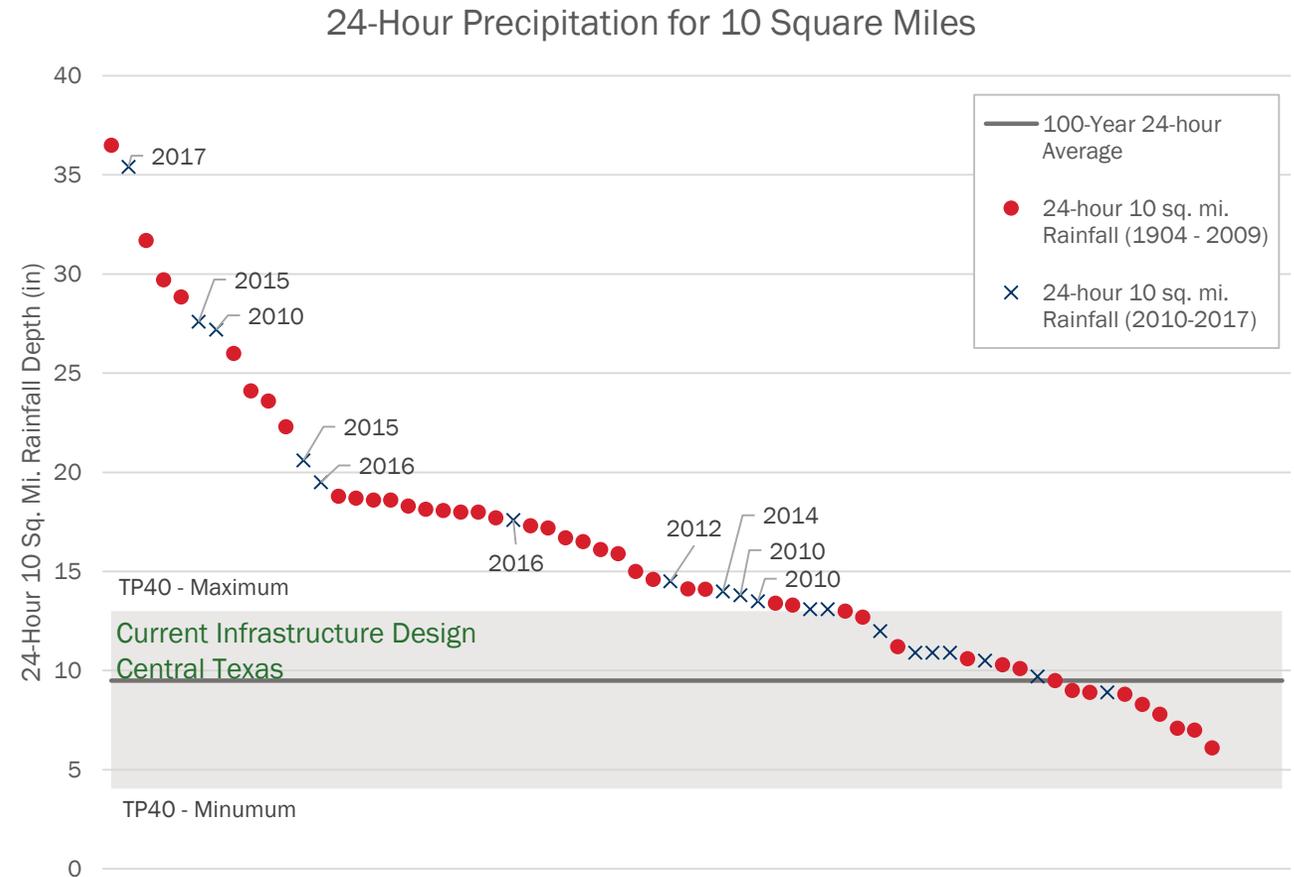
- Rainfall totals up to 60”
- Approaching or exceeding regional PMP
- 23,000 + mi²
(CT, RI, DE, NJ)
- Largest storm in continental US history
- OFF THE CHARTS!



Max: 82.07 inches

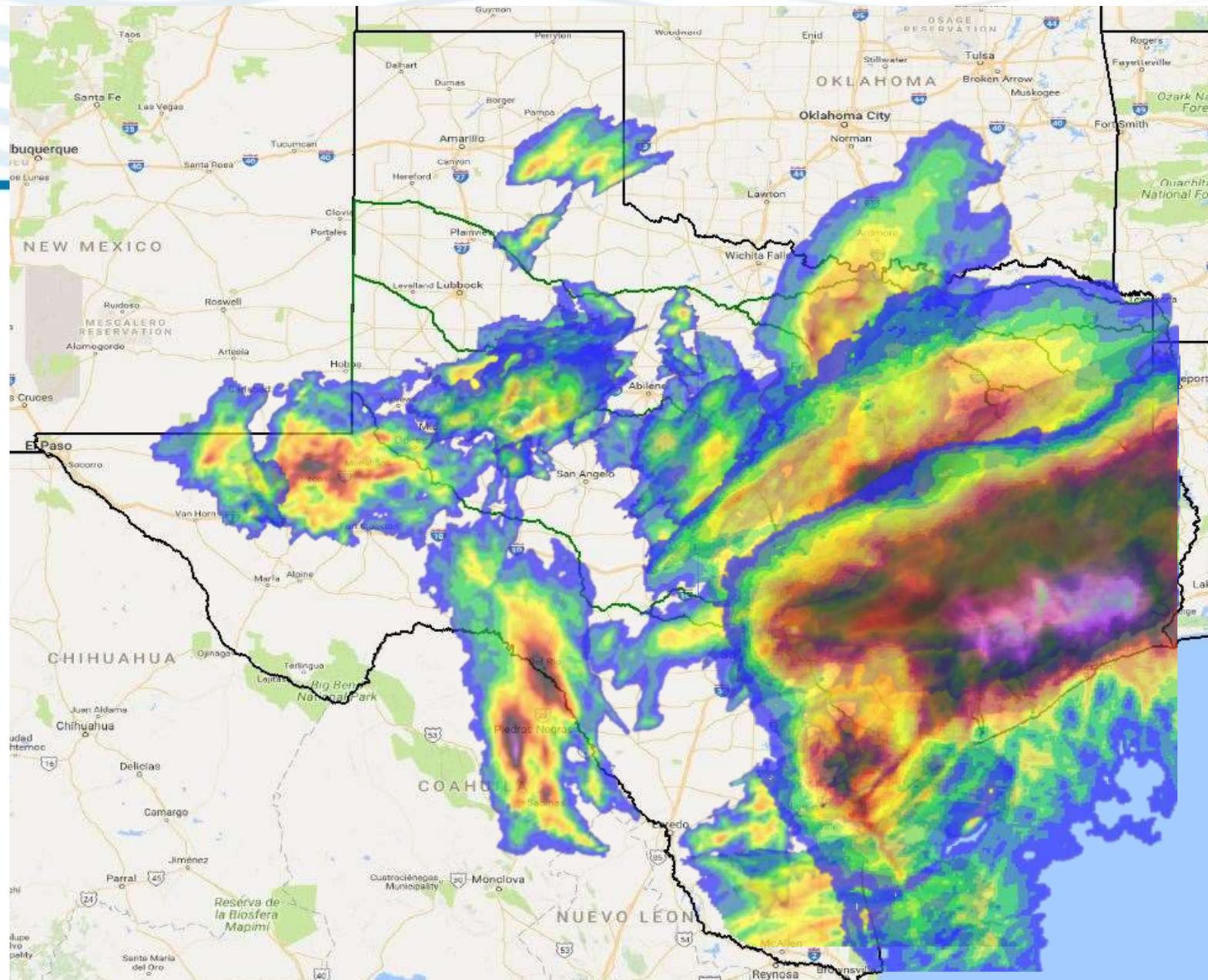
Why InFRM - Storms Exceeding Infrastructure and NFIP Standards

- **Regional observed storms**
 - USACE extreme storm database
- **24-hour rainfall for 10 mi²**
- **Plotted in descending order**
- **Grey band is current design standard (100-year) for all of TX**
- **Blue X's points are 2010-2017 storms that exceed 100-year**
- **18 events exceeded the 100-yr design standard**



Why InFRM - Storms

- Storm exceeding infrastructure and NFIP standards
- 2010-2017



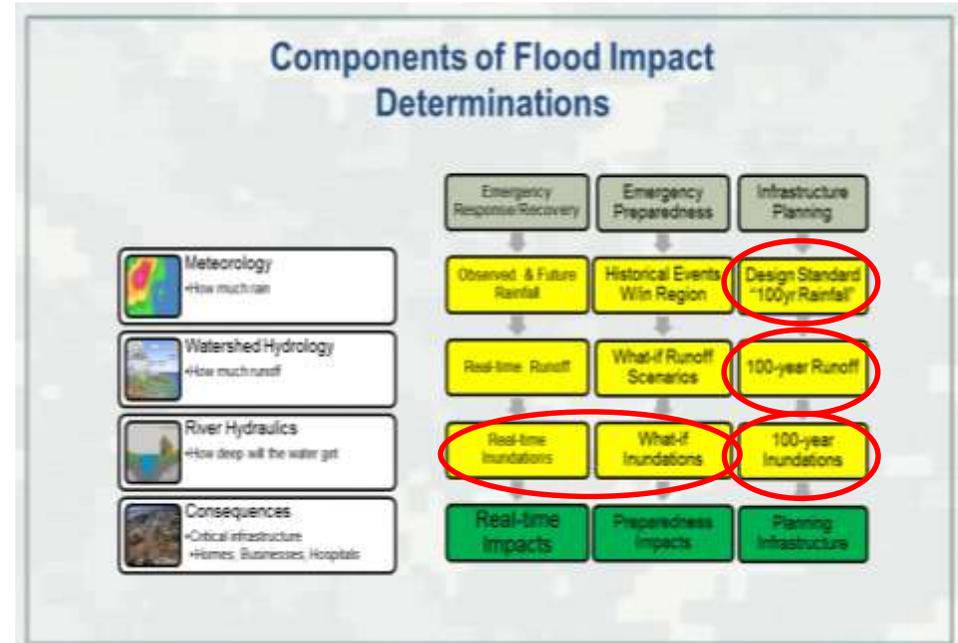
Interagency Flood Risk Management (InFRM)

- Established 2014
- Integrated Water Resources Science and Services (IWRSS) program
- Regional (FEMA Region 6)/Statewide/Basin-wide approaches & support
- Supports common missions
- Collaboration
- Leveraging resources and information
- Limit duplication of effort
- www.InFRM.US



Interagency Flood Risk Management (InFRM) Products and Services

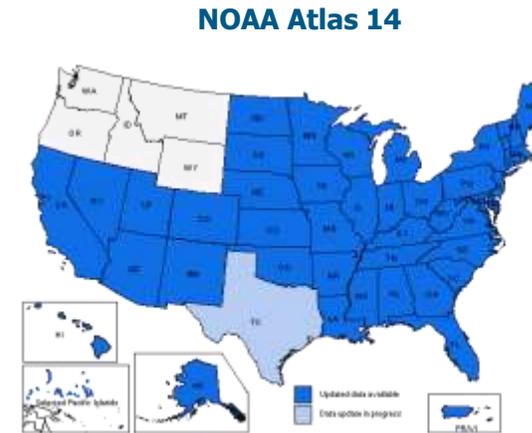
- NOAA Atlas 14 (what is the 100-year rainfall)
- Flood Inundation Map Library & Scenario viewer
- Watershed Hydrology Assessments (what is the 100-year flow)
- Base Level Engineering BFE Viewer (what is the BFE at my location)
- WEB services @ www.InFRM.US



NOAA Atlas 14, Precipitation Frequency Estimates (Planning and Mitigation)

InFRM – Meteorology Research Initiatives, NOAA Atlas 14

- **What is it:**
 - Precipitation frequency estimates
 - Informs us of how much rain to expect in a 100-yr storm event
 - Non-regulatory product
- **Benefits**
 - Better understanding of the risk from extreme precipitation events
 - Infrastructure design, bridges, culverts, wastewater, water supply
 - Floodplain mapping (NFIP), where can we safely construct new neighborhoods
 - Preparedness or mitigation planning
- **Ongoing studies**
 - NOAA Atlas 14 (September 2018)
 - Extreme storm HHT & Extreme storm DB



InFRM – Accessing NOAA Atlas 14

- To access NOAA Atlas 14 data (beginning 26 September 2018)
 - Navigate to:
<http://hdsc.nws.noaa.gov/hdsc/pfds/>
 - Or thru
www.InFRM.US
- Click on a study location
- Access tables, and other forms of data in electronic format
- Utilize USACE applications that incorporate NOAA Atlas 14 data
- Use an updated NFIP map

PDFS-based precipitation frequency estimates with 95% confidence intervals (in inches)

Average recurrence interval (years)

Duration	1	2	5	10	25	50	100	200	500	1000
10min	0.005	0.006	0.008	0.010	0.013	0.016	0.020	0.025	0.030	0.035
15min	0.007	0.009	0.012	0.015	0.019	0.024	0.030	0.037	0.045	0.053
30min	0.012	0.015	0.020	0.025	0.032	0.040	0.050	0.062	0.075	0.090
1hr	0.018	0.022	0.030	0.038	0.048	0.060	0.075	0.092	0.110	0.130
2hr	0.025	0.030	0.040	0.050	0.062	0.078	0.095	0.115	0.140	0.170
3hr	0.028	0.034	0.045	0.056	0.070	0.088	0.108	0.130	0.160	0.195
4hr	0.030	0.036	0.048	0.060	0.075	0.095	0.118	0.142	0.175	0.215
6hr	0.035	0.042	0.055	0.068	0.085	0.105	0.130	0.160	0.200	0.250
8hr	0.038	0.046	0.060	0.075	0.095	0.120	0.150	0.185	0.235	0.295
12hr	0.042	0.050	0.065	0.080	0.100	0.125	0.160	0.200	0.260	0.330
18hr	0.045	0.054	0.070	0.085	0.105	0.130	0.170	0.215	0.280	0.360
24hr	0.048	0.058	0.075	0.090	0.110	0.140	0.185	0.235	0.305	0.395
36hr	0.050	0.060	0.078	0.095	0.115	0.145	0.195	0.250	0.325	0.425
48hr	0.052	0.062	0.080	0.098	0.120	0.150	0.200	0.260	0.340	0.445
72hr	0.055	0.065	0.085	0.105	0.125	0.160	0.215	0.280	0.365	0.475
96hr	0.058	0.068	0.088	0.110	0.130	0.170	0.230	0.300	0.390	0.505
144hr	0.060	0.070	0.090	0.115	0.135	0.180	0.245	0.320	0.415	0.535
192hr	0.062	0.072	0.095	0.120	0.140	0.190	0.260	0.340	0.440	0.565
288hr	0.065	0.075	0.100	0.125	0.145	0.200	0.275	0.365	0.470	0.600
384hr	0.068	0.078	0.105	0.130	0.150	0.210	0.290	0.385	0.500	0.640
576hr	0.070	0.080	0.110	0.135	0.155	0.220	0.305	0.405	0.525	0.680
768hr	0.072	0.082	0.115	0.140	0.160	0.230	0.315	0.420	0.545	0.720
1152hr	0.075	0.085	0.120	0.145	0.165	0.240	0.325	0.435	0.565	0.765
1536hr	0.078	0.088	0.125	0.150	0.170	0.250	0.335	0.450	0.590	0.810
2112hr	0.080	0.090	0.130	0.155	0.175	0.260	0.345	0.465	0.615	0.855
2880hr	0.082	0.092	0.135	0.160	0.180	0.270	0.355	0.480	0.635	0.900
3888hr	0.085	0.095	0.140	0.165	0.185	0.280	0.365	0.495	0.655	0.945
5232hr	0.088	0.098	0.145	0.170	0.190	0.290	0.375	0.510	0.675	0.990
7056hr	0.090	0.100	0.150	0.175	0.195	0.300	0.385	0.525	0.695	1.035
9408hr	0.092	0.102	0.155	0.180	0.200	0.310	0.395	0.540	0.715	1.080
12576hr	0.095	0.105	0.160	0.185	0.205	0.320	0.405	0.555	0.735	1.125
16704hr	0.098	0.108	0.165	0.190	0.210	0.330	0.415	0.570	0.755	1.170
22272hr	0.100	0.110	0.170	0.195	0.215	0.340	0.425	0.585	0.775	1.215
29760hr	0.102	0.112	0.175	0.200	0.220	0.350	0.435	0.600	0.795	1.260
39744hr	0.105	0.115	0.180	0.205	0.225	0.360	0.445	0.615	0.815	1.305
52896hr	0.108	0.118	0.185	0.210	0.230	0.370	0.455	0.630	0.835	1.350
70848hr	0.110	0.120	0.190	0.215	0.235	0.380	0.465	0.645	0.855	1.395
93888hr	0.112	0.122	0.195	0.220	0.240	0.390	0.475	0.660	0.875	1.440
124896hr	0.115	0.125	0.200	0.225	0.245	0.400	0.485	0.675	0.895	1.485
166800hr	0.118	0.128	0.205	0.230	0.250	0.410	0.495	0.690	0.915	1.530
221760hr	0.120	0.130	0.210	0.235	0.255	0.420	0.505	0.705	0.935	1.575
294240hr	0.122	0.132	0.215	0.240	0.260	0.430	0.515	0.720	0.955	1.620
390720hr	0.125	0.135	0.220	0.245	0.265	0.440	0.525	0.735	0.975	1.665
514560hr	0.128	0.138	0.225	0.250	0.270	0.450	0.535	0.750	0.995	1.710
679680hr	0.130	0.140	0.230	0.255	0.275	0.460	0.545	0.765	1.015	1.755
899520hr	0.132	0.142	0.235	0.260	0.280	0.470	0.555	0.780	1.035	1.800
1188000hr	0.135	0.145	0.240	0.265	0.285	0.480	0.565	0.795	1.055	1.845
1569600hr	0.138	0.148	0.245	0.270	0.290	0.490	0.575	0.810	1.075	1.890
2073600hr	0.140	0.150	0.250	0.275	0.295	0.500	0.585	0.825	1.095	1.935
2745600hr	0.142	0.152	0.255	0.280	0.300	0.510	0.595	0.840	1.115	1.980
3628800hr	0.145	0.155	0.260	0.285	0.305	0.520	0.605	0.855	1.135	2.025
4761600hr	0.148	0.158	0.265	0.290	0.310	0.530	0.615	0.870	1.155	2.070
6196800hr	0.150	0.160	0.270	0.295	0.315	0.540	0.625	0.885	1.175	2.115
7996800hr	0.152	0.162	0.275	0.300	0.320	0.550	0.635	0.900	1.195	2.160
10464000hr	0.155	0.165	0.280	0.305	0.325	0.560	0.645	0.915	1.215	2.205
13824000hr	0.158	0.168	0.285	0.310	0.330	0.570	0.655	0.930	1.235	2.250
18144000hr	0.160	0.170	0.290	0.315	0.335	0.580	0.665	0.945	1.255	2.295
23712000hr	0.162	0.172	0.295	0.320	0.340	0.590	0.675	0.960	1.275	2.340
30912000hr	0.165	0.175	0.300	0.325	0.345	0.600	0.685	0.975	1.295	2.385
39984000hr	0.168	0.178	0.305	0.330	0.350	0.610	0.695	0.990	1.315	2.430
52320000hr	0.170	0.180	0.310	0.335	0.355	0.620	0.705	1.005	1.335	2.475
68448000hr	0.172	0.182	0.315	0.340	0.360	0.630	0.715	1.020	1.355	2.520
89952000hr	0.175	0.185	0.320	0.345	0.365	0.640	0.725	1.035	1.375	2.565
118800000hr	0.178	0.188	0.325	0.350	0.370	0.650	0.735	1.050	1.395	2.610
156960000hr	0.180	0.190	0.330	0.355	0.375	0.660	0.745	1.065	1.415	2.655
207360000hr	0.182	0.192	0.335	0.360	0.380	0.670	0.755	1.080	1.435	2.700
274560000hr	0.185	0.195	0.340	0.365	0.385	0.680	0.765	1.095	1.455	2.745
362880000hr	0.188	0.198	0.345	0.370	0.390	0.690	0.775	1.110	1.475	2.790
476160000hr	0.190	0.200	0.350	0.375	0.395	0.700	0.785	1.125	1.495	2.835
619680000hr	0.192	0.202	0.355	0.380	0.400	0.710	0.795	1.140	1.515	2.880
799680000hr	0.195	0.205	0.360	0.385	0.405	0.720	0.805	1.155	1.535	2.925
1046400000hr	0.198	0.208	0.365	0.390	0.410	0.730	0.815	1.170	1.555	2.970
1382400000hr	0.200	0.210	0.370	0.395	0.415	0.740	0.825	1.185	1.575	3.015
1814400000hr	0.202	0.212	0.375	0.400	0.420	0.750	0.835	1.200	1.595	3.060
2371200000hr	0.205	0.215	0.380	0.405	0.425	0.760	0.845	1.215	1.615	3.105
3091200000hr	0.208	0.218	0.385	0.410	0.430	0.770	0.855	1.230	1.635	3.150
3998400000hr	0.210	0.220	0.390	0.415	0.435	0.780	0.865	1.245	1.655	3.195
5232000000hr	0.212	0.222	0.395	0.420	0.440	0.790	0.875	1.260	1.675	3.240
6844800000hr	0.215	0.225	0.400	0.425	0.445	0.800	0.885	1.275	1.695	3.285
8995200000hr	0.218	0.228	0.405	0.430	0.450	0.810	0.895	1.290	1.715	3.330
11880000000hr	0.220	0.230	0.410	0.435	0.455	0.820	0.905	1.305	1.735	3.375
15696000000hr	0.222	0.232	0.415	0.440	0.460	0.830	0.915	1.320	1.755	3.420
20736000000hr	0.225	0.235	0.420	0.445	0.465	0.840	0.925	1.335	1.775	3.465
27456000000hr	0.228	0.238	0.425	0.450	0.470	0.850	0.935	1.350	1.795	3.510
36288000000hr	0.230	0.240	0.430	0.455	0.475	0.860	0.945	1.365	1.815	3.555
47616000000hr	0.232	0.242	0.435	0.460	0.480	0.870	0.955	1.380	1.835	3.600
61968000000hr	0.235	0.245	0.440	0.465	0.485	0.880	0.965	1.395	1.855	3.645
79968000000hr	0.238	0.248	0.445	0.470	0.490	0.890	0.975	1.410	1.875	3.690
104640000000hr	0.240	0.250	0.450	0.475	0.495	0.900	0.985	1.425	1.895	3.735
138240000000hr	0.242	0.252	0.455	0.480	0.500	0.910	0.995	1.440	1.915	3.780
181440000000hr	0.245	0.255	0.460	0.485	0.505	0.920	1.005	1.455	1.935	3.825
237120000000hr	0.248	0.258	0.465	0.490	0.510	0.930	1.015	1.470	1.955	3.870
309120000000hr	0.250	0.260	0.470	0.495	0.515	0.940	1.025	1.485	1.975	3.915
399840000000hr	0.252	0.262	0.475	0.500	0.520	0.950	1.035	1.500	1.995	3.960
523200000000hr	0.255	0.265	0.480	0.505	0.525	0.960	1.045	1.515	2.015	4.005
684480000000hr	0.258	0.268	0.485	0.510	0.530	0.970	1.055	1.530	2.035	4.050
899520000000hr	0.260	0.270	0.490	0.515	0.535	0.980	1.065	1.545	2.055	4.095
1188000000000hr	0.262	0.272	0.495	0.520	0.540	0.990	1.075	1.560	2.075	4.140
1569600000000hr	0.265	0.275	0.500	0.525	0.545	1.000	1.085	1.575	2.095	4.185
2073600000000hr	0.268	0.278	0.505	0.530	0.550	1.010	1.095	1.590	2.115	4.230
2745600000000hr	0.270	0.280	0.510	0.535	0.555	1.020	1.105	1.605	2.135	4.275
3628800000000hr	0.272	0.282	0.515	0.540	0.560	1.030	1.115	1.620	2.155	

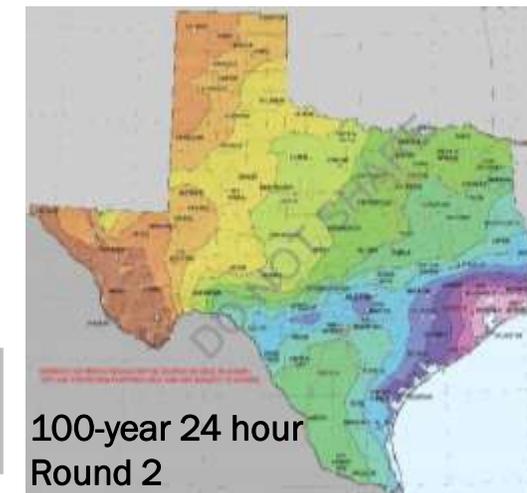
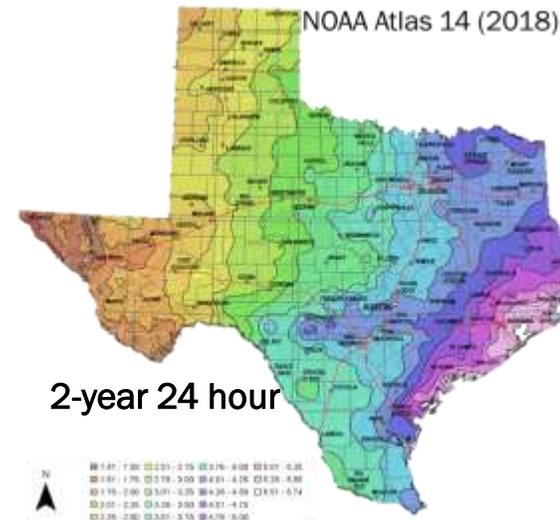
InFRM – NOAA Atlas 14 Peer Review

■ Integrated science team

- Scientist from federal, state and local governments, FEMA, USACE, USGS, NWS, Harris County, TXDOT
- University researchers, UTA, A&M
- State climatologist

■ Map shape determinations

- Developed additional data set for 25-yr return interval
 - Average around 60-years of record length
 - 2-year and 25-year return interval maps matched reasonable well
 - > 25-year less consistency of the map



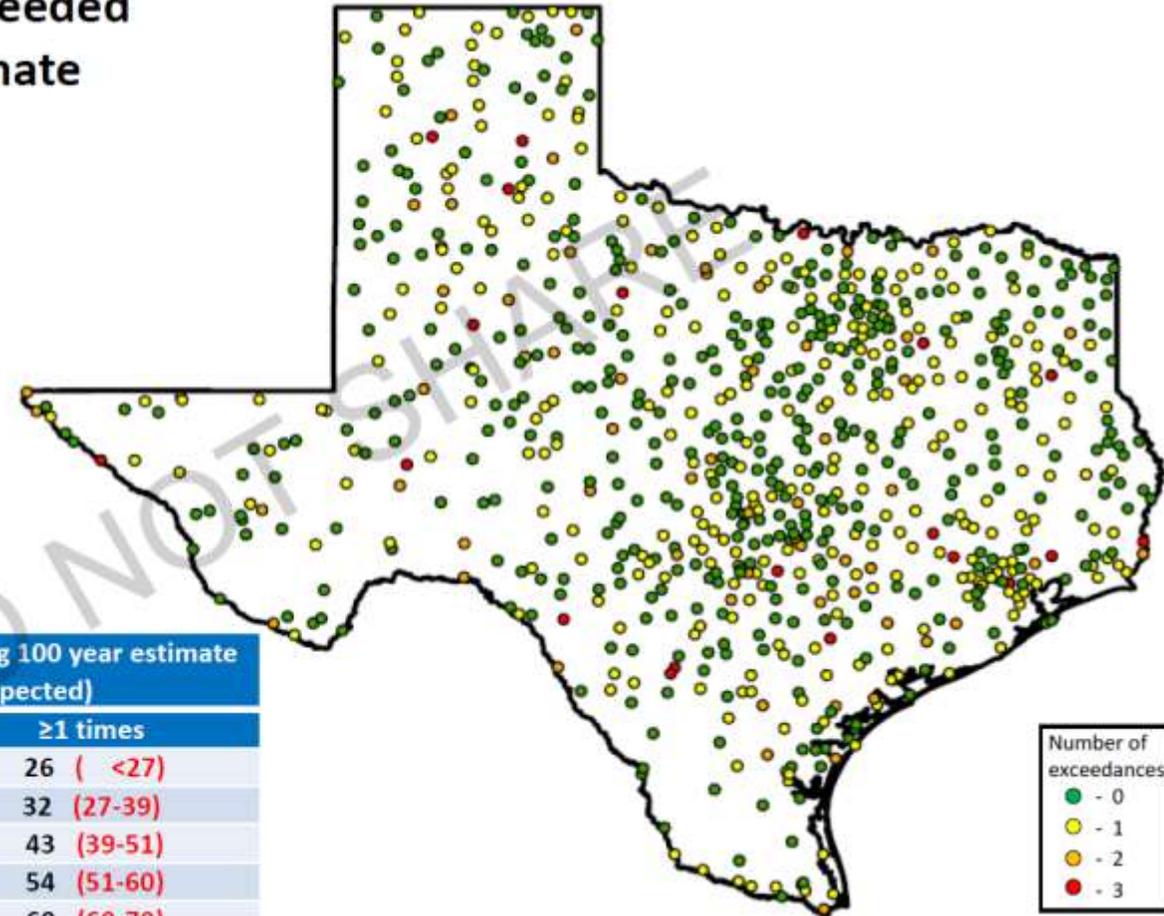
InFRM – NOAA Atlas 14 PEER Review

- Appropriateness of selected distribution
- How many data points equaled or exceeded estimate
- Variability of estimates over time

Number of times AM exceeded 24-hour 100-year estimate

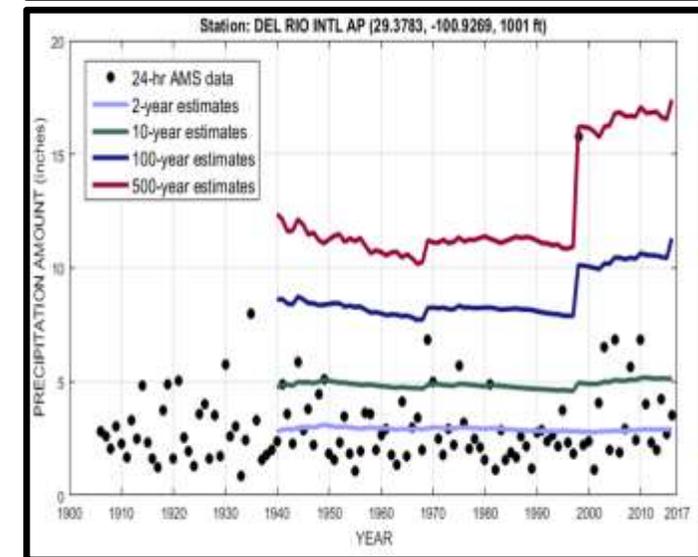
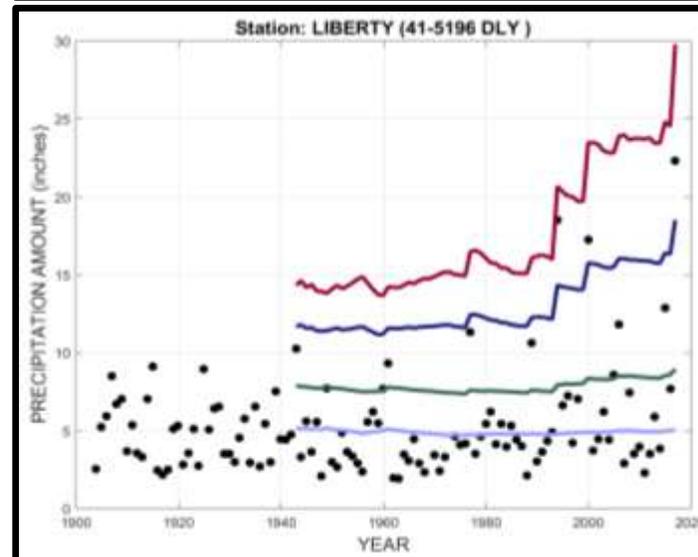
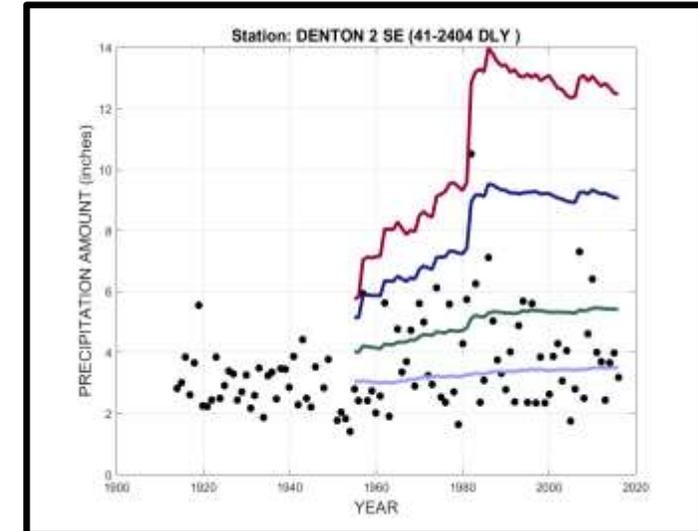
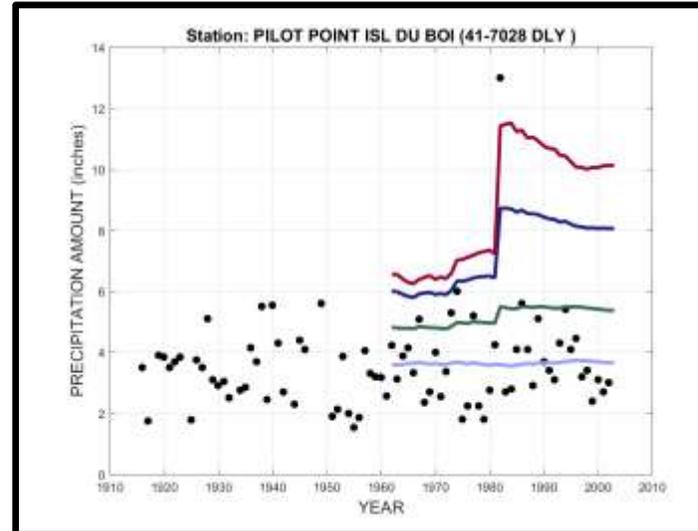
Record length	# of stations	# of exceedances			
		0	1	2	3
≤ 30	129	96	30	2	1
31- 50	296	202	78	12	4
51 - 70	356	204	125	25	2
71 - 90	224	104	97	18	5
> 90	223	89	89	32	13

Record length	# of stations	% of stations exceeding 100 year estimate	
		actual	(expected)
≤ 30	129	74 (>73)	26 (<27)
31- 50	296	68 (61-73)	32 (27-39)
51 - 70	356	57 (49-61)	43 (39-51)
71 - 90	224	46 (40-49)	54 (51-60)
> 90	223	40 (30-40)	60 (60-70)

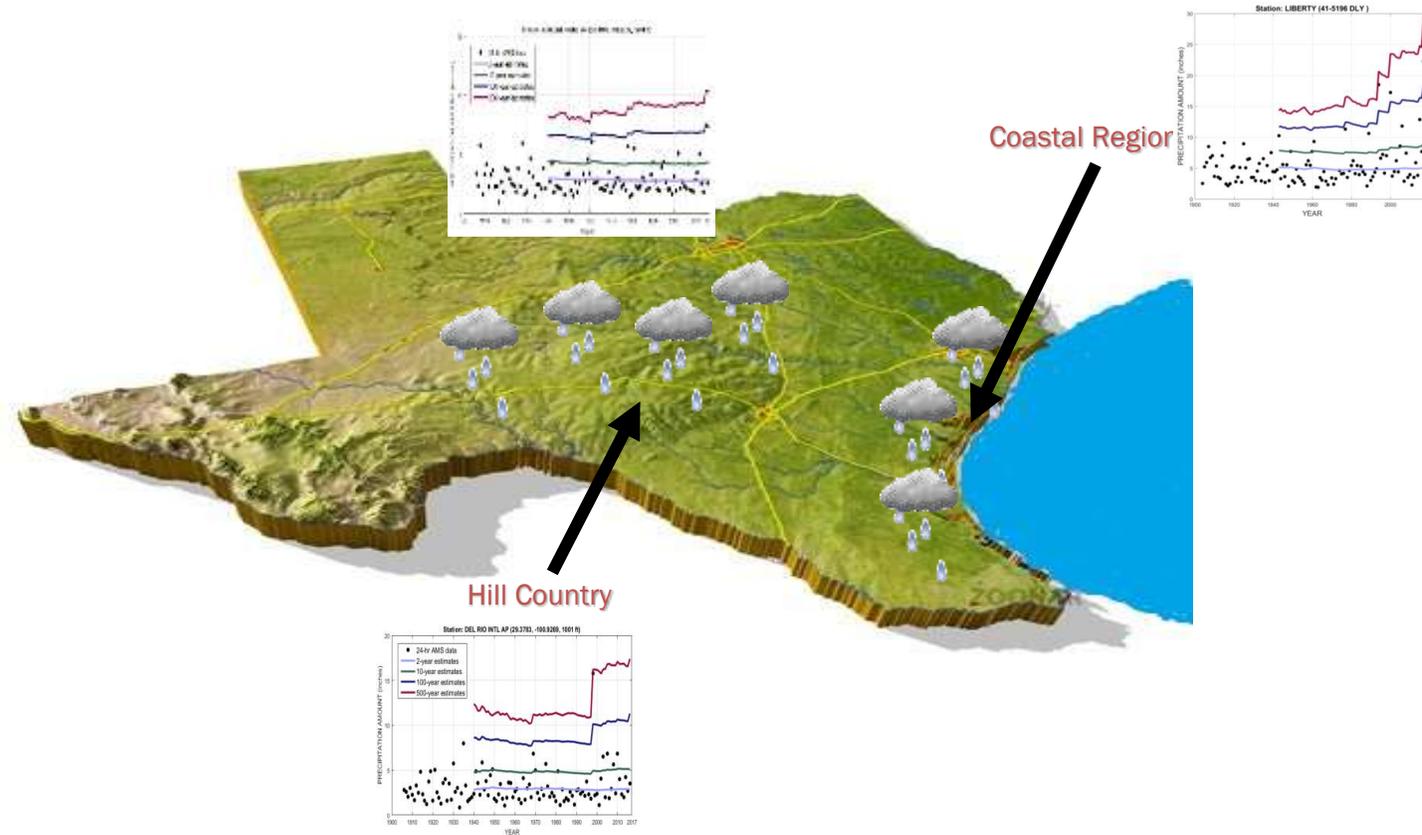


InFRM – NOAA Atlas 14, Are We Done?

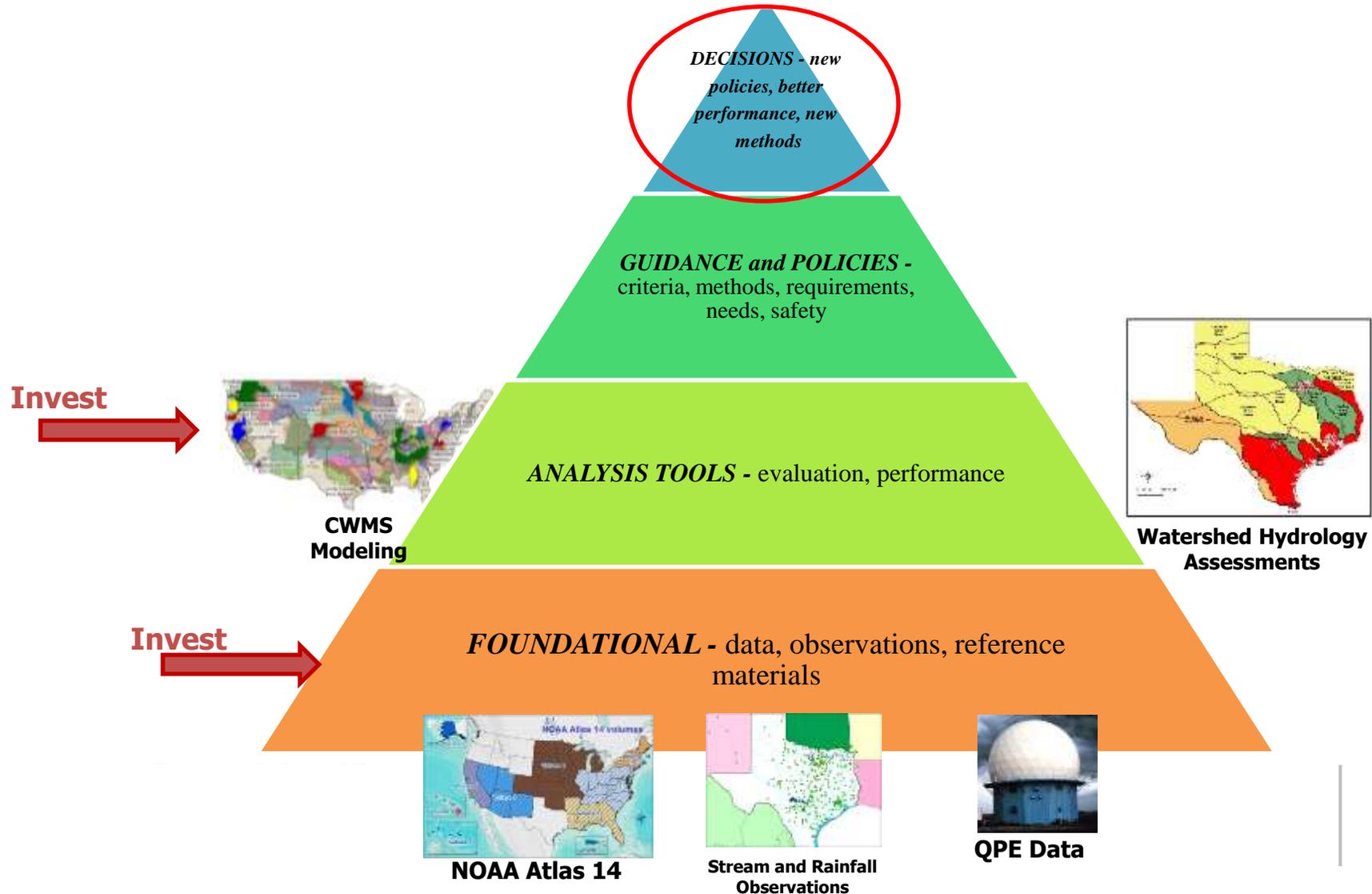
- Should you be concerned about?
 - Climate variability, extreme weather, drought and climate change?
 - How will we manage these phenomena?
- Do we understand what is happening with the weather and climate change?
- Do we need additional studies? (\$3 - \$4 M)
 - Other methods to estimate precipitation frequency (check)
 - Trend analysis
 - Storm studies
- Responsibility?
- Cost?



InFRM - NOAA Atlas 14 Precipitation Results



Infrastructure Decision Pyramid



Questions?



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of Engineers**

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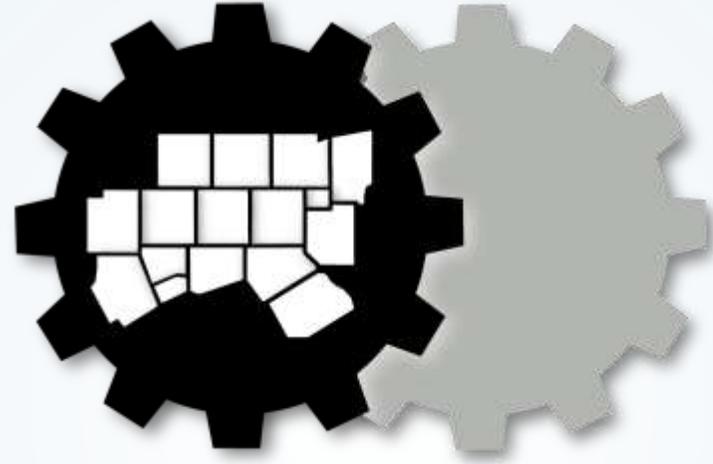
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Roundtable



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