Atlas 14

UNDERSTANDING AUSTIN'S FLOOD RISK

External Stakeholders Meeting

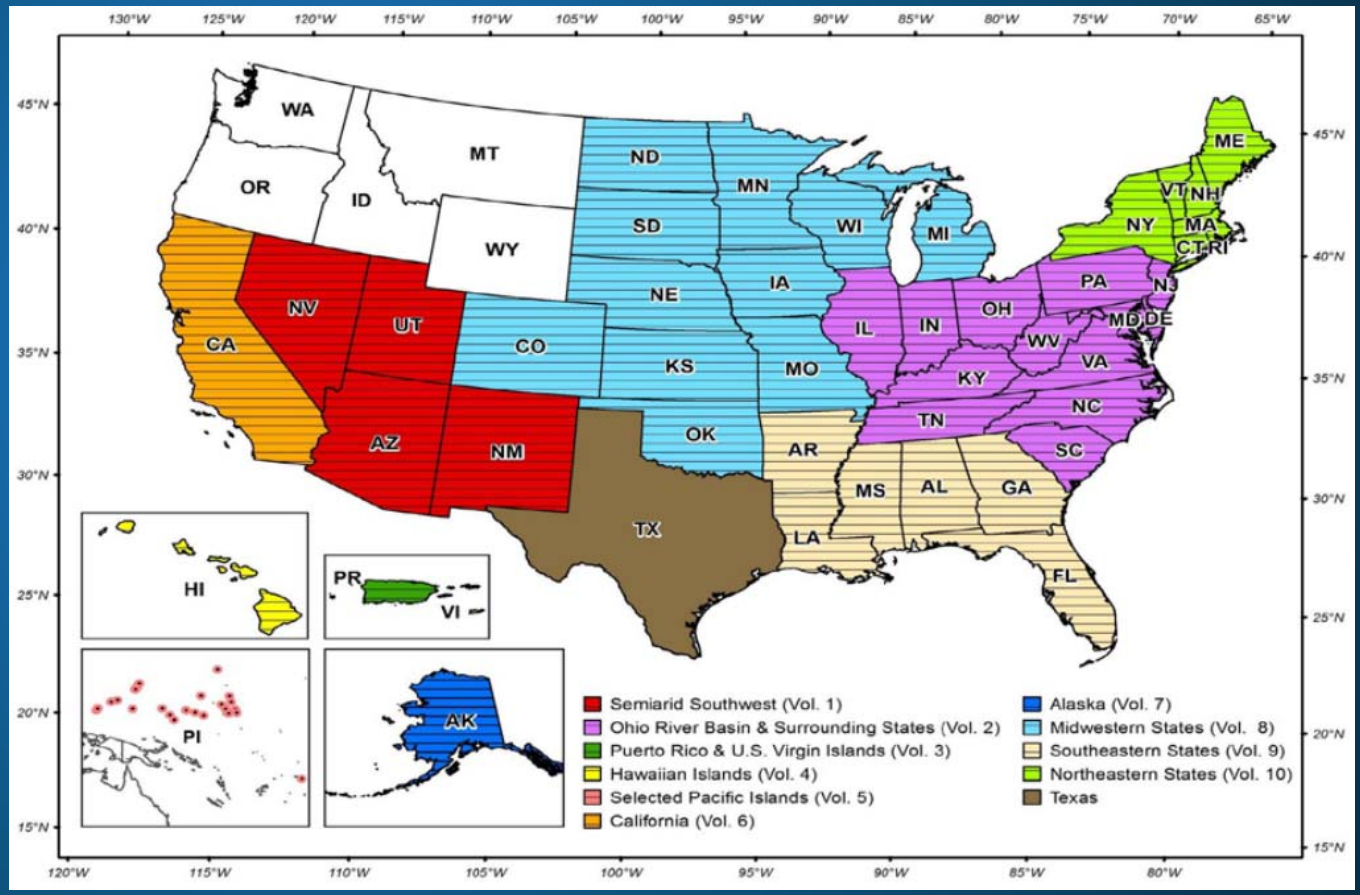
July 17, 2018

Overview

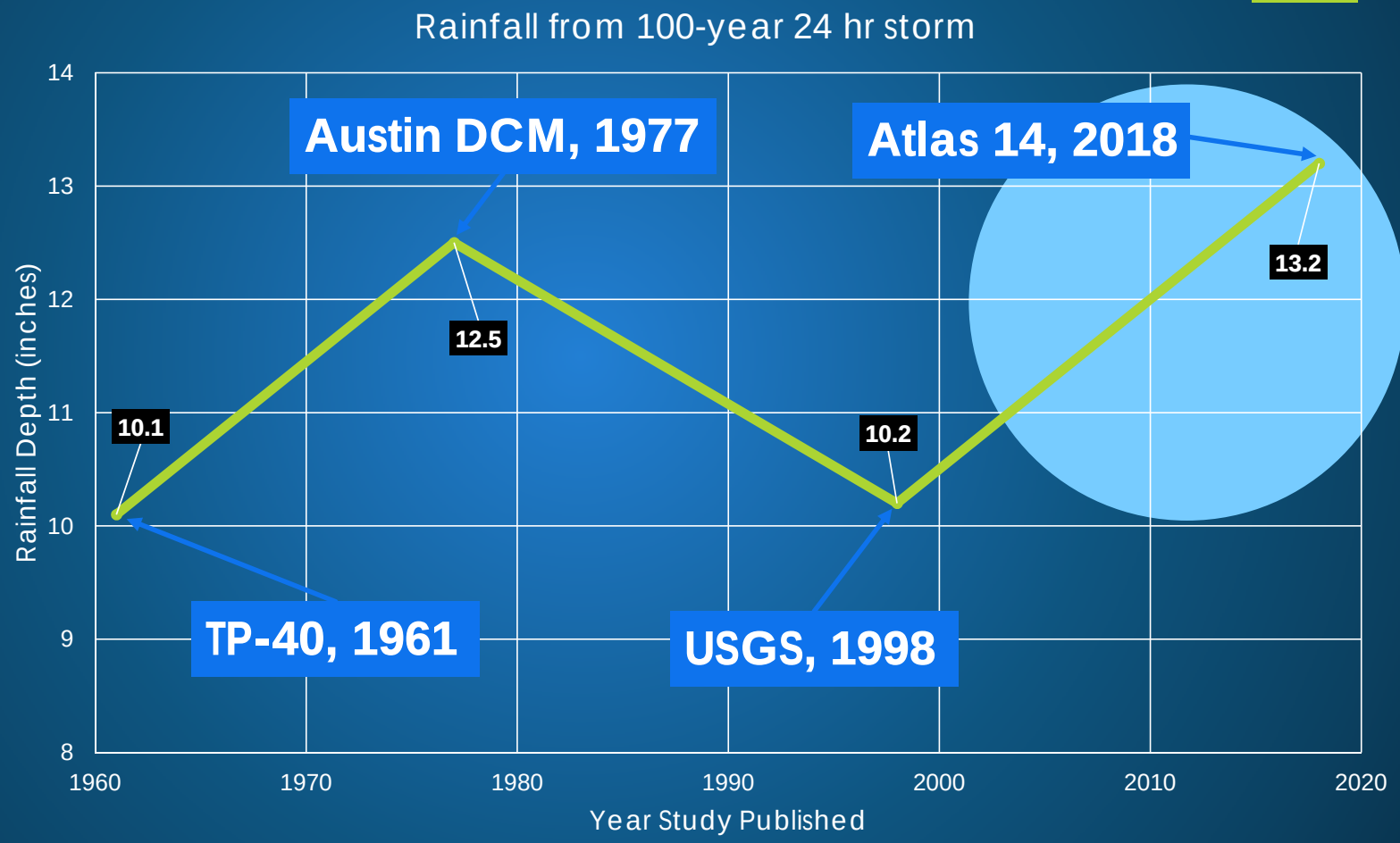
- Rainfall Data Changes
- Need for Action
- Solution Options
- Recommended Code Amendments
- Impacts to Residents and Development
- Discussion/Next Steps

NOAA Atlas 14 - Background

- Nationwide study of rainfall intensities
- Partners:
  - **Federal:** National Weather Service, U. S. Army Corps of Engineers, Federal Highway Administration
  - **State/Local:** TxDOT, Harris County Flood Control District, City of Austin, et al.



History of Rainfall Intensity Studies for Austin



Rainfall Depth Changes (Preliminary)

Recurrence Interval	Current Rainfall Depth in inches	Atlas 14 Rainfall in inches
25-year	7.6	Almost 10
100-year	10.2	Up to 13+
500-year	13.5	Not yet available

City-wide Atlas 14 Impacts

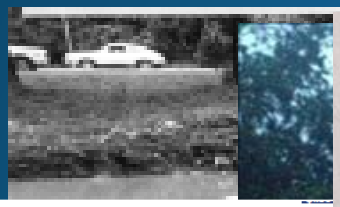
- Approximate **number of buildings in floodplain** (excluding Colorado River floodplain)

Area	Current 100-Year	Current 500-Year	Difference
City Limits	3,702	6,533	2,831

- Approximate **percent of area in the floodplain** (excluding Colorado River floodplain)

Area	Current 100-Year	Current 500-Year	% Larger
City Limits	7%	9%	26%

Need for Action



Austin American-Statesman

Tuesday, May 26, 2015 — Breaking news at statesman.com

EXPANDED COVERAGE CENTRAL TEXAS FLOODING

WAVES OF DISASTER

12 people, including holiday visitors, still missing as river sweeps away 72 homes.

Lamar Boulevard turns into a waterway itself as Shoal Creek spills over its banks.

Governor adds 24 counties to devastation list, warns of water's 'tsunami'-like power.

Rescue personnel grab the hand of a man stranded Monday at the northwest corner of Lamar Boulevard and 15th Street after Shoal Creek overflowed its banks, inundated Lamar with rushing water and covered the field at House Park. Several cars were stalled under and near the 15th Street bridge, where spectators gathered in disbelief, taking photographs. ALBERTO MARTÍNEZ / FOR AMERICAN-STATESMAN

Flood is highest in Texas history

Hays asks citizens to look for missing; rain to continue rest of week.

By Tony Plohetski
tplohetski@statesman.com

WIMBERLEY — On a day that brought a new round of fierce thunderstorms and torrential rates, authorities continued a grim search Monday for 12 people still missing after being swept from riverfront homes, and property owners returned to dramatic scenes of destruction.

San Marcos and Hays County officials revised upward the property damage wrought by the historic flood, saying 72 homes had been washed away. Texas Gov. Greg Abbott, who toured the scene, said the storms brought a punch that "you cannot candy-coat" and declared a disaster area in 24 additional counties, including Bastrop and Hays.

Abbott said the flood in the Wimberley valley is "the highest flood we've ever record-

for Dodds' replacement

Celebrating the restaurants that have been doing it right for years

'12 Years a Slave' leads our movie reviews

Austin American-Statesman

Friday, November 1, 2013 — Breaking news at statesman.com

CENTRAL TEXAS FLOODING 4 PAGES OF EXPANDED COVERAGE INSIDE

DELUGE TURNS DEADLY

2 DEAD IN STORM: Victims found in Onion Creek and in Caldwell County.

DAMAGE: Homes, roads, golf course inundated in hard-hit Southeast Austin.

Isabel Rodriguez and her children Christopher, 3, and Ruby, 9 months, are carried on a boat Thursday on Quicksilver Boulevard after their home on South Pleasant Valley Road was flooded.

tuesday morning

Austin American-Statesman

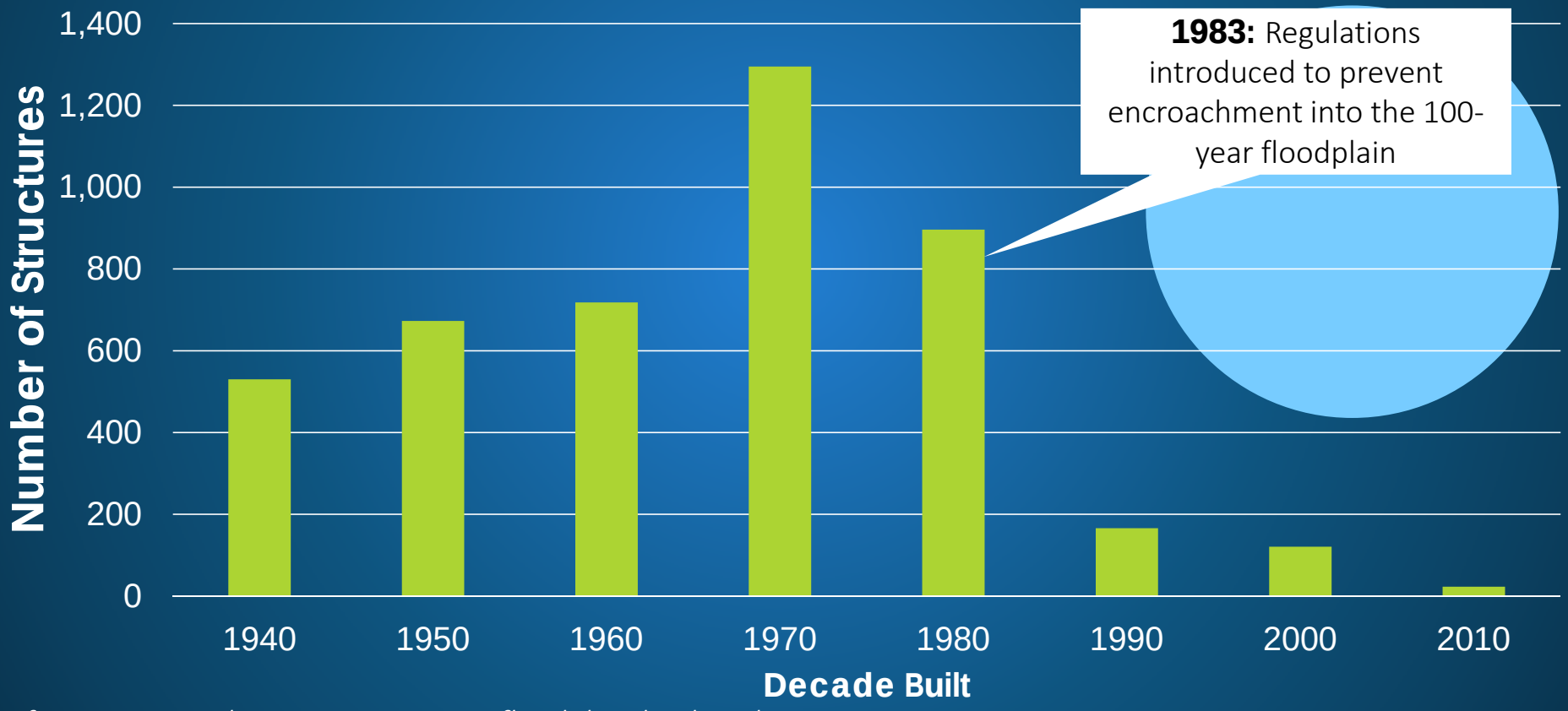
clear

13 die as floods ravage city; losses estimated in millions

The aftermath

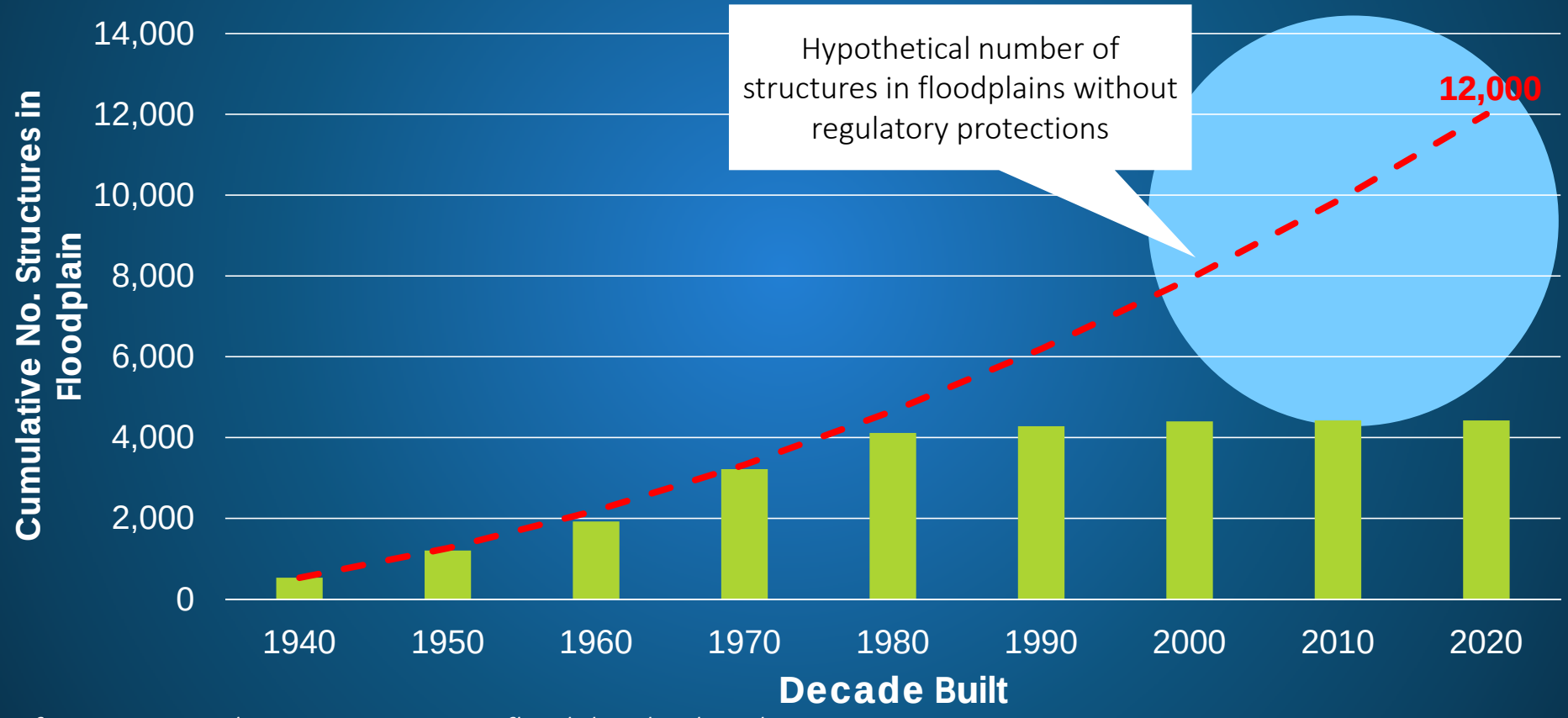
Ana Hernandez, 2, stands amid the destruction at her home at 824 Wood St., waiting for the cleanup to begin.

Watershed Regulations: Flood Mitigation



Count of structures in the current 100-year floodplain by decade

Watershed Regulations: Flood Mitigation



Count of structures in the current 100-year floodplain by decade

Regulation Revision Options

- Do Nothing
- Wait to change regs until floodplain studies are final
- Update regs now using currently available data

Regulation Revision Options

- Do Nothing
  - **Disregard Atlas 14 and maintain current regs**
  - **Doesn't protect residents from flood hazards based on new understanding of flood risks**

Regulation Revision Options

- Wait to change regs until floodplain studies are updated
  - **Updating floodplain studies will take a minimum of two years**
  - **Life/safety implications are too significant to delay**
  - **WPD will initiate floodplain study updates immediately**

Regulation Revision Options

- Update regs using currently available data
  - **Provides immediate protection and vital information to residents**
  - **Uses readily available, valid data**

Proposed Code Amendment

- Revise floodplain definitions
- Redevelopment exception
- Colorado River exception
- Change minimum freeboard to 2 feet

Proposed Code Amendment

Recurrence Interval	Current Rainfall Depth in inches	Atlas 14
25-year	7.6	Almost 10 inches
100-year	10.2	Up to 13+ inches
500-year	13.5	Not yet available

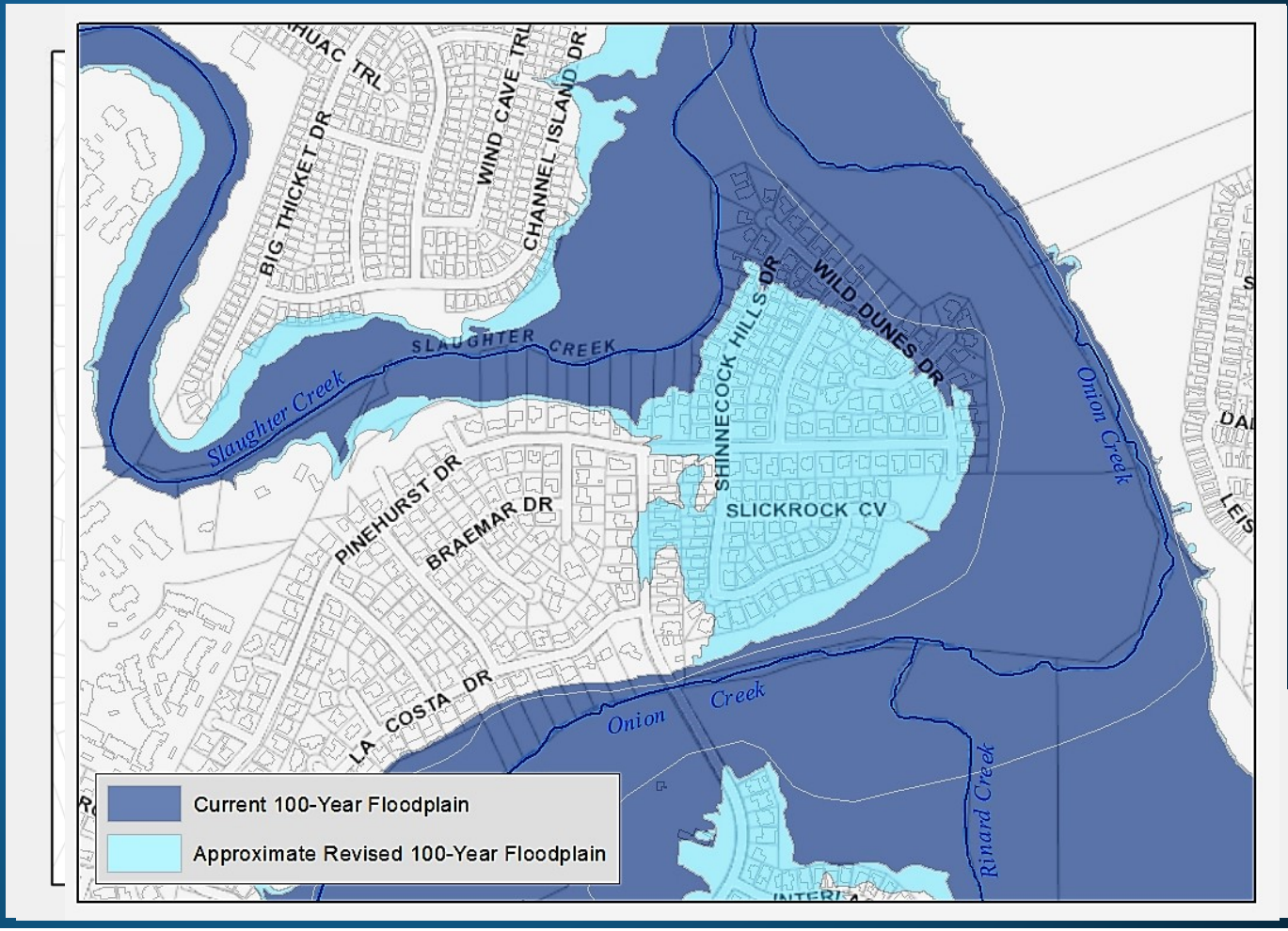
Revise floodplain definitions

- **100-year =**

  Atlas 14 100-year or FEMA 500-year

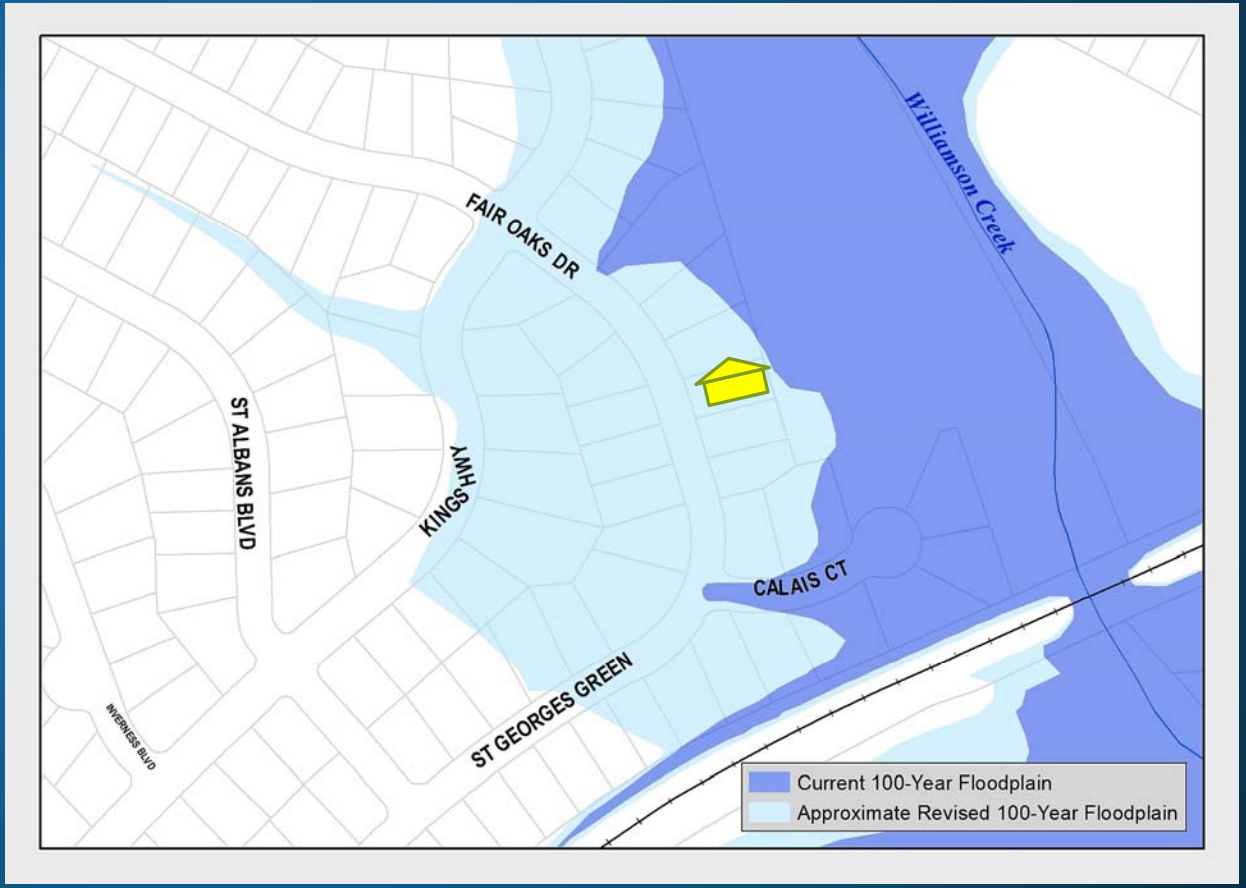
- **25-year =**

  Atlas 14 25-year or fully developed 100-year



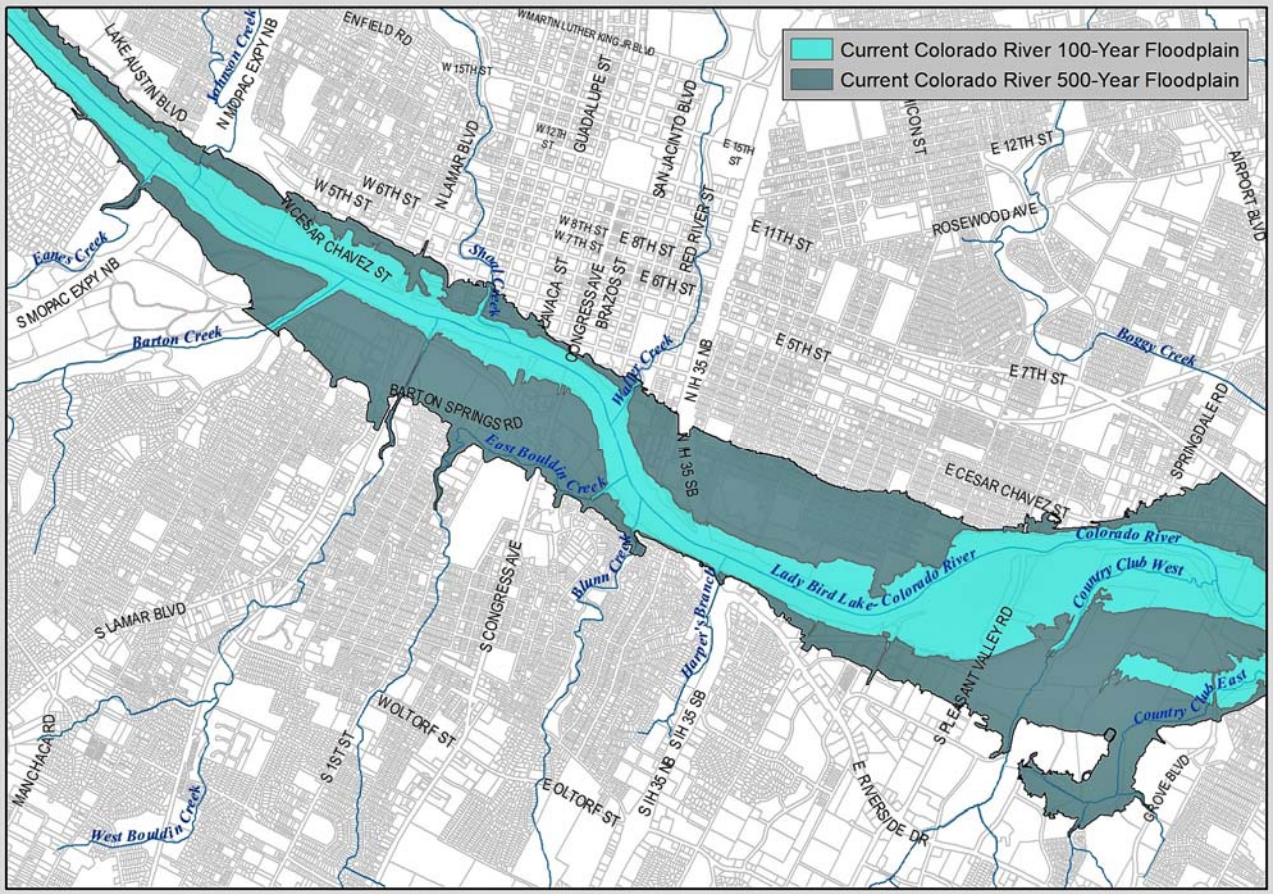
Revise floodplain definitions

- Encroachment
  - **Must satisfy floodplain rules**
- Safe access
  - **Access path min. 1-ft above**
- Freeboard
  - **Min. 2-ft above**



Colorado River Floodplain

- **Maintain** current 100-year floodplain along Colorado River

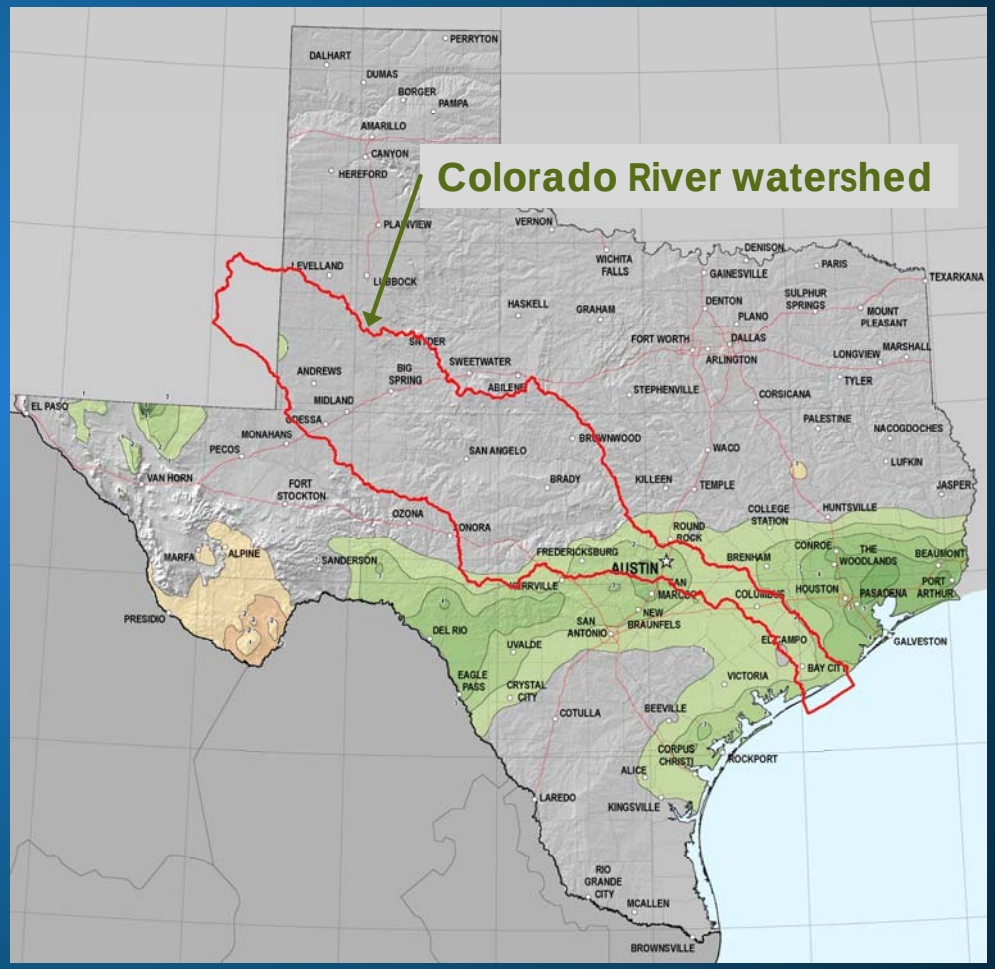


Revise floodplain definitions – Why?

- Inform public of current understanding of flood risk
- Current, valid 500-year is approximate new 100-year

Revise floodplain definitions – Why?

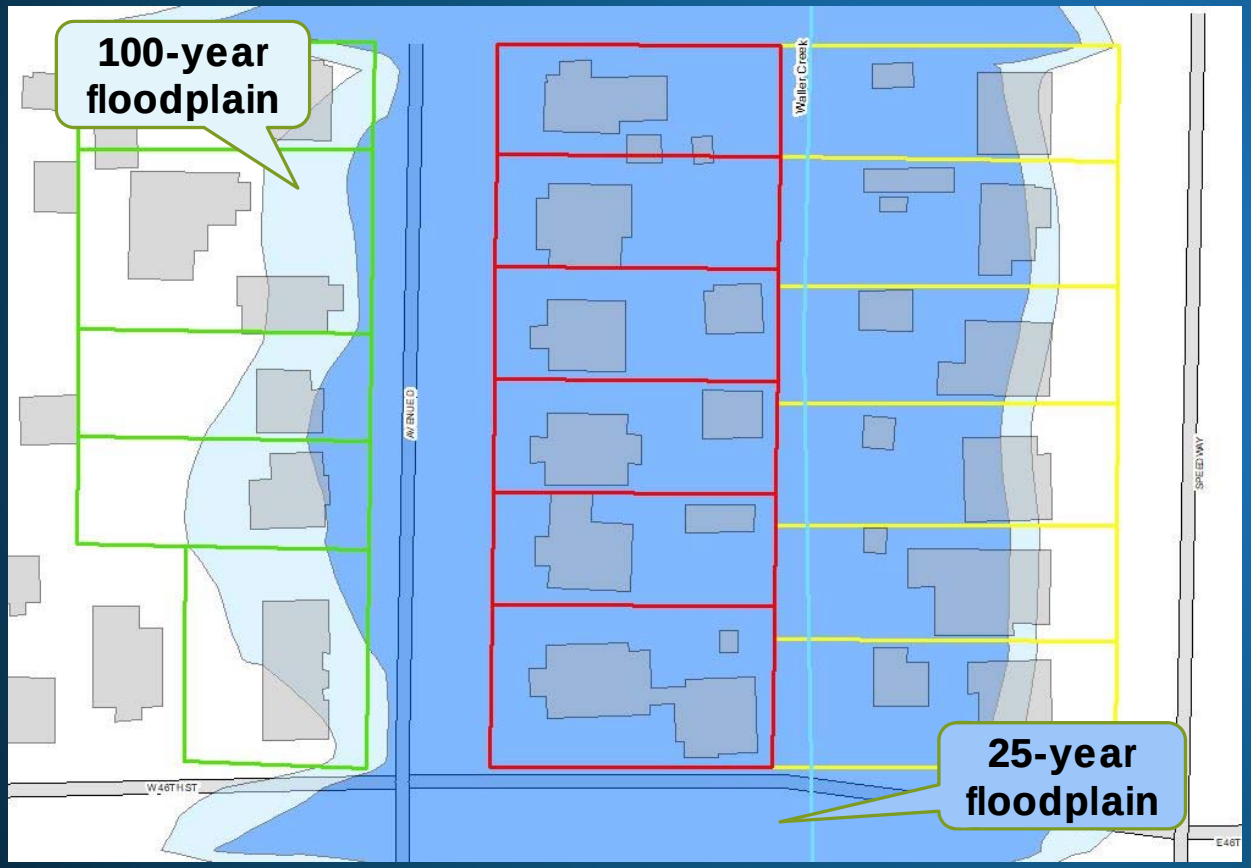
- Atlas 14 changes not expected to significantly affect Colorado River watershed upstream of Austin



Redevelopment exception

- A residential building in the 25- or 100-year floodplain can be redeveloped as long as:
  - **Above 100-year floodplain by 2 feet**
  - **A maximum gross floor area that is the larger of existing or 2,200 square feet**
  - **Does not increase number of dwelling units**
- Replaces the pre-1983 exception

Redevelopment exception



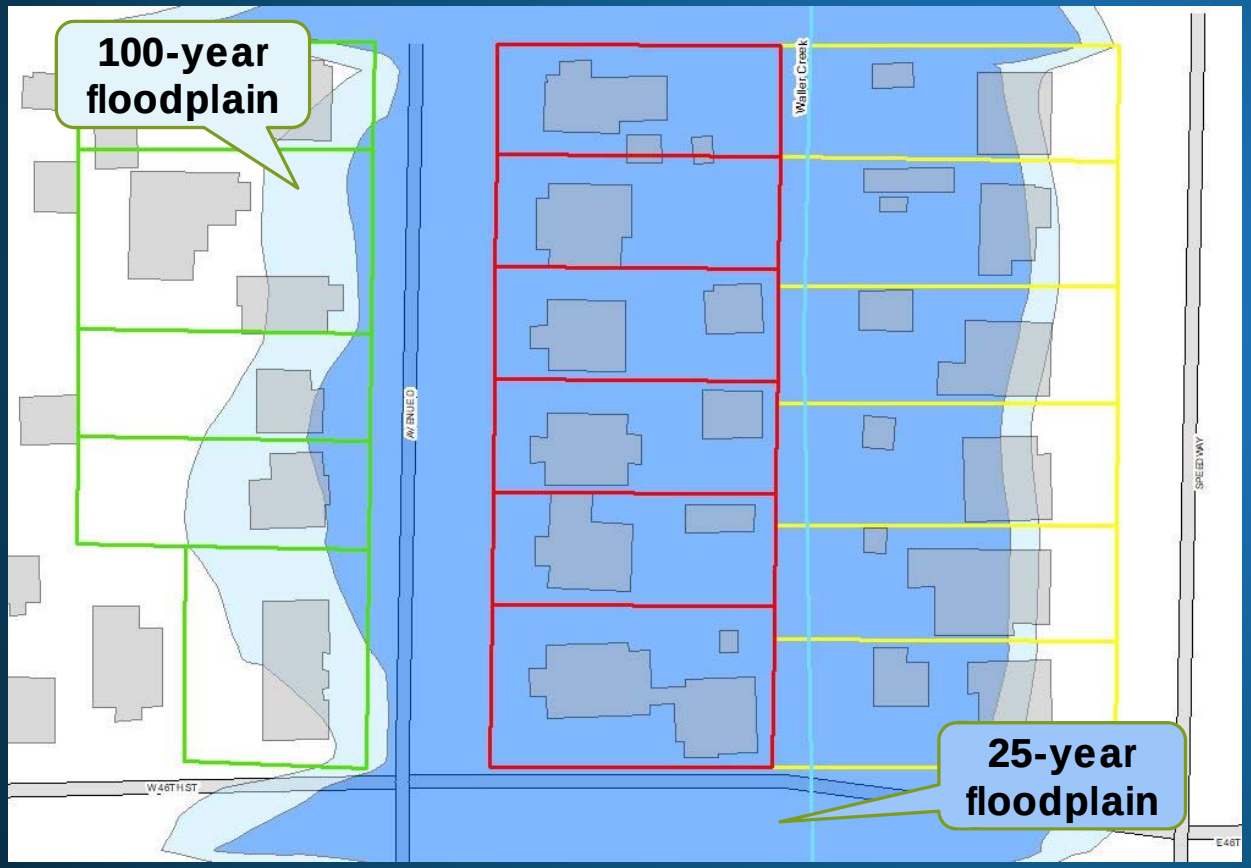
Under current rules:

Properties in green likely to redevelop under the pre-1983 exception

Properties in yellow likely to redevelop with an administrative variance

Properties in red require a Council variance to redevelop

Redevelopment exception



Under new rules:

All properties have same opportunity to redevelop with a size limitation and elevated finished floor under an exception

Flood risk will be reduced in all cases

Redevelopment exception

- How does this apply to additions?
  - **If the home meets freeboard and the proposed total square footage doesn't exceed the size limitation, then it may be approved under this exception**

Redevelopment exception

- How does this apply to renovations?
  - **If the renovation is not a substantial improvement, then it may be approved under the existing code**
  - **If the renovation is a substantial improvement and the home meets freeboard, then it may be approved under this exception**

Redevelopment exception – Why?

- Incentivizes redevelopment while reducing flood risk
- Over time reduces the number of buildings at risk of flooding
- Simplify code
- 2,200 sq. ft. is median single-family home size in Austin

Colorado River exception

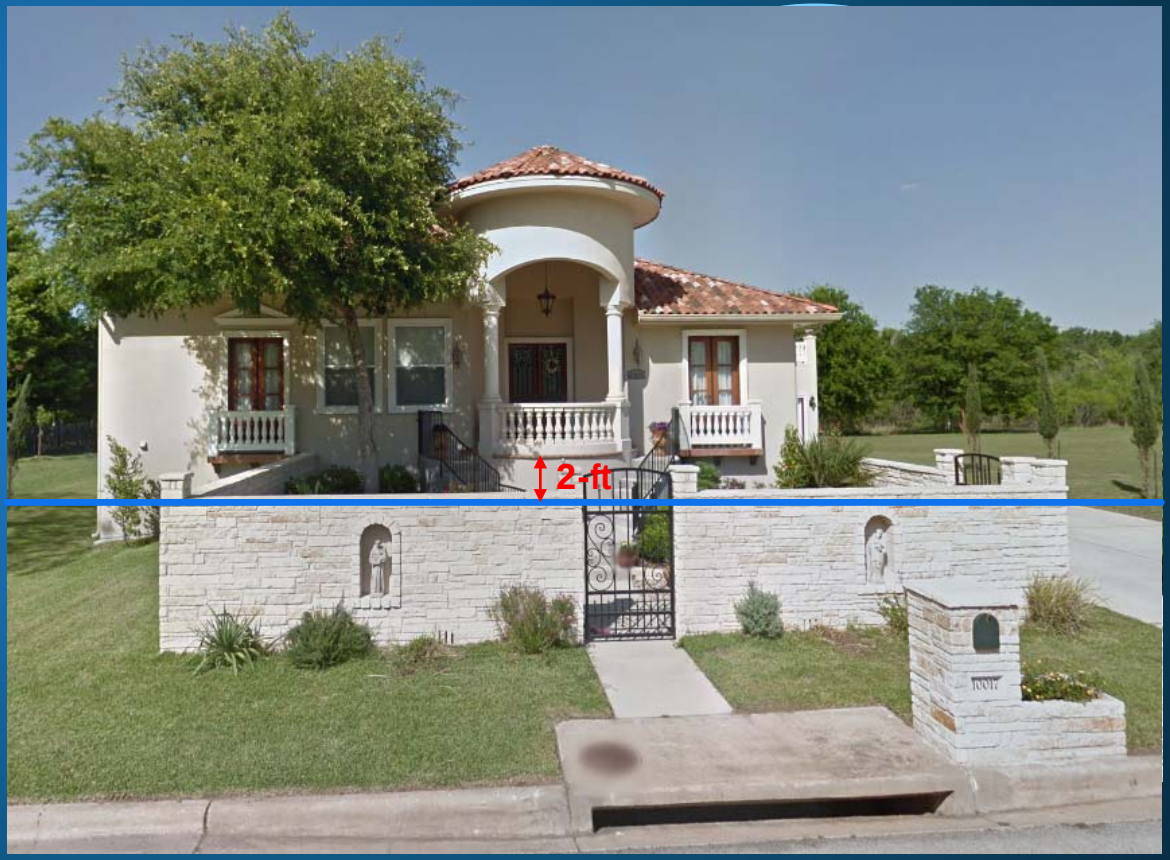
- **Expand** 100-year encroachment exception to include Lake Austin and Lake Travis

Colorado River exception – Why?

- Colorado River flooding is not expected to happen in a “flash”
- Still requires no adverse impact and freeboard – waives safe access

Minimum freeboard to 2 feet

- Minimum height between building's lowest floor and 100-year floodplain
- More than 140 Texas communities have freeboard of 2 feet or higher



Minimum freeboard to 2 feet – Why?

- Freeboard is the single-most effective means for reducing flood risk to a building in the floodplain
- Simplify code – current freeboard requirement for administrative floodplain variances and Central Business Area exception is 2 feet, elsewhere it's 1 foot
- Reduced flood insurance costs can offset increased construction cost

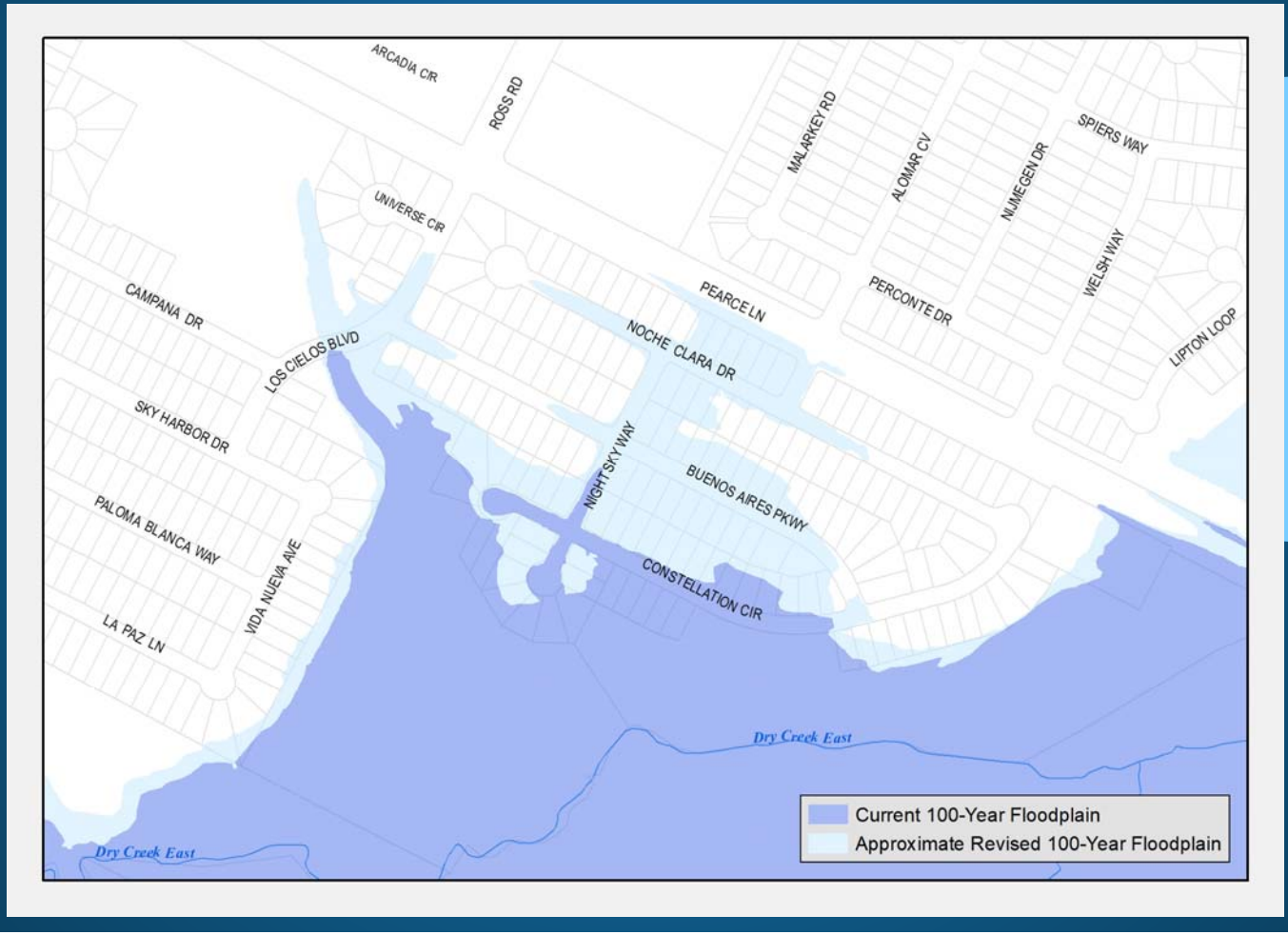
Atlas 14 Impact to homeowners

- New understanding of flood risk
- Flood insurance changes at least 3 years away
  - **Rates may go up**
  - **Insurance requirements may change**
  - **Talk to an insurance agent now**
- See impacts at ATXfloodpro.com

Atlas 14 Impact to Development

- When might these changes start being enforced?
- Will these changes affect development already submitted?
- Will these changes affect building permits for platted subdivisions?
  - **DSD memo about recommendations**

Atlas 14 Impact to Development



Atlas 14 Impact to Development

- Storm drain design
- Detention pond design
- Phased development

Rainfall Depth Changes (Preliminary)

- Onion Creek at Buda rain gauge

Recurrence Interval (years)	Rainfall Totals (inches)		Increase in Rainfall Totals (inches)	
	1-hr	24-hr	1-hr	24-hr
25		9.8		2.2
100		13.2		3.0

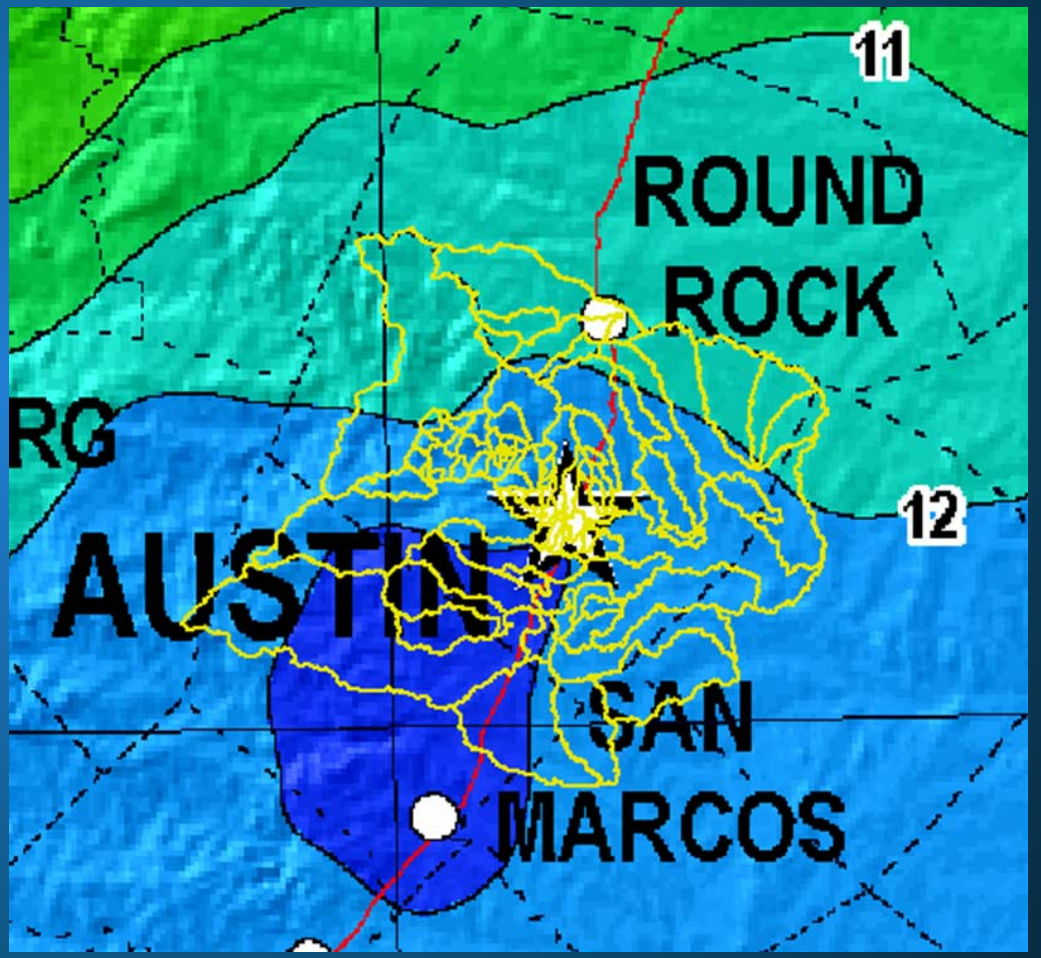
Rainfall Depth Changes (Preliminary)

- Onion Creek at Buda rain gauge

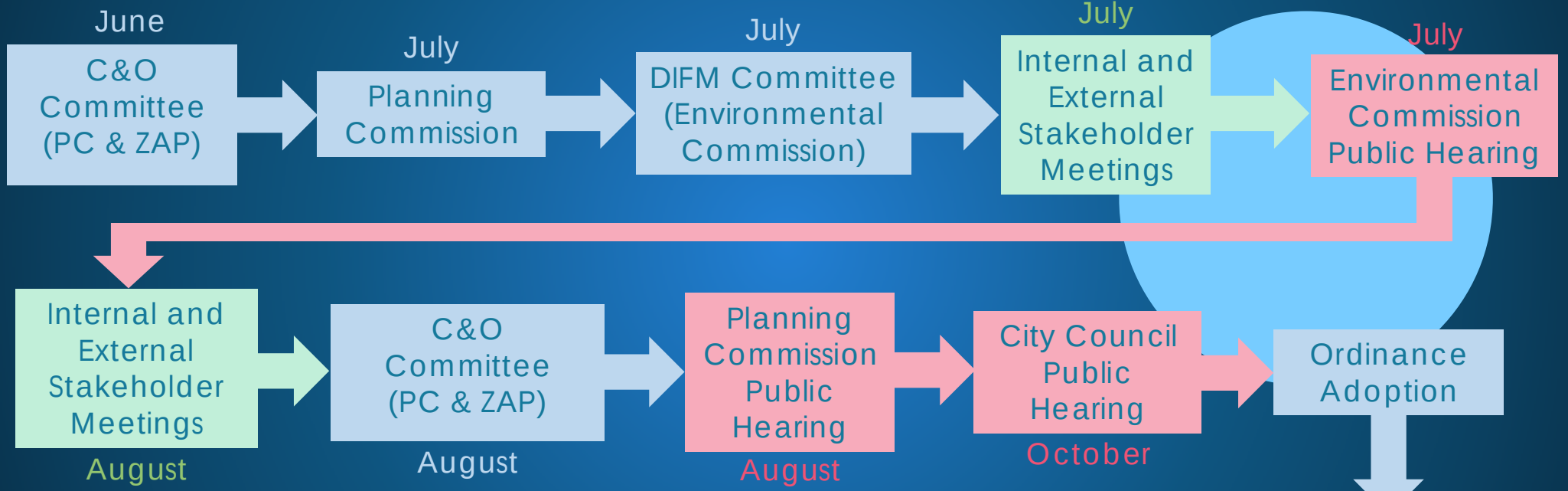
Recurrence Interval (years)	Rainfall Totals (inches)		Increase in Rainfall Totals (inches)	
	1-hr	24-hr	1-hr	24-hr
25	3.7	9.8	0.4	2.2
100	4.7	13.2	0.3	3.0

Variation of Rainfall Across Region

- Previous rainfall studies yielded relatively consistent values across the Austin Metro area
- Atlas 14 shows significant variation
- Options for Criteria
  - Single value assuming the maximum
  - Single value assuming an average
  - Multiple values based on watersheds
  - Multiple values based on county boundaries



Code Amendment Process and Timeline



3 public hearings

At least **4** stakeholder meetings

Next Steps

- Public Hearings & Stakeholder Meetings
  - **Check AustinTexas.gov/atlas14 for details**
- Public Education & Outreach
  - **Post cards to properties in 100/500-year floodplains**
  - **Geographically based public meetings**
- WPD staff to determine application of rainfall values for Austin area (Oct-Dec 2018)
- Rules change process – DCM (Q2 or Q3 of FY 2019)
- Re-mapping of Austin floodplains (2019 – 2021)


Discussion/Questions?

Rainfall Depth Changes (Preliminary)

- Onion Creek at Buda rain gauge

Recurrence Interval (years)	Annual Chance (%)	Rainfall Totals (inches) for Various Durations						Increase in Rainfall Totals (inches) for Various Durations					
		1-hr	2-hr	3-hr	6-hr	12-hr	24-hr	1-hr	2-hr	3-hr	6-hr	12-hr	24-hr
2	50	2	2.6	2.8	3.2	3.7	4.2	0.3	0.4	0.5	0.5	0.6	0.8
5	20	2.3	3.4	3.9	4.7	5.4	6.1	0.0	0.5	0.8	1.1	1.3	1.1
10	11	3.1	4.2	4.9	5.9	6.8	7.7	0.4	0.8	1.2	1.7	2.0	1.6
25	4	**3.7**	5.3	6.3	7.6	8.7	**9.8**	**0.4**	1.1	1.7	2.5	2.8	**2.2**
50	2	4.2	6.1	7.2	8.9	10.2	11.5	0.4	1.2	1.9	3.0	3.3	2.6
100	1	**4.7**	7	8.3	10.1	11.7	**13.2**	**0.3**	1.3	2.2	3.3	3.7	**3.0**

Rainfall Depth Changes (Preliminary)

- Camp Mabry rain gauge

Recurrence Interval (years)	Annual Chance (%)	Rainfall Totals (inches) for Various Durations						Increase in Rainfall Totals (inches) for Various Durations					
		1-hr	2-hr	3-hr	6-hr	12-hr	24-hr	1-hr	2-hr	3-hr	6-hr	12-hr	24-hr
2	50	2	2.4	2.6	3.2	3.7	4.1	0.3	0.2	0.3	0.5	0.6	0.7
5	20	2.5	3.3	3.9	4.7	5.4	6	0.2	0.4	0.8	1.1	1.3	1.0
10	11	3.1	4.3	4.9	5.8	6.7	7.5	0.4	0.9	1.2	1.6	1.9	1.4
25	4	**3.8**	5.3	6.3	7.4	8.7	**9.6**	**0.5**	1.1	1.7	2.3	2.8	**2.0**
50	2	4.3	6.3	7.3	8.9	10.2	11.3	0.5	1.4	2.0	3.0	3.3	2.4
100	1	**4.8**	7.2	8.5	10.2	11.6	**12.9**	**0.4**	1.5	2.4	3.4	3.6	**2.7**

Rules change process – DCM

- Section 2.4.3
  - **Rainfall Intensity value updates**
  - **Storm drain design**
- Section 2.5.1
  - **Austin 24-Hour Storm Rainfall Distribution**
- Timeline
  - **Q2 or Q3 of FY 2019**