

Onion Creek Flood Mitigation Feasibility Study

May 16, 2017

City of Austin
Watershed Protection Department

Meeting Agenda

- Project Team
- Background & Risk
- Alternatives Analysis
 - Final Alternatives considered
 - Evaluation Criteria
- Key Issues & Next Steps
- Q & A



Project Team

- **Watershed Protection Department**
 - Mike Personett, Assistant Director
 - Pam Kearfott, P.E., Supervising Engineer
 - Karl McArthur, P.E., Supervising Engineer
 - Kacey Paul, P.E., Engineer C
- **Halff Associates**
 - Michael Moya, P.E., Vice President
 - Cindy Engelhardt, P.E., Austin Water Resources Lead
 - Ashley Lowrie, Water Resources Engineer

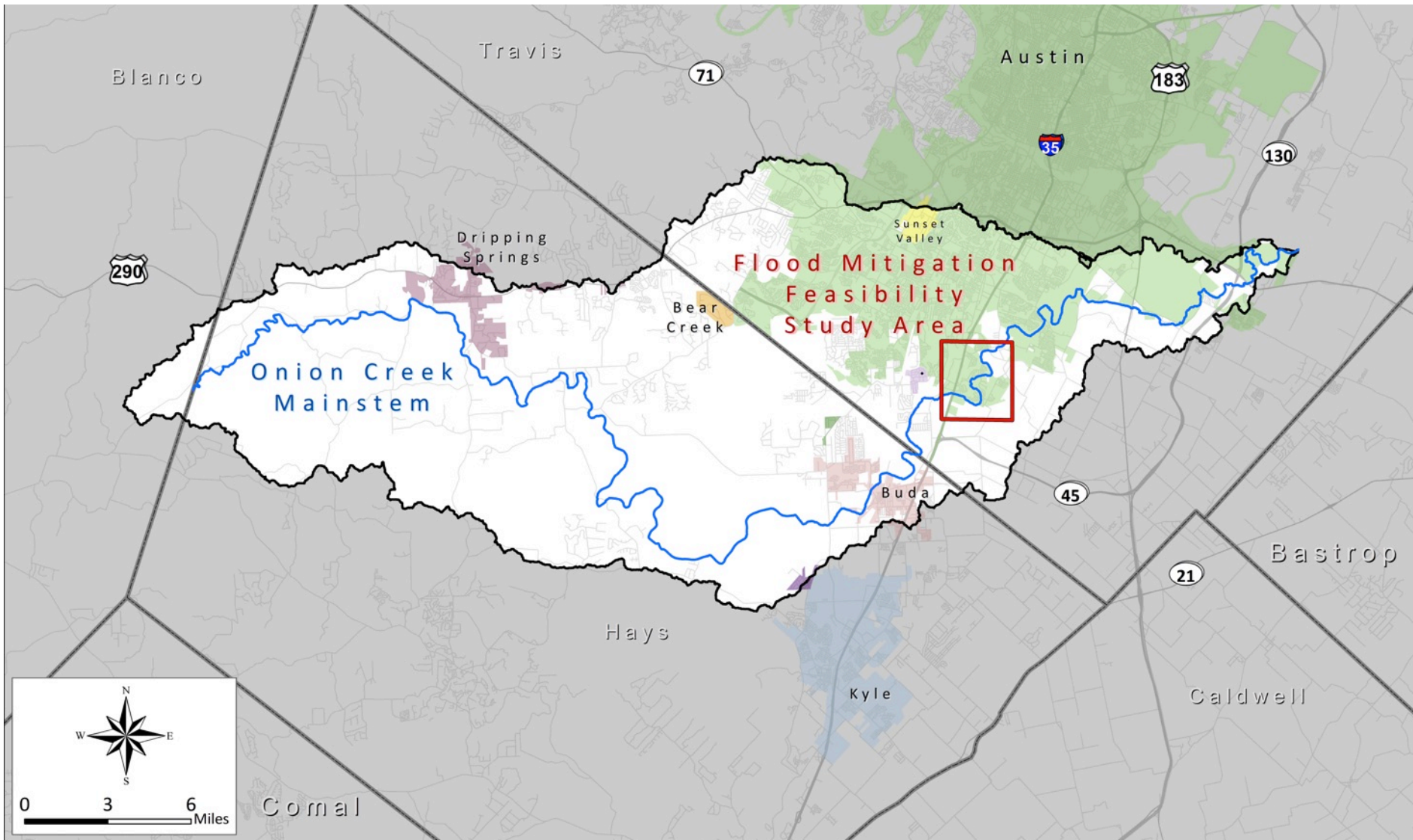
A photograph of a residential street completely flooded with murky water. In the background, there are trees and a house with a stone chimney. A white car is partially submerged on the right. A blue rectangular overlay covers the middle of the image, containing the title text.

Background & Risk

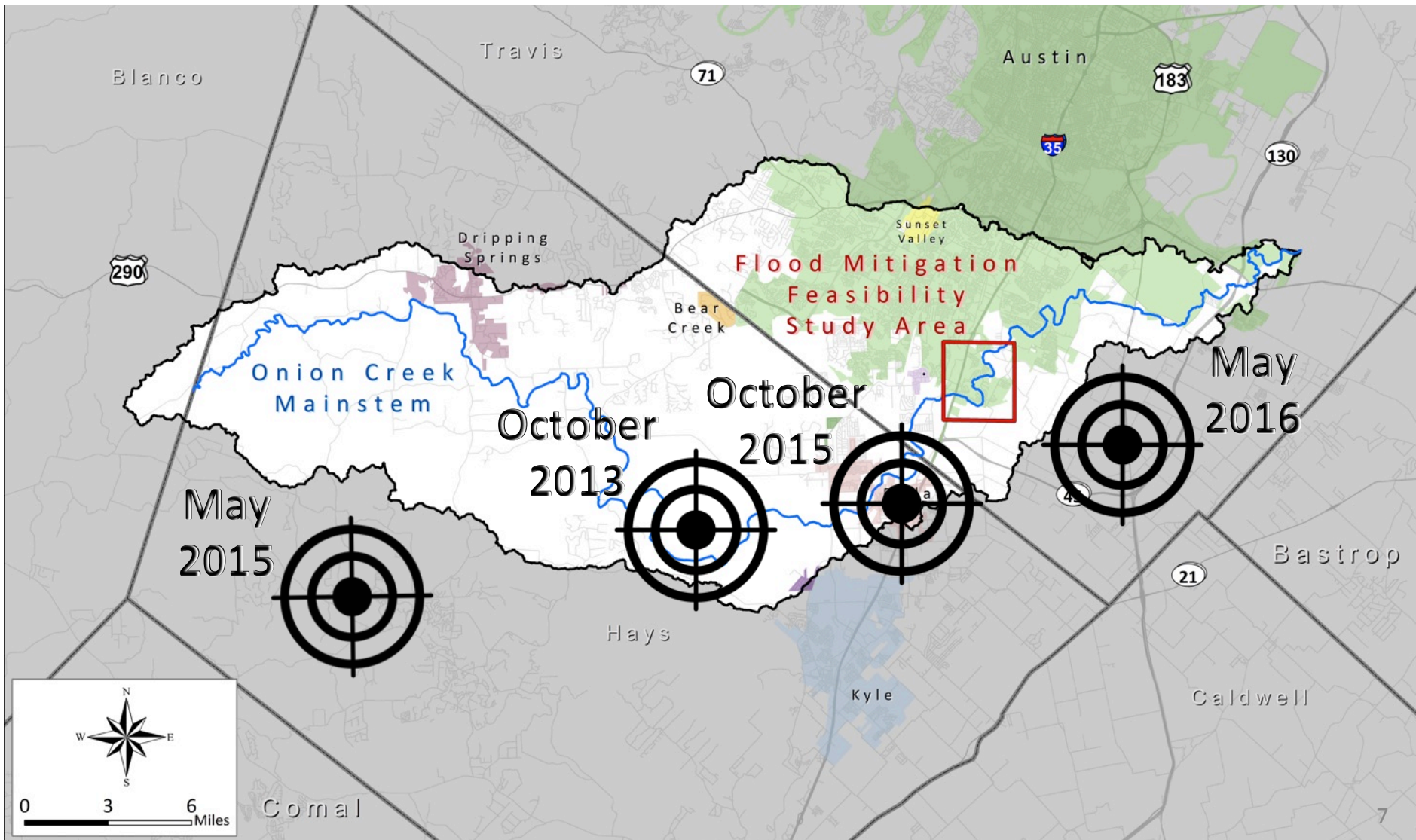
Flood Risk

| Amount of rainfall (24 hour) | Houses at risk in project area | Houses at risk citywide | Category of flood | Chance of occurring in any year |
|---|---|------------------------------------|------------------------------|--|
| 3.4 inches | 0 | 50 | 2-year | 50% |
| 7.6 inches | 0 | 900 | 25-year | 4% |
| 10.2 inches | 139 | 2,400 | 100-year | 1% |

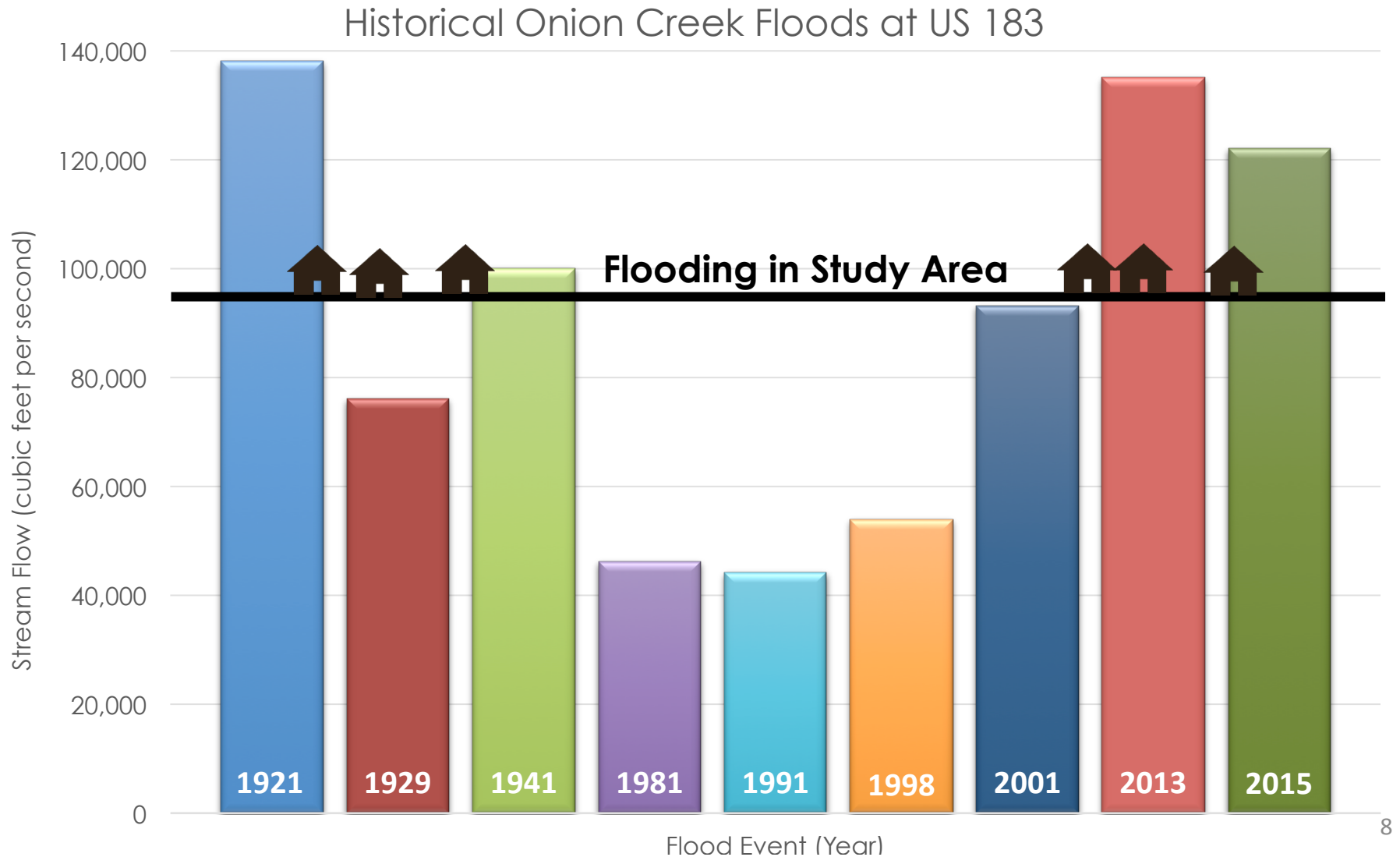
Onion Creek Watershed



Risk: Where the rain falls matters

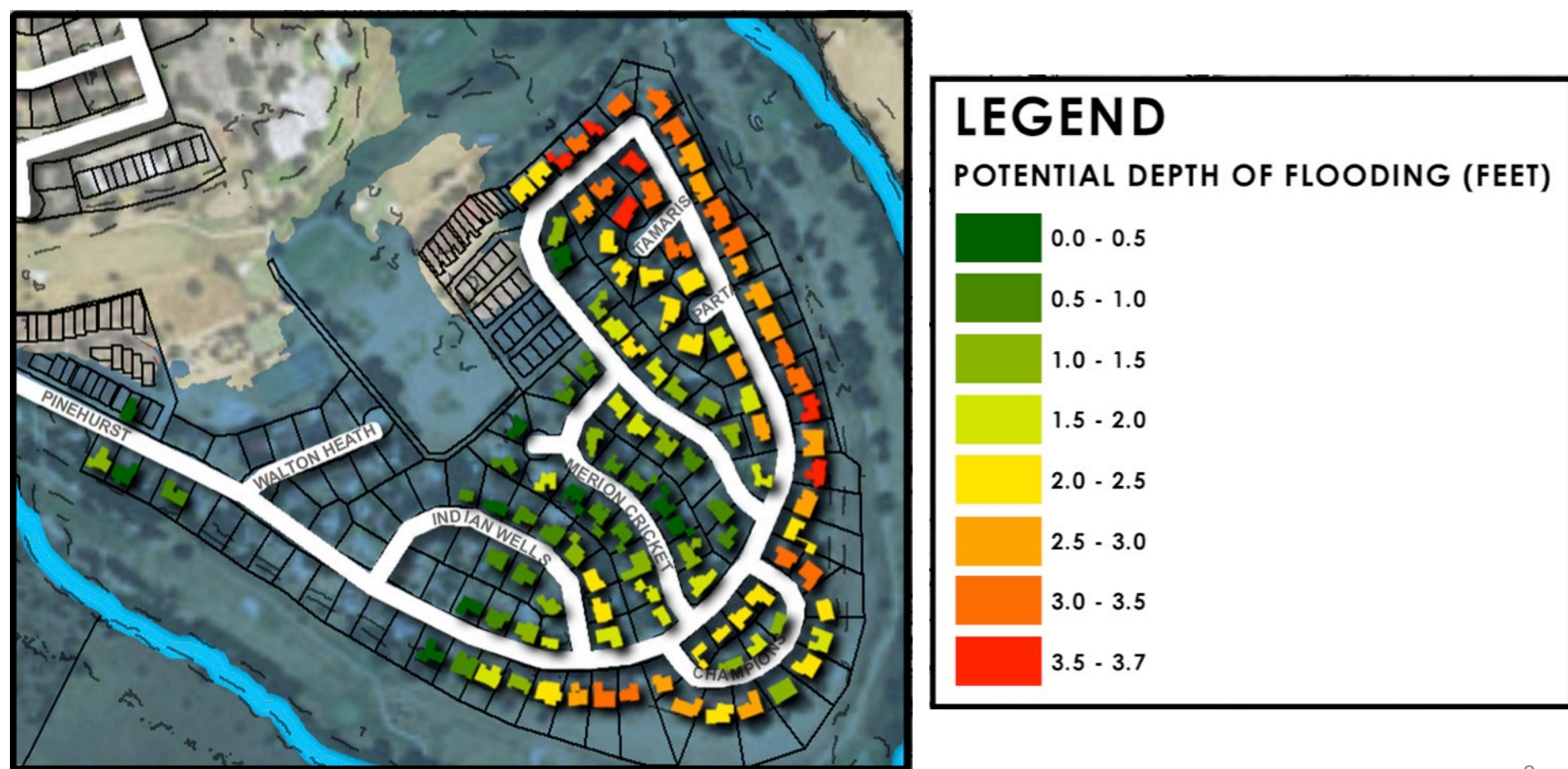


Risk: How much rain matters



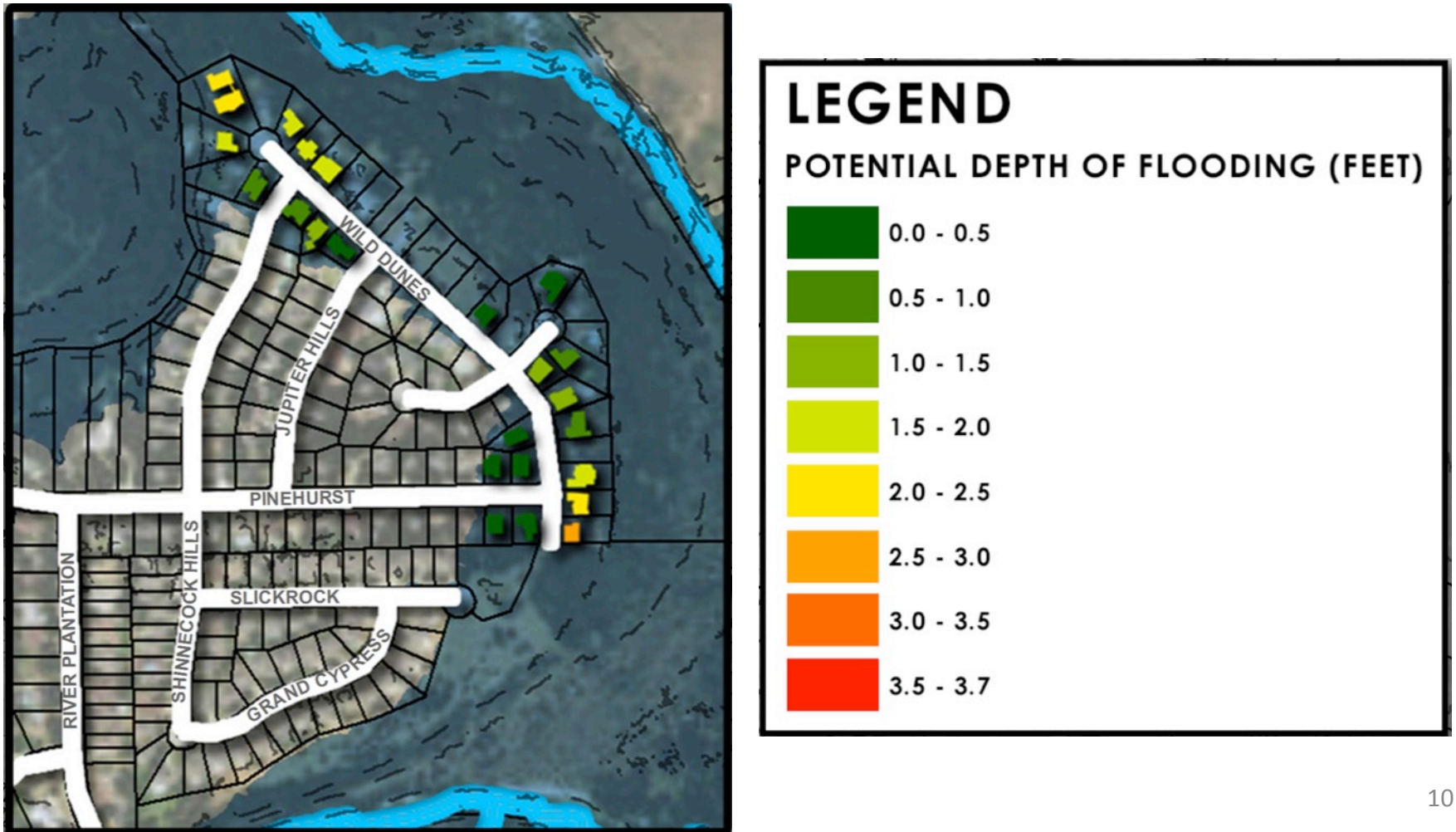
Existing Condition 100-year Flood Risk

- Pinehurst Neighborhood (116 houses at risk)



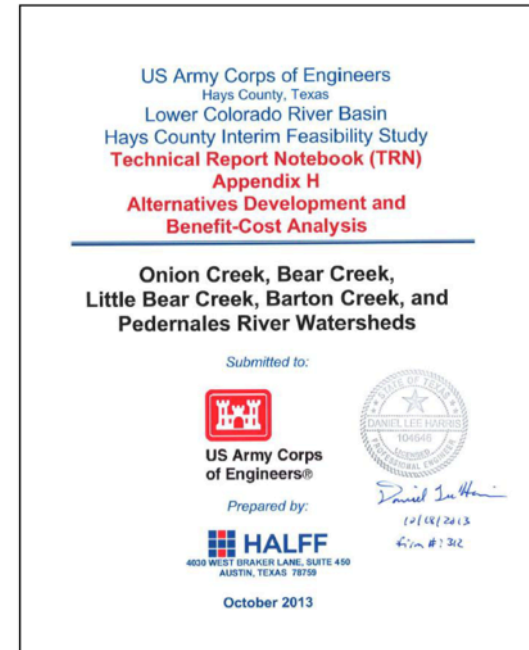
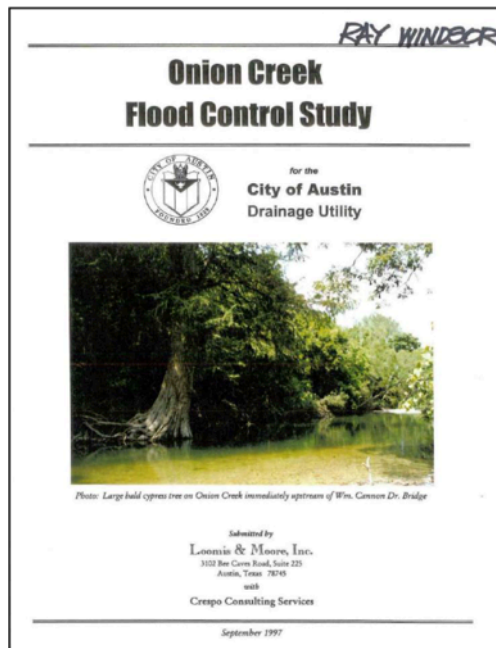
Existing Condition 100-year Flood Risk

- Wild Dunes Neighborhood (23 houses at risk)



Previous Studies

- 1997 – Loomis and Moore
- 2006 – U.S. Army Corps of Engineers
- 2013 – U.S. Army Corps of Engineers, Hays County



A photograph of a residential street completely flooded with water. In the background, there are trees and a house with a stone chimney. A white car is partially submerged on the right. A blue rectangular overlay covers the middle of the image, containing the title text.

Alternatives Analysis

Final Alternatives Considered

- **Stand-Alone Options**

- Regional Detention Ponds
- Channel Clearing
- Voluntary Buyouts
 - Pinehurst Neighborhood
 - Wild Dunes Neighborhood

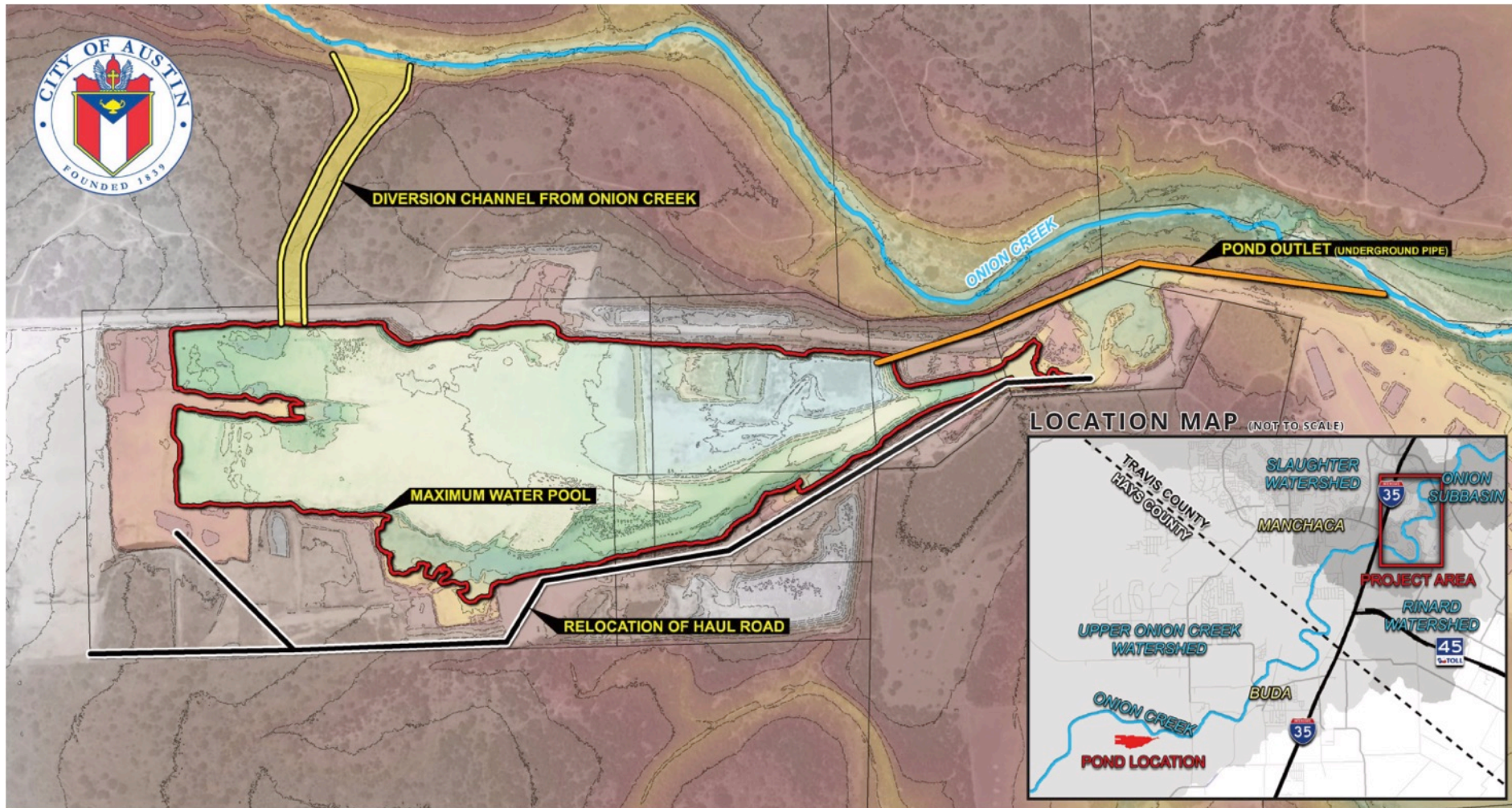
- **Combined Options**

- Centex West Detention Pond with Channel Modifications
- Pinehurst Flood Protection Wall with Voluntary Buyouts
- Pinehurst Flood Protection Wall with Channel Modifications

Evaluation Criteria

- Benefits & Costs
- Environmental Impacts
- Land & Easement Acquisition Required
- Complexity of Permitting
- Funding Constraints
- Time of Implementation
- Neighborhood Input

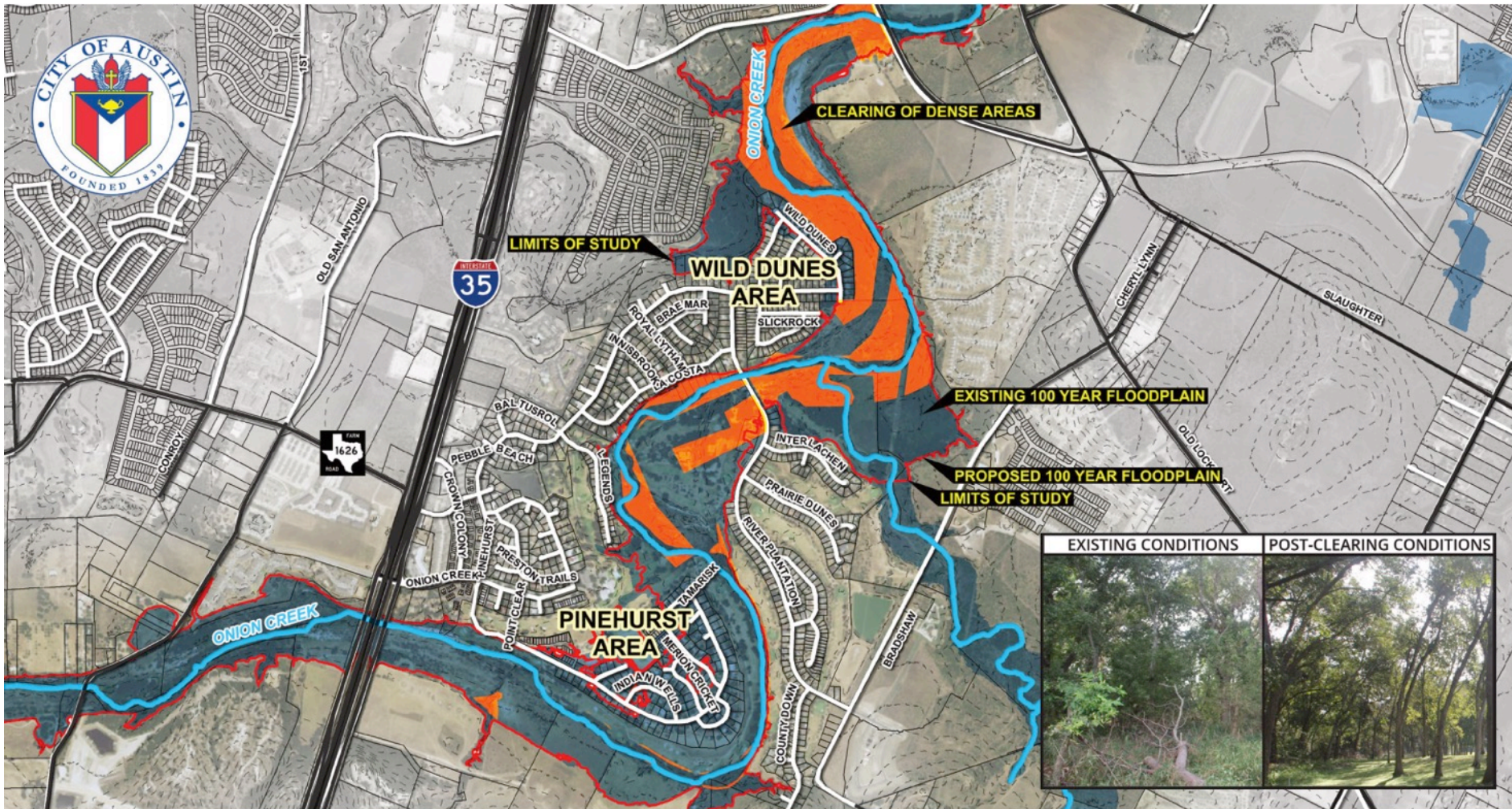
Centex West Regional Detention Pond



Centex West Regional Detention Pond

| | |
|--|---------------|
| Project Cost | \$51 million |
| Time of Completion (if funded) | Over 10 years |
| Protected from 100-year flood | 79 houses |
| Still at risk in 100-year flood | 60 houses |

Channel Clearing



Channel Clearing

| | |
|--|--|
| Project Cost | \$36 million |
| Time of Completion (if funded) | 2 to 5 years (plus perpetual, intensive maintenance) |
| Protected from 100-year flood | 52 houses |
| Still at risk in 100-year flood | 87 houses |

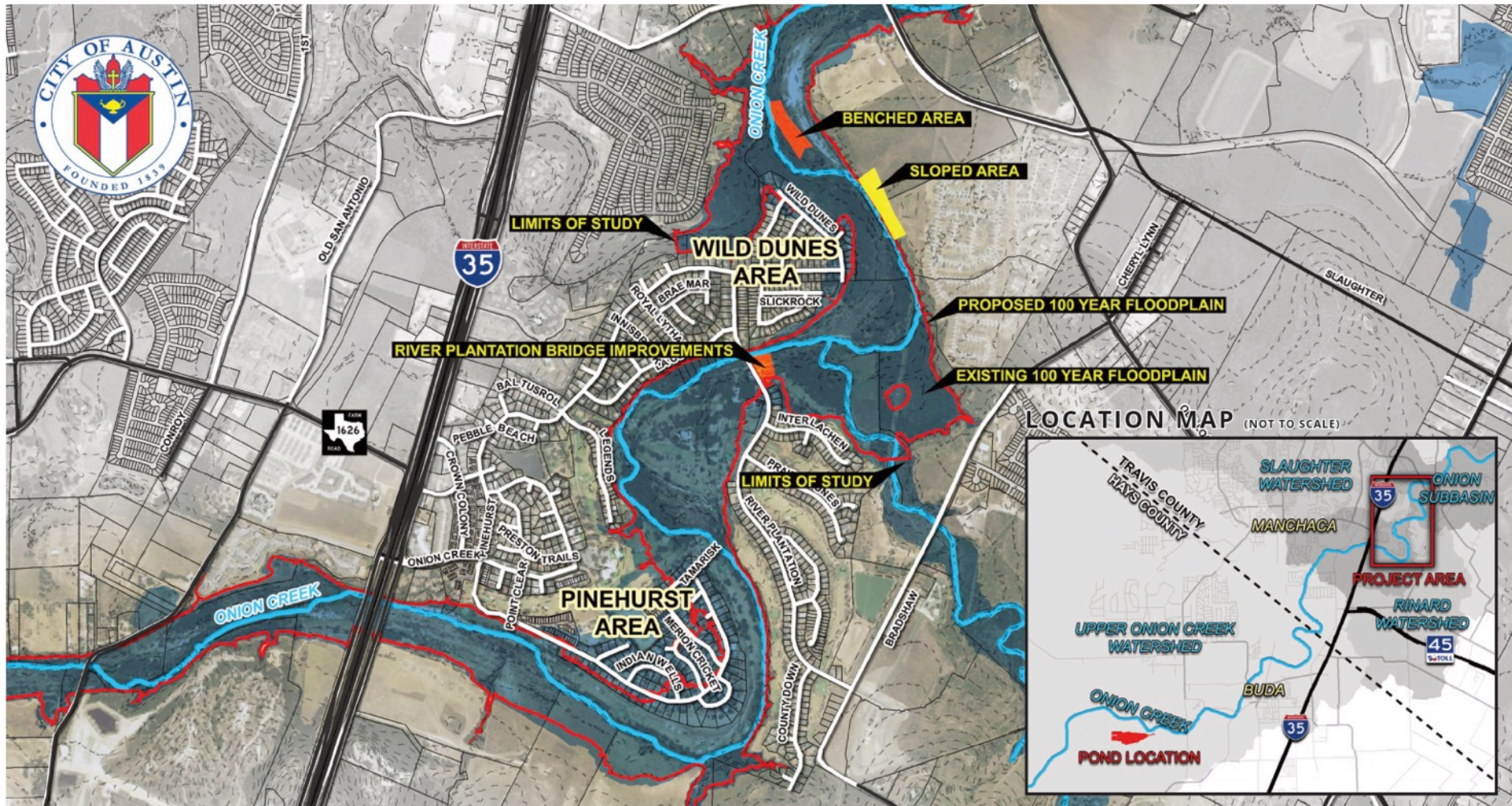
Voluntary Buyouts



Voluntary Buyouts

| | |
|--|--------------|
| Project Cost | \$99 million |
| Time of Completion (if funded) | 2 years |
| Protected from 100-year flood | 139 houses |
| Still at risk in 100-year flood | 0 houses |

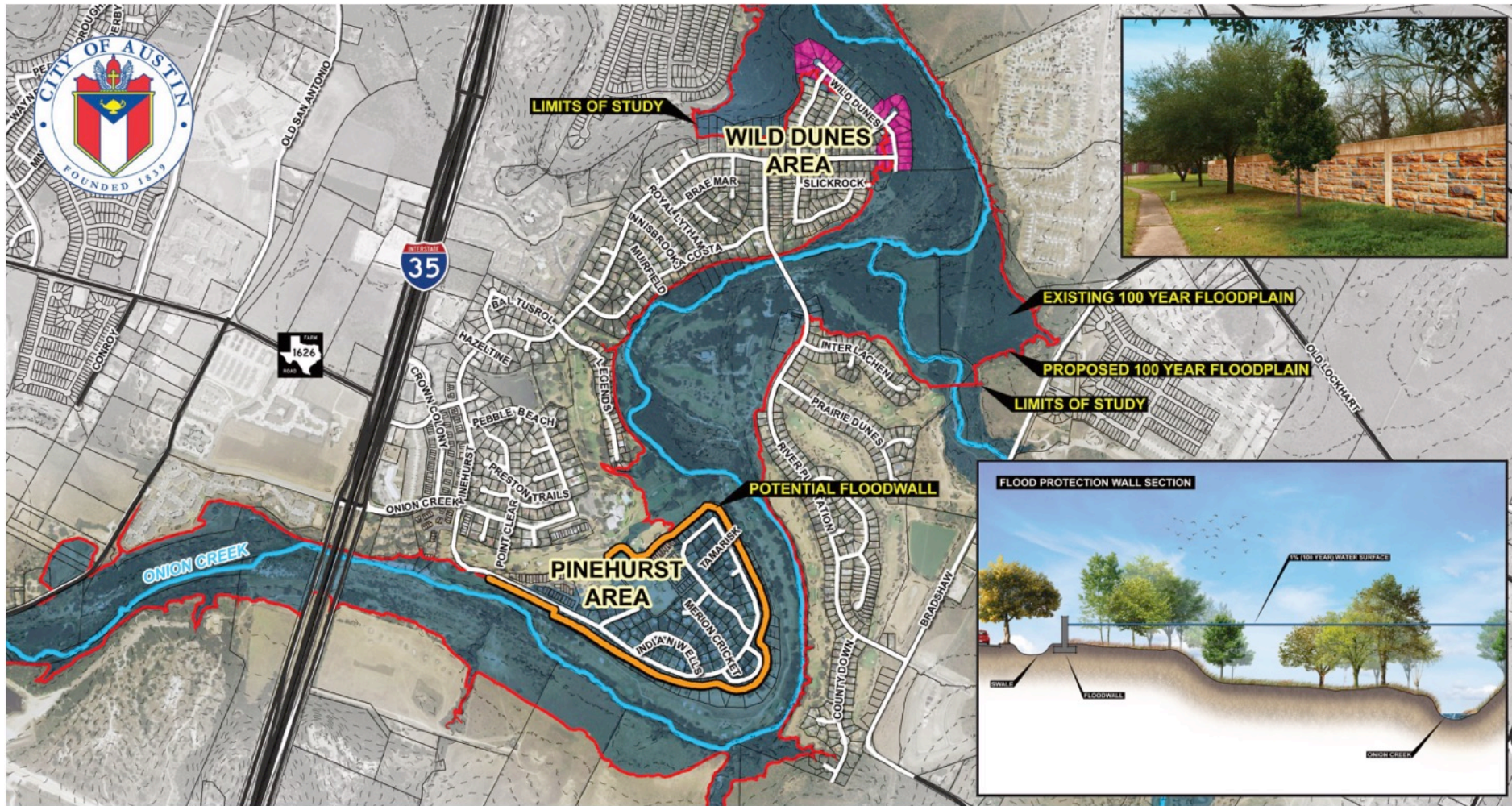
Centex West Detention Pond with Channel Modifications



Centex West Detention Pond with Channel Modifications

| | |
|--|---------------|
| Project Cost | \$71 million |
| Time of Completion (if funded) | Over 10 years |
| Protected from 100-year flood | 111 houses |
| Still at risk in 100-year flood | 28 houses |

Pinehurst Flood Protection Wall with Voluntary Buyouts



Pinehurst Flood Protection Wall with Voluntary Buyouts

| | |
|--|--------------|
| Project Cost | \$62 million |
| Time of Completion (if funded) | 5 to 7 years |
| Protected from 100-year flood | 139 houses |
| Still at risk in 100-year flood | 0 houses |

The map displays the Wild Dunes Area and Pinehurst Area, showing Union Creek and its floodplains. Key features include:

- City of Austin Logo:** Located in the top left corner, featuring the text "CITY OF AUSTIN" and "FOUNDED 1859".
- Map Labels:**
 - WILD DUNES AREA:** The central area of the map, including neighborhoods like Wild Dunes, Slickrock, and River Plantation.
 - PINEHURST AREA:** Located at the bottom of the map, including neighborhoods like Pinehurst, Pebble Beach, and Preston Trails.
 - UNION CREEK:** The main waterway flowing through the area.
 - RIVER PLANTATION BRIDGE IMPROVEMENTS:** A specific project area along the creek.
 - POTENTIAL FLOODWALL:** A proposed structure to manage flooding.
 - EXISTING 100 YEAR FLOODPLAIN:** Shaded in light blue.
 - PROPOSED 100 YEAR FLOODPLAIN:** Shaded in dark blue.
 - LIMITS OF STUDY:** Indicated by a red line.
 - BENCHED AREA:** A specific area of the floodplain.
 - SLOPED AREA:** A specific area of the floodplain.
 - CHANNEL MODIFICATIONS SECTION:** A detailed view of the creek channel.
- Inset Images:**
 - Channel Modifications Section:** A cross-section diagram showing the existing ground, existing homes, and the proposed channel modifications.
 - Potential Floodwall:** A photograph of a stone wall with trees in the background.




Pinehurst Flood Protection Wall with Channel Modifications

| | |
|--|---------------|
| Project Cost | \$88 million |
| Time of Completion (if funded) | 7 to 10 years |
| Protected from 100-year flood | 139 houses |
| Still at risk in 100-year flood | 0 houses |

Evaluation Criteria

- Benefits & Costs
- Environmental Impacts
- Land & Easement Acquisition Required
- Complexity of Permitting
- Funding Constraints
- Time of Implementation
- Neighborhood Input

Criteria: Summary

| Criteria | <div>Best</div>  <div>Worst</div> | | |
|---------------------------|---|--|---|
| Benefits and Costs | <ul style="list-style-type: none"> • Wall with Buyouts | <ul style="list-style-type: none"> • Wall with Chl. Mods. • Voluntary Buyouts | <ul style="list-style-type: none"> • Centex West Pond • Pond with Chl. Mods. • Channel Clearing |
| Environmental Impacts | <ul style="list-style-type: none"> • Voluntary Buyouts | <ul style="list-style-type: none"> • Centex West Pond • Pond with Chl. Mods. • Wall with Buyouts | <ul style="list-style-type: none"> • Wall with Chl. Mods. • Channel Clearing |
| Time of Implementation | <ul style="list-style-type: none"> • Voluntary Buyouts | <ul style="list-style-type: none"> • Wall with Buyouts • Wall with Chl. Mods. • Channel Clearing | <ul style="list-style-type: none"> • Centex West Pond • Pond with Chl. Mods. |
| Land Acquisition Required | <ul style="list-style-type: none"> • Voluntary Buyouts | <ul style="list-style-type: none"> • Wall with Buyouts • Wall with Chl. Mods. | <ul style="list-style-type: none"> • Centex West Pond • Pond with Chl. Mods. • Channel Clearing |
| Complexity of Permitting | <ul style="list-style-type: none"> • Voluntary Buyouts | <ul style="list-style-type: none"> • Wall with Buyouts • Wall with Chl. Mods. • Channel Clearing | <ul style="list-style-type: none"> • Centex West Pond • Pond with Chl. Mods. |
| Neighborhood Input | <ul style="list-style-type: none"> • Centex West Pond • Pond with Chl. Mods. • Channel Clearing | <ul style="list-style-type: none"> • Wall with Chl. Mods. • Voluntary Buyouts | <ul style="list-style-type: none"> • Wall with Buyouts |
| Funding Constraints | <ul style="list-style-type: none"> • Voluntary Buyouts | <ul style="list-style-type: none"> • Pond with Chl. Mods. • Wall with Buyouts • Wall with Chl. Mods. • Channel Clearing | <ul style="list-style-type: none"> • Centex West Pond |



Key Issues & Next Steps

Key Issues

Level of Protection

(Benefit vs. Cost)

Funding Limitations

- Ineligible for federal and state funding
- City sources:
 - Drainage Utility Fund (City Council approval)
 - Bonds (City Council and/or voter approval)

Time of Implementation

Next Steps

**Finalize
feasibility
study**

**Present to
Environmental
Commission
subcommittee**

June 7th

**Present to
City Council**

Questions?

City of Austin Watershed Protection Department

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