

# Onion Creek Floodplain and Flood Hazard Mitigation Study

*November 15, 2016*

City of Austin  
Watershed Protection Department

# Meeting Overview

- New Floodplain Study
  - Why?
  - Where?
  - How will it affect you?
- Flood Mitigation
- Regional Coordination
- Recovery Buyouts
- Schedule / Funding
- Q&A
- Breakout Groups

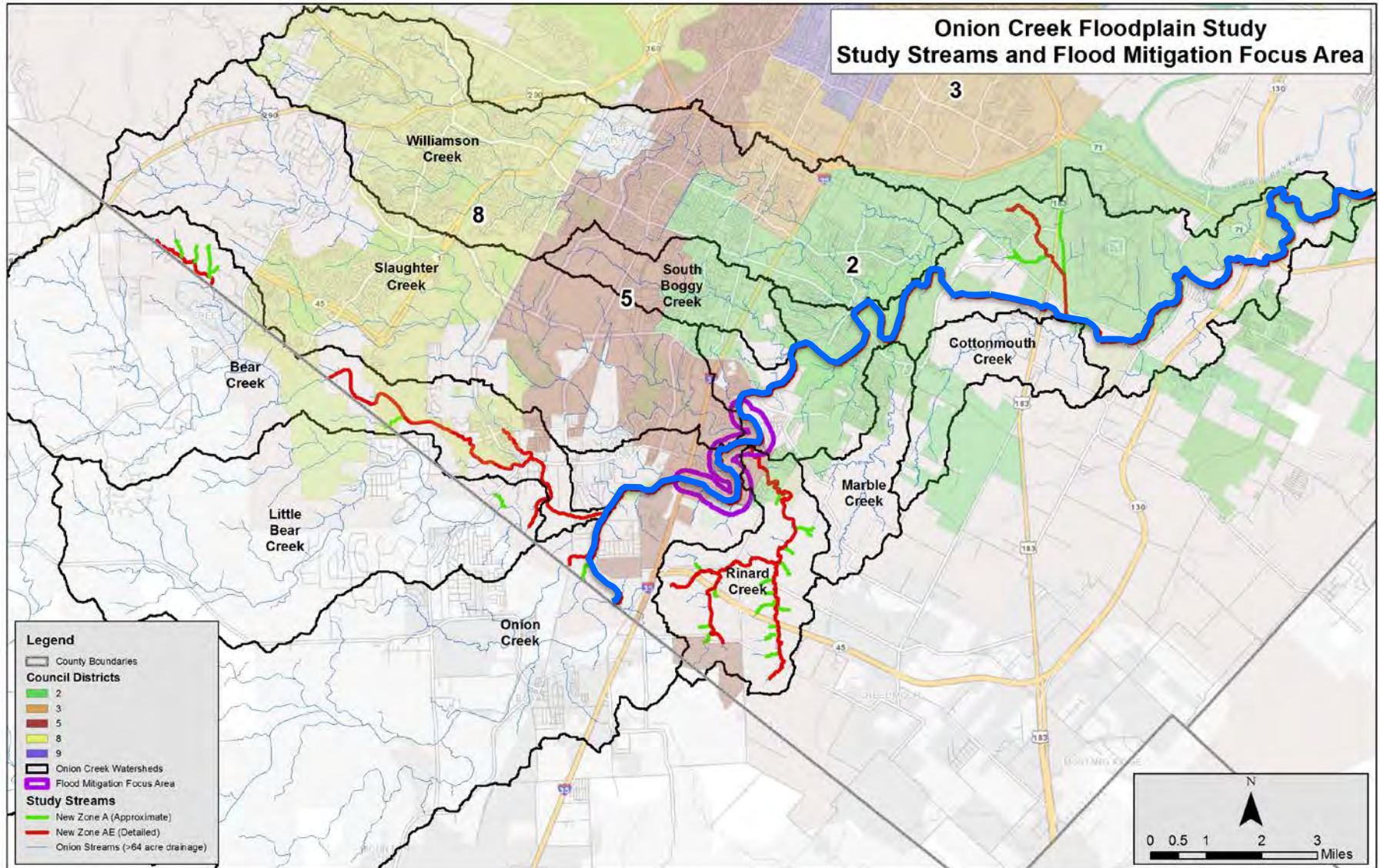


# Update of Floodplain Study

- 4 parts to a study
  - Survey  
(ground elevations)
  - Hydrology  
(how much water)
  - Hydraulics  
(how high is the water)
  - Mapping  
(where does the water go)
- Fully-developed vs. FEMA floodplains



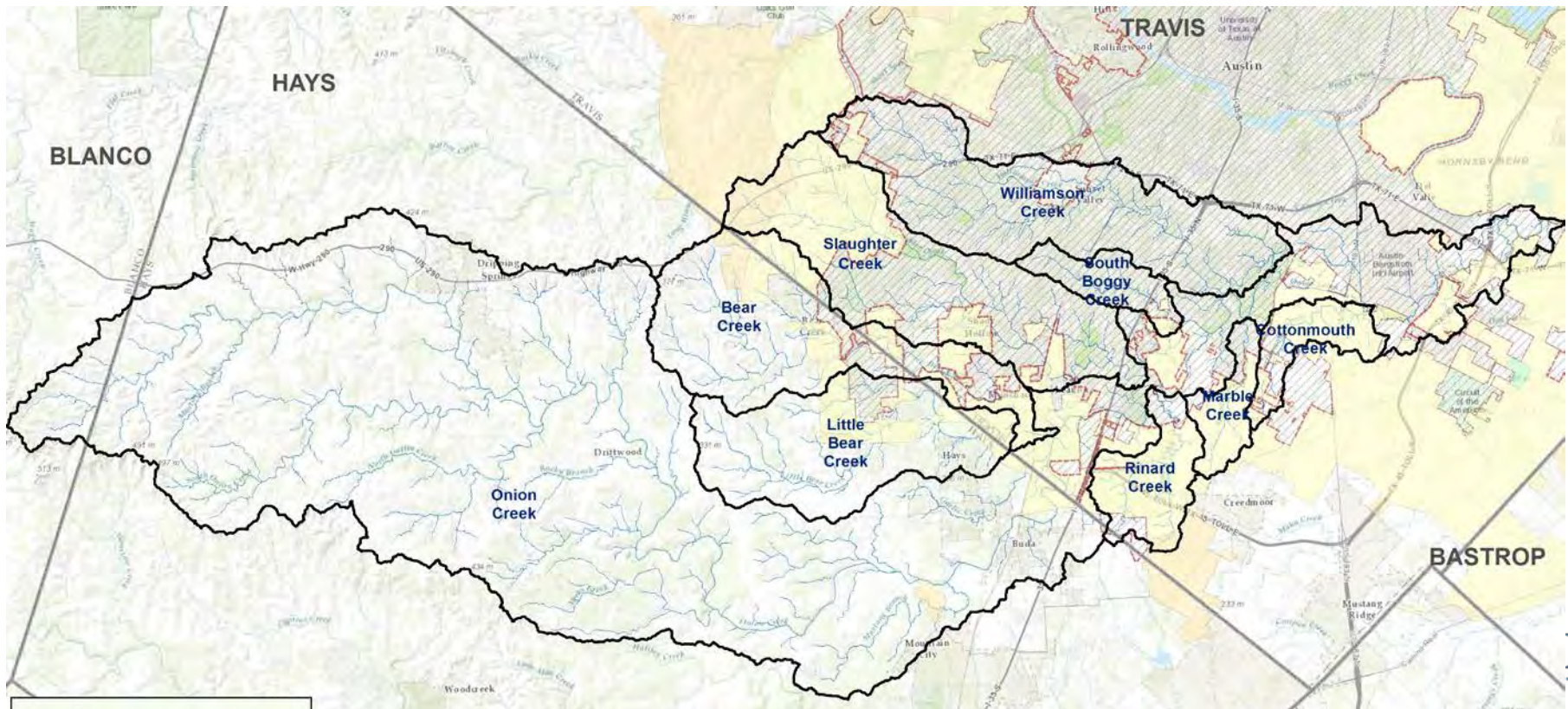
# Scope of Work – Floodplain Study



# Onion Creek Hydrology

## How much flow is in Onion Creek?

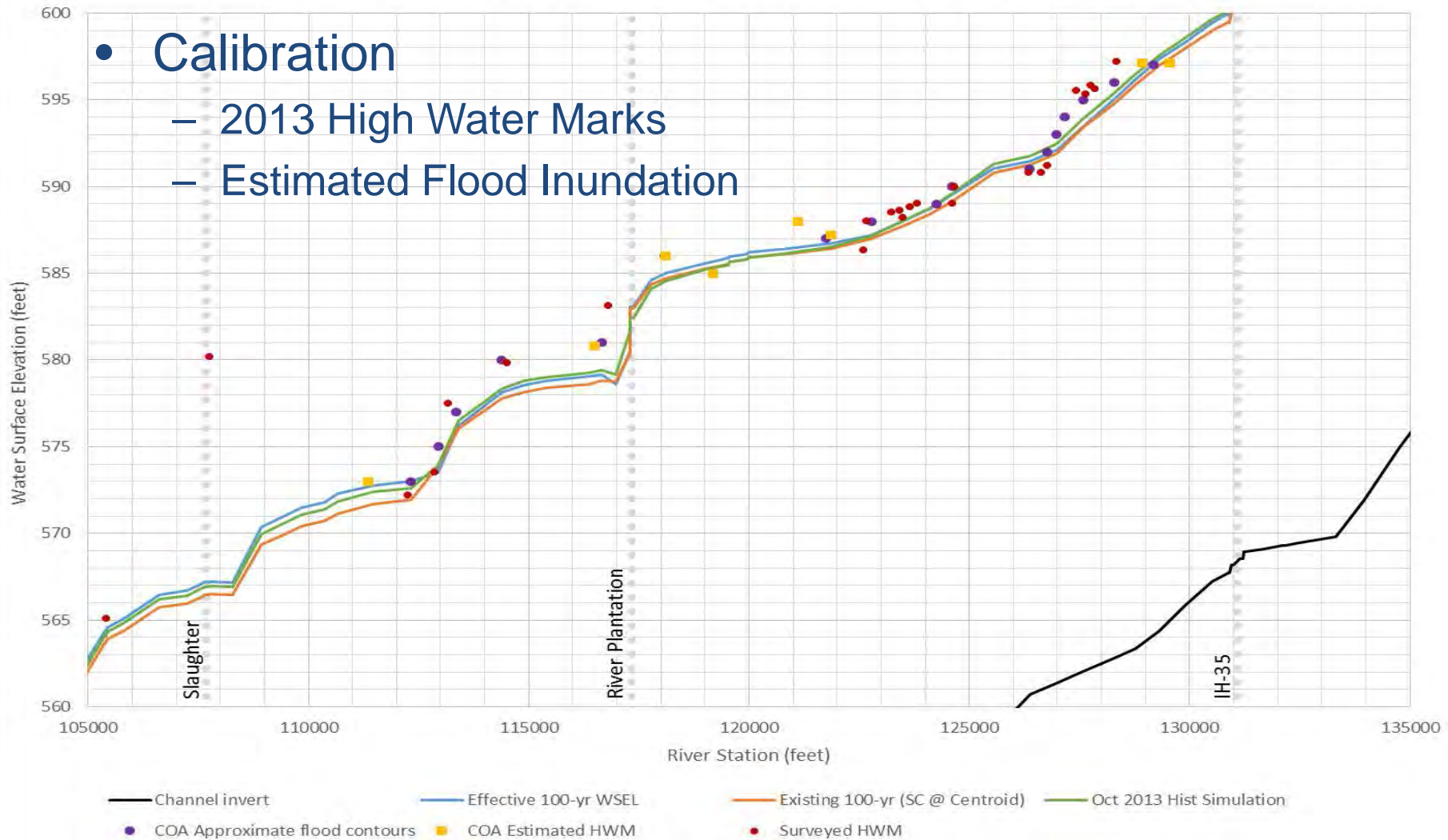
- Flood events October 2013 and 2015
- 345 square miles
- Considerable variation in previous studies
- Multiple, large tributaries



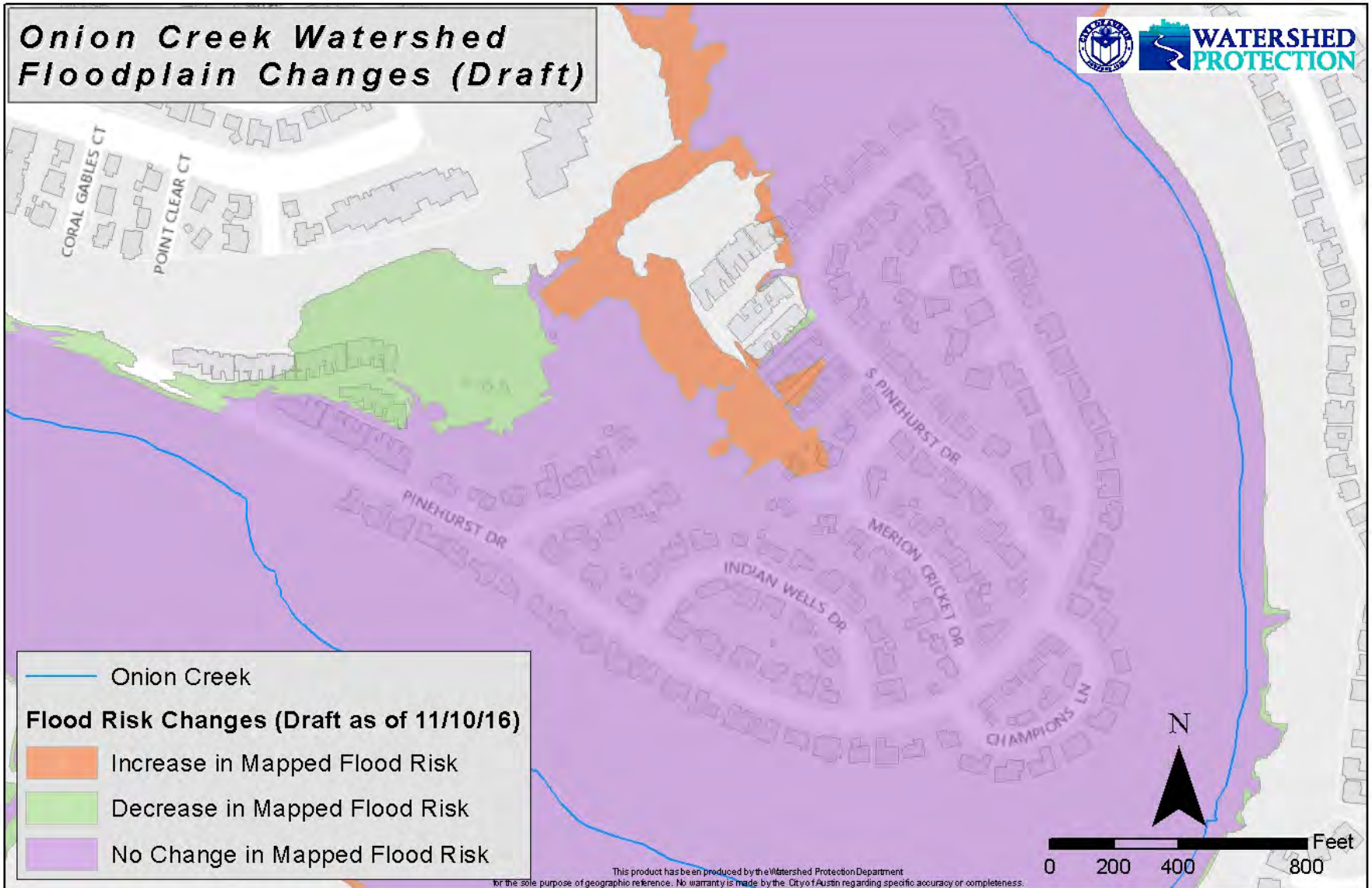
# Onion Creek Hydraulics

## How high does the water get?

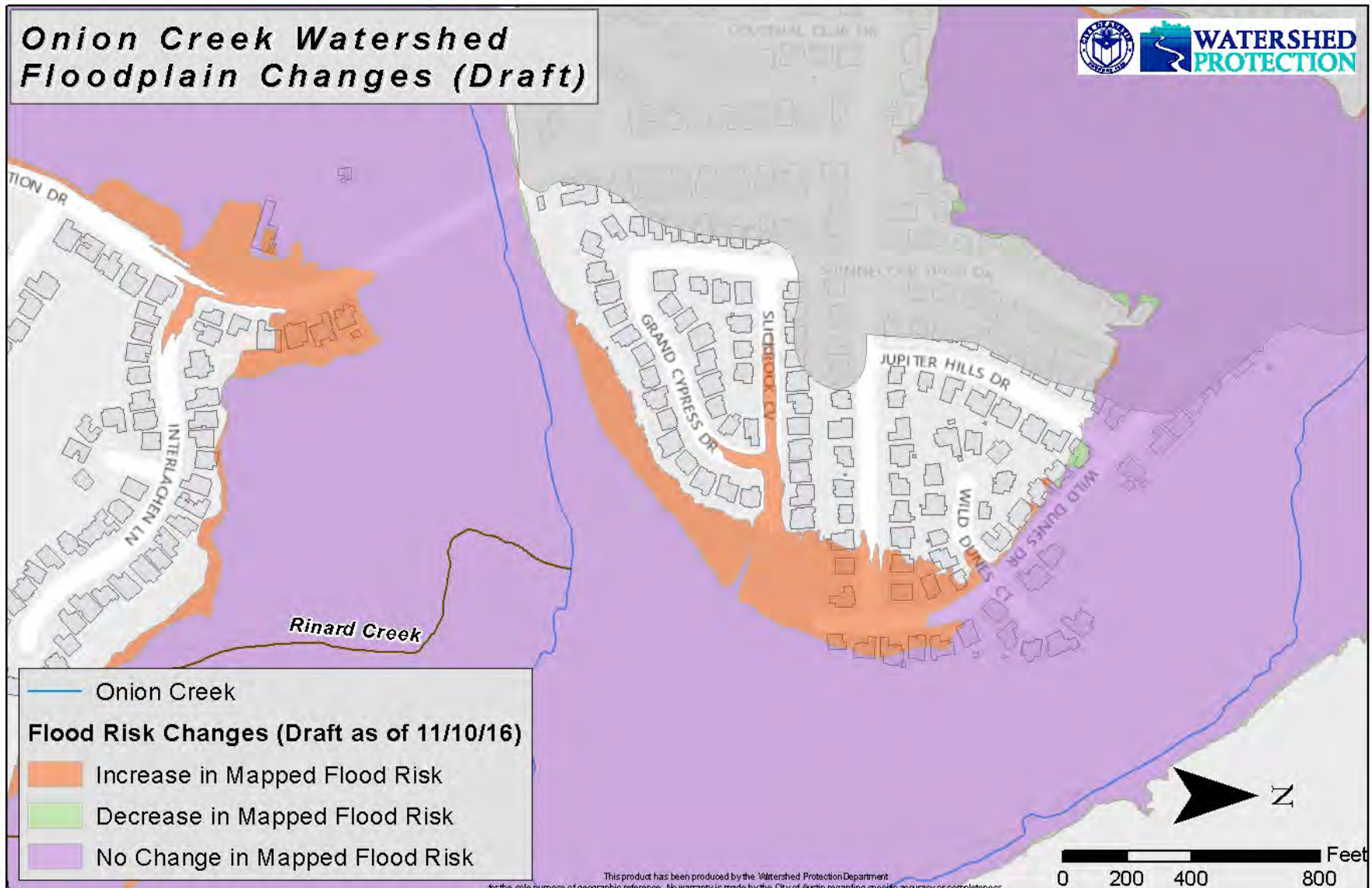
Onion Creek 100-year profile vs. October 2013 HWM survey comparison



# Floodplain Changes – Pinehurst Area



# Floodplain Changes – Wild Dunes Area





# Timeline for New FEMA Maps

**Floodplains  
Effective for  
Development  
Purposes**

- January 2017

**FEMA Appeal  
and Comment  
Period**

- Spring 2017

**Production of  
Final FEMA  
Maps**

- Fall 2017

**FEMA Maps  
Become  
Effective**

- Spring 2018

# Flood Safety & Preparedness

## Learn...

... *Flooding can be deadly. Learn where flooding may occur.*

[www.ATXFloodPro.com](http://www.ATXFloodPro.com)

[www.ATXFloods.com](http://www.ATXFloods.com)

## Plan...

... *Make an emergency plan and kit.*

[www.austintexas.gov/department/preparedness](http://www.austintexas.gov/department/preparedness)

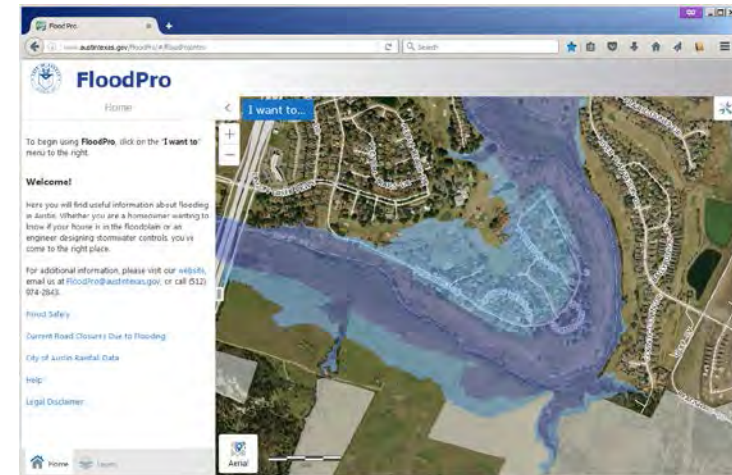
**preparedness**

... *Consider purchasing flood insurance.*

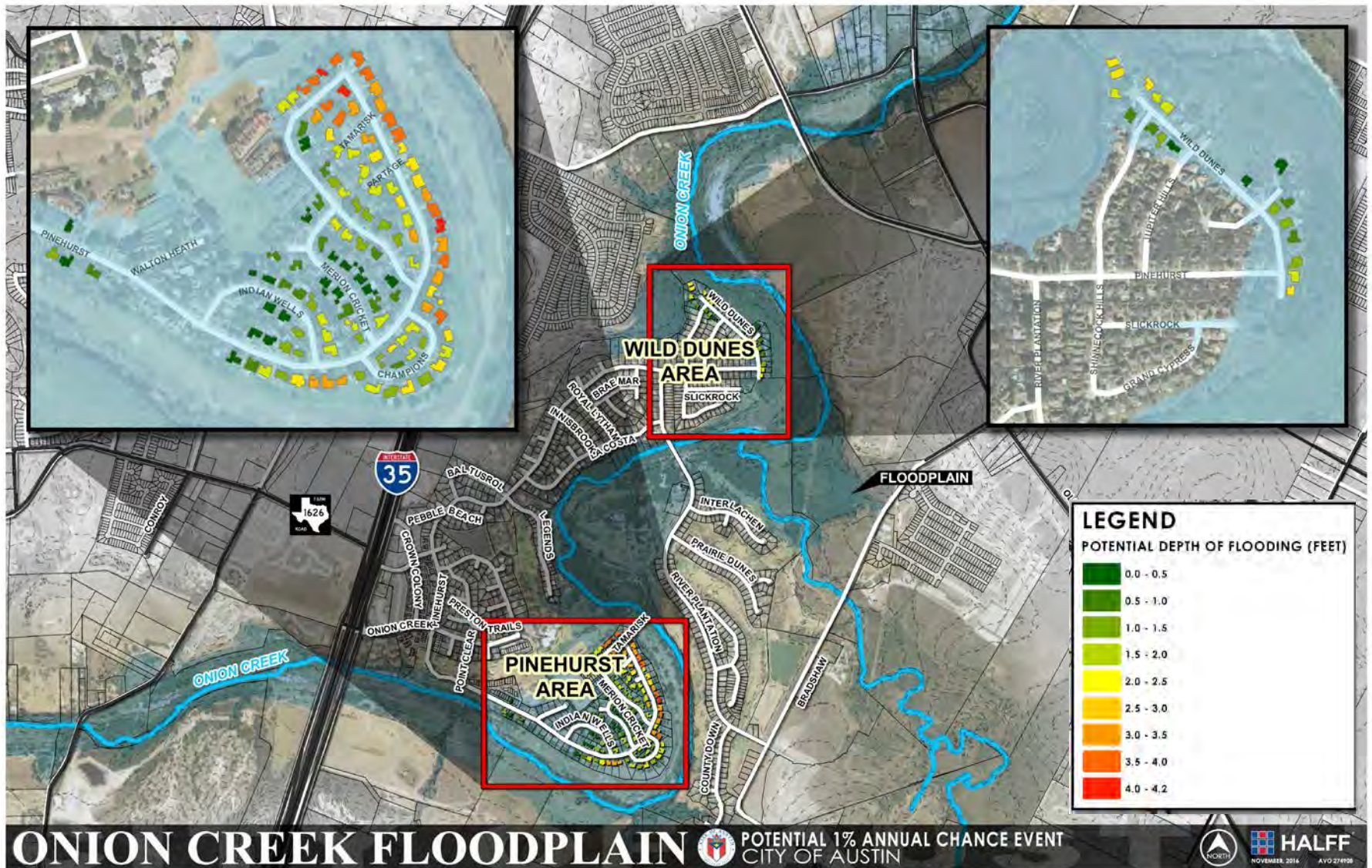
## Live...

... *Flooding can have devastating effects on families and the community.*

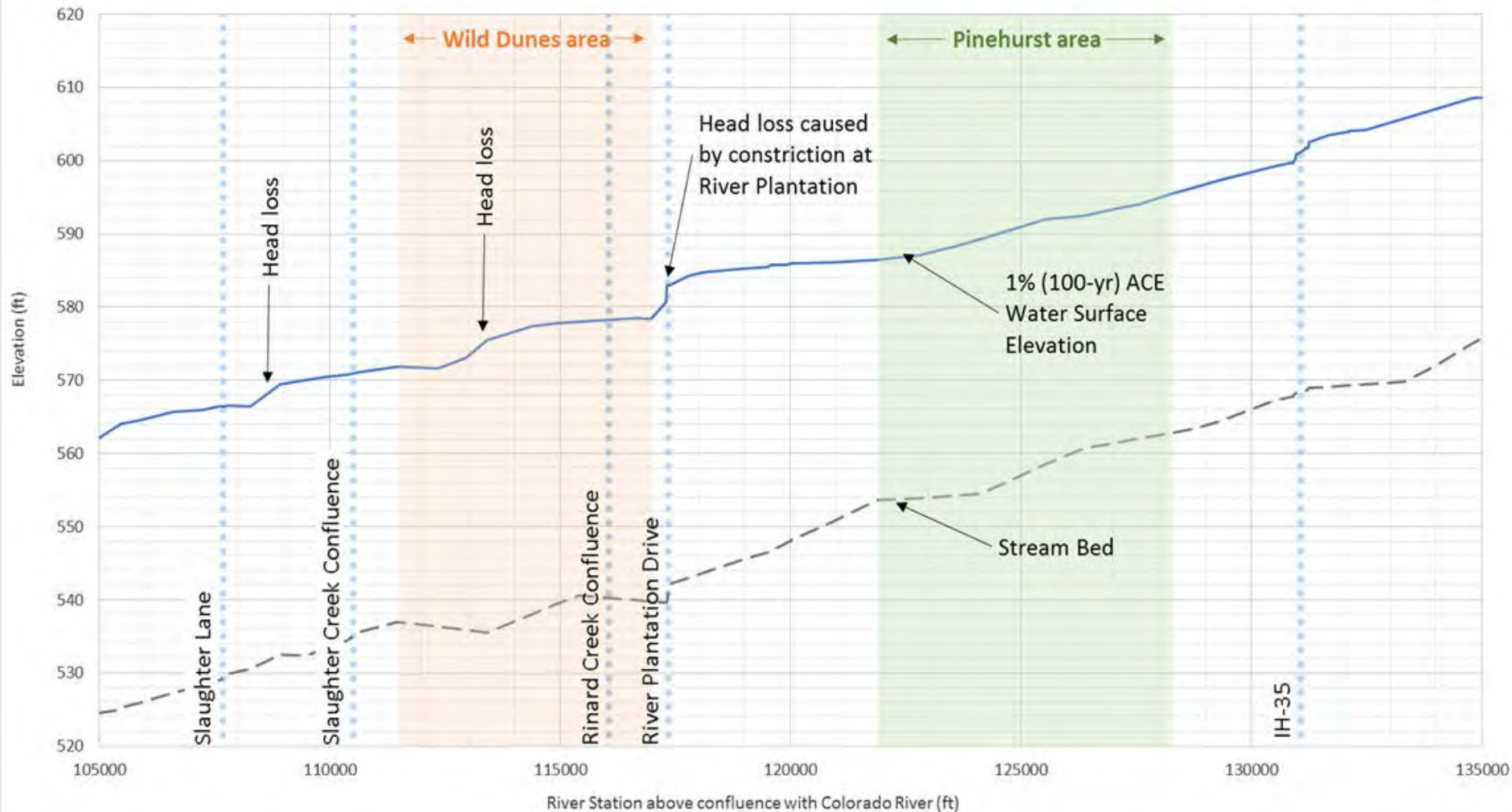
*Learn, plan, and live to protect your family, your property and yourself.*



# Existing Condition Flood Risk

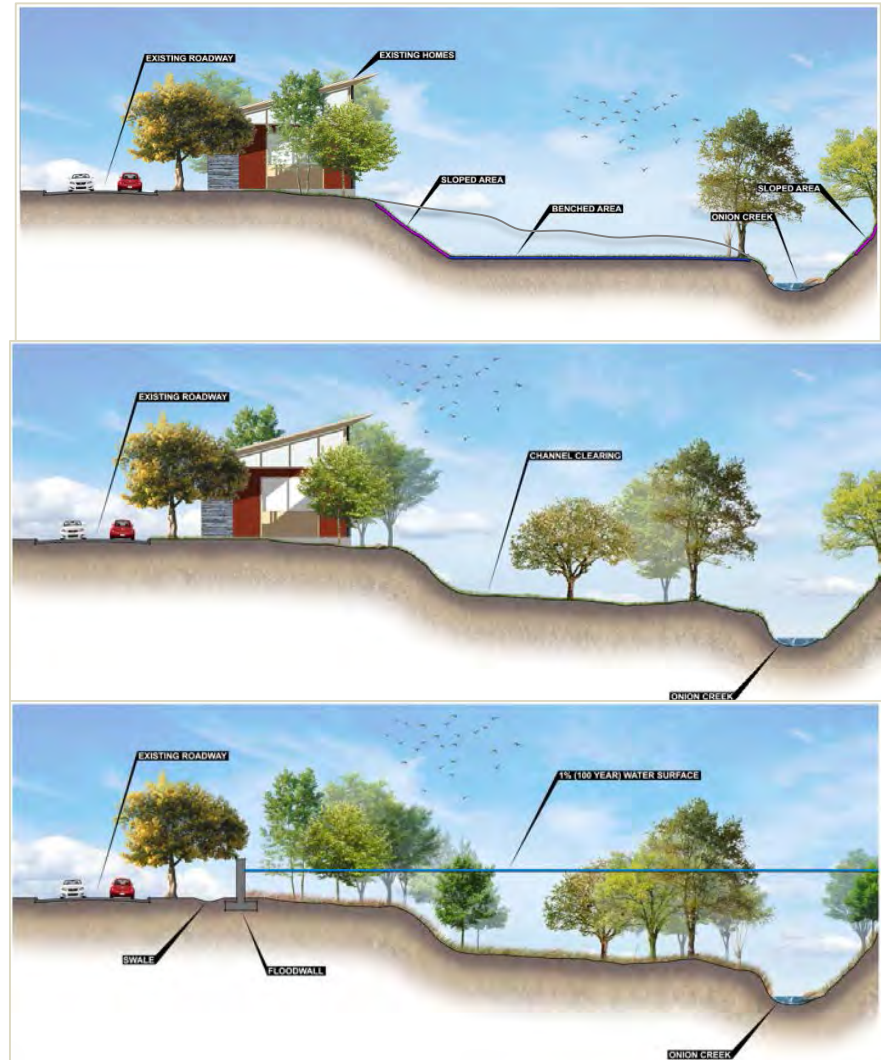


# Hydraulic Mitigation

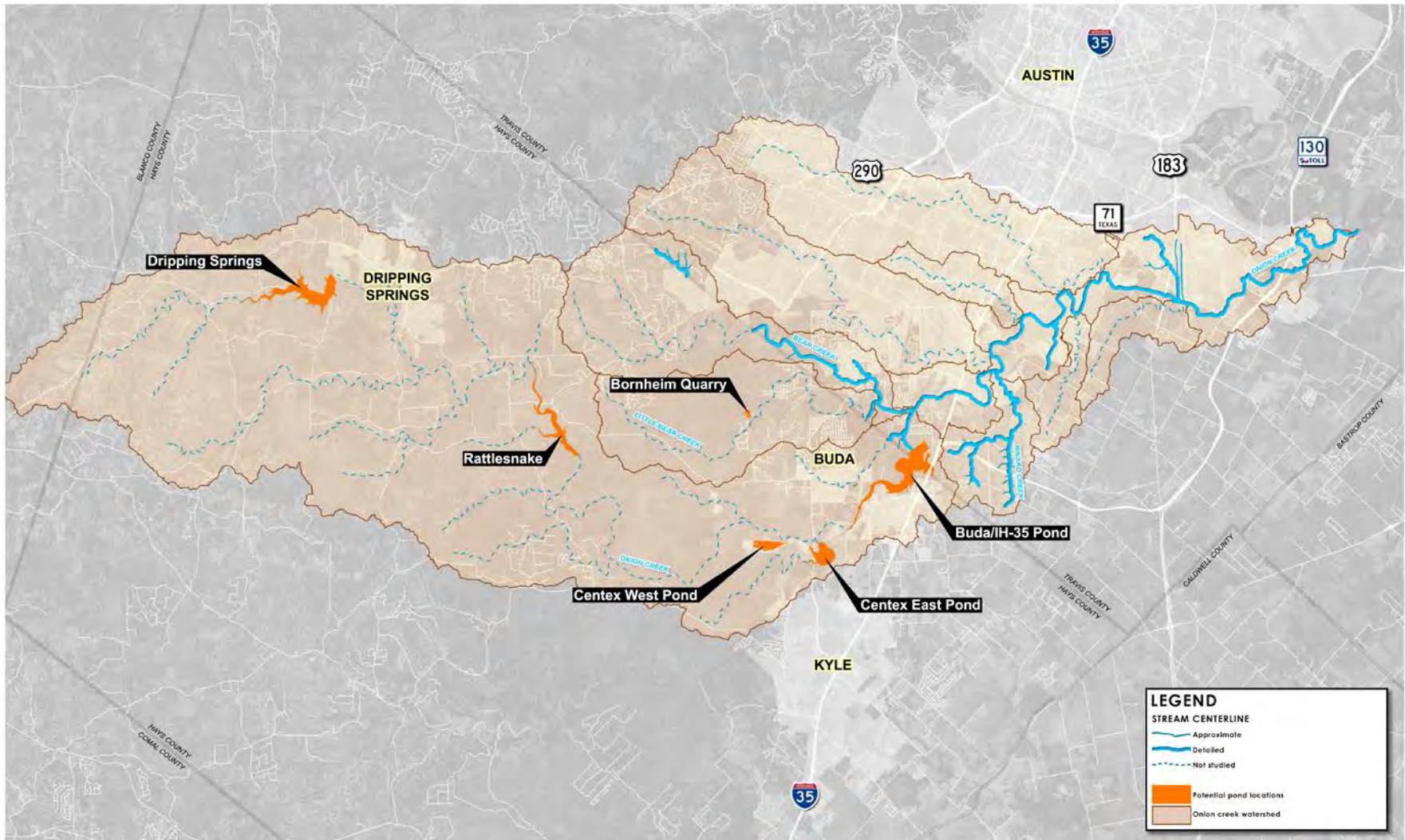


# Onion Creek Mitigation Alternatives

- Preliminary Analysis
  - Regional Detention
  - Channel Clearing
  - Channel Modification
  - Floodwall
  - Property Acquisition



# Regional Detention



# Regional Detention

- Evaluated Regional Ponds

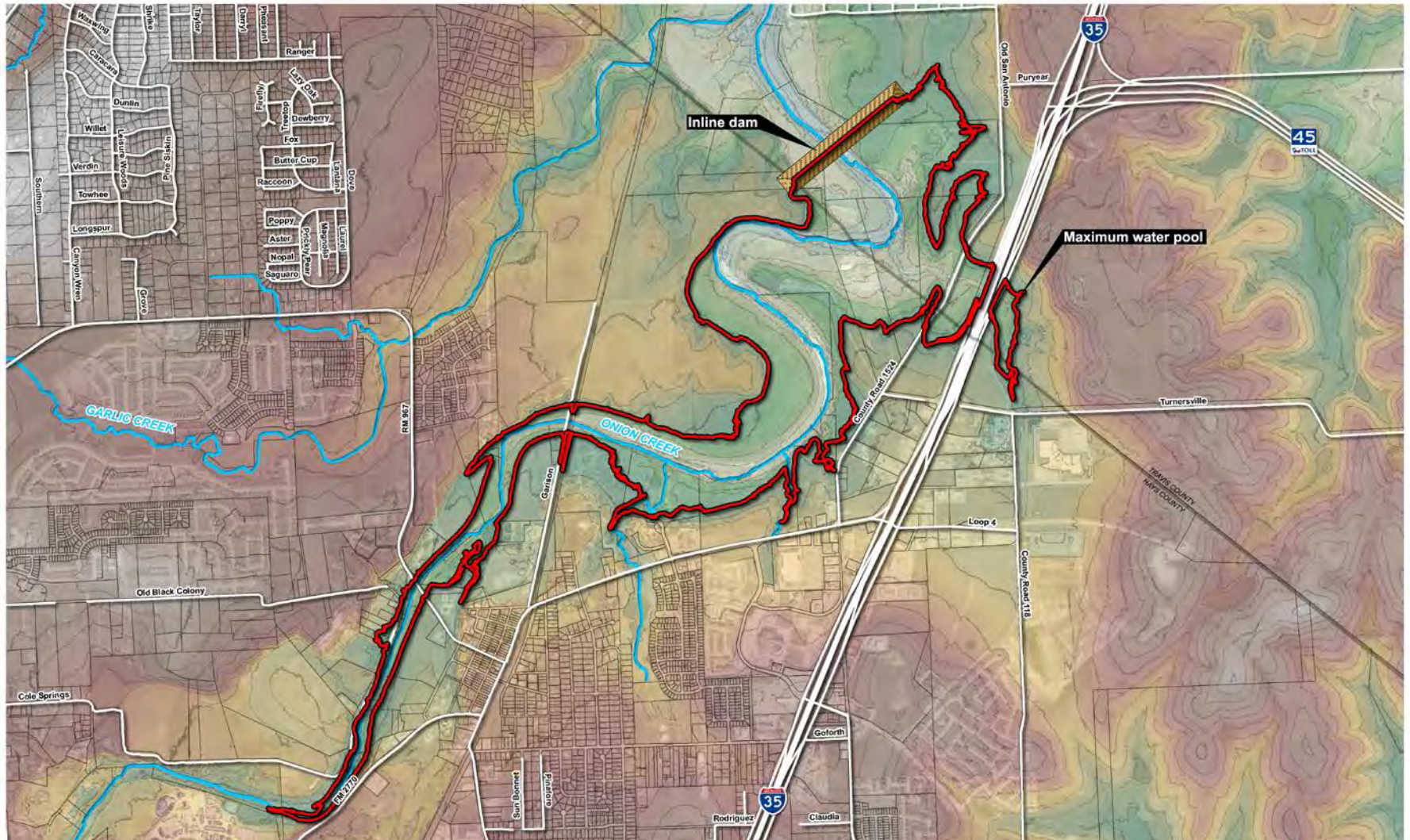
- Dripping Springs Pond
- Rattlesnake Pond
- Centex West Regional Pond

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- Buda / IH-35 Regional Pond
- Bornheim Quarry



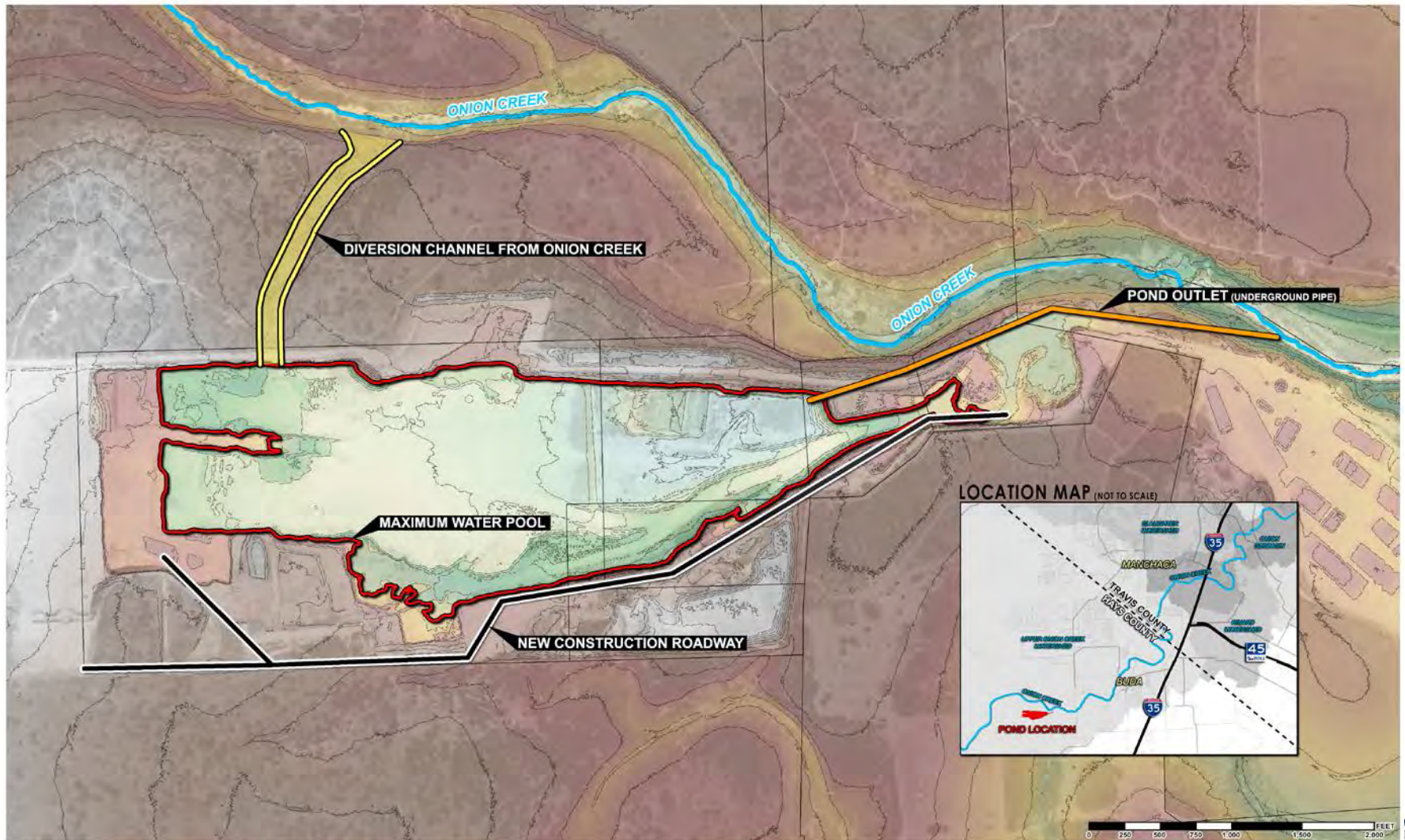
Dry Comal Creek Dam, Comal County / ~\$20M / ~2,900 ac-ft

# Buda / IH-35 Regional Pond





# Centex West Regional Pond



# Regional Detention

## Benefits

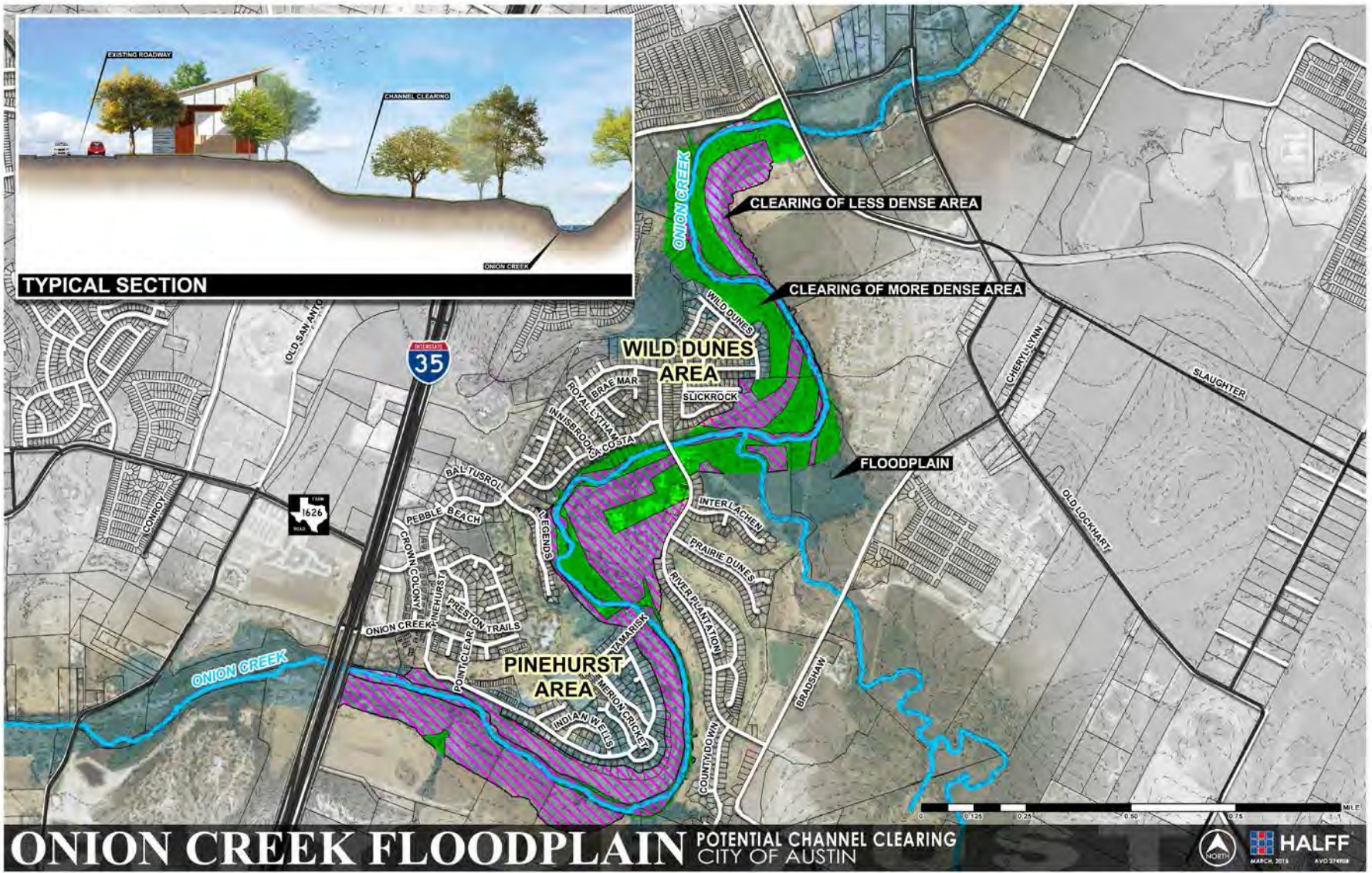
- 10-13% reduction of flow
- 1 to 3 ft Water Surface Reduction
- Mitigated Structures
  - 90 Pinehurst
  - 4 Wild Dunes

## Constraints

- Stakeholder Coordination
- Property Purchase
- Dam Safety / Permitting
- Environmental Impacts
- Combined Alternative



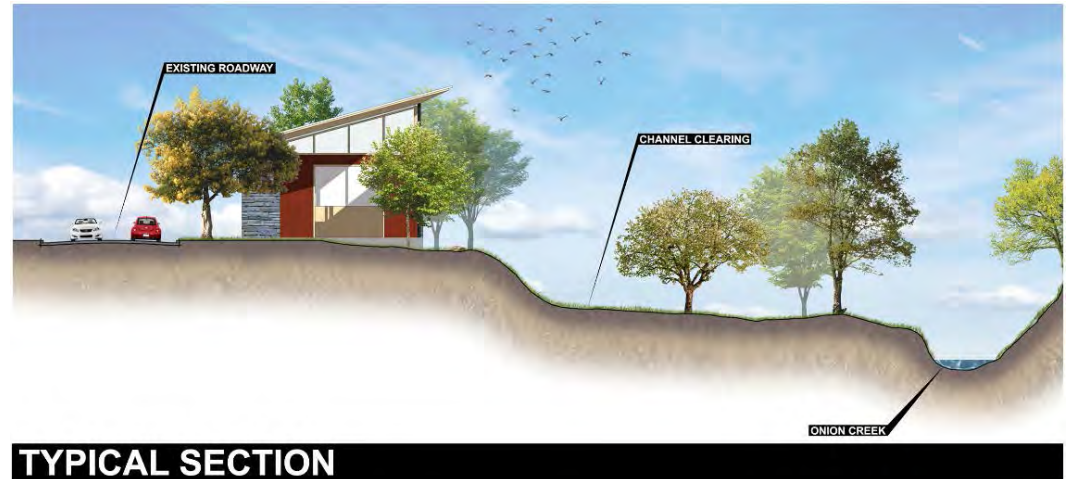
# Channel Clearing



# Channel Clearing

## Benefits

- 0.5 to 2.5 ft Water Surface Reduction
- Mitigated Structures
  - 78 Pinehurst
  - 7 Wild Dunes

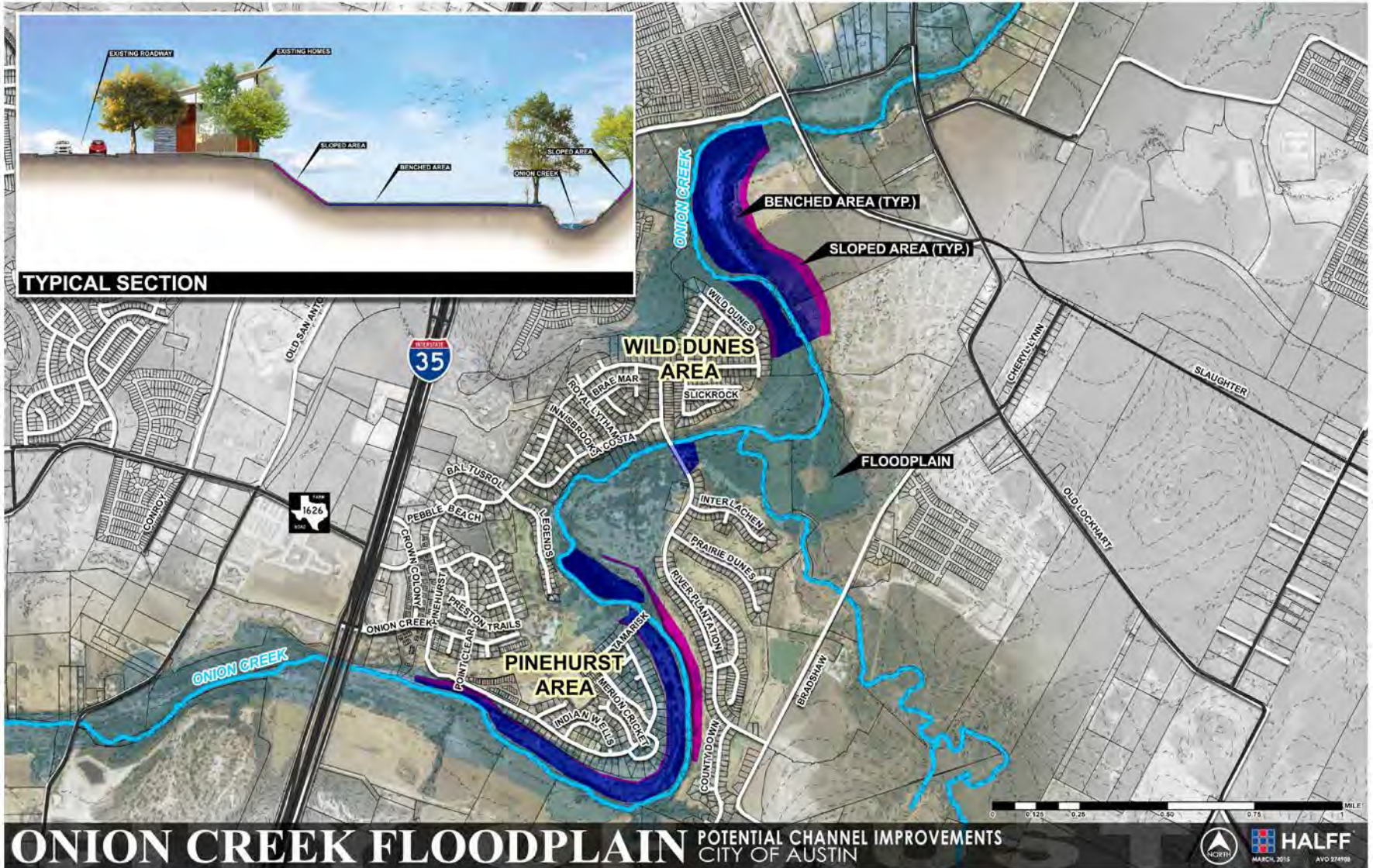


## Constraints

- Perpetual Maintenance
- Stakeholder Coordination
- Property Purchase
- Environmental Impacts
- Golf Course Impacts
- Combined Alternative



# Channel Modification



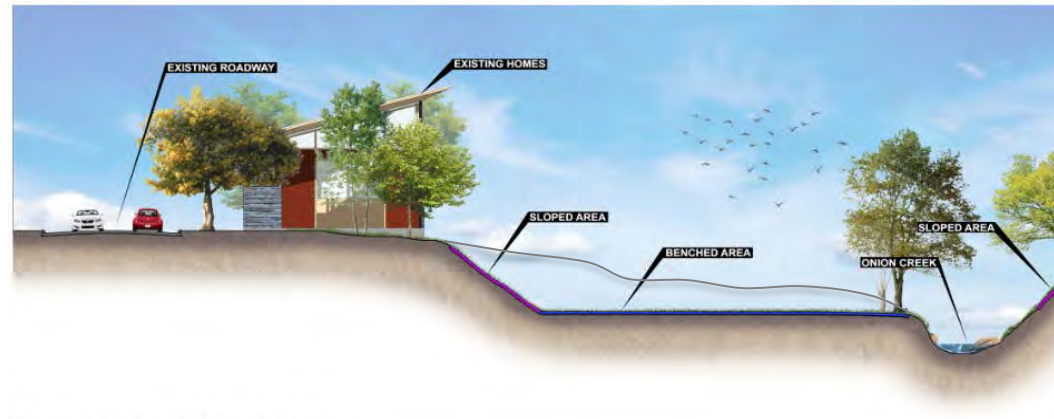
# Channel Modification

## Benefits

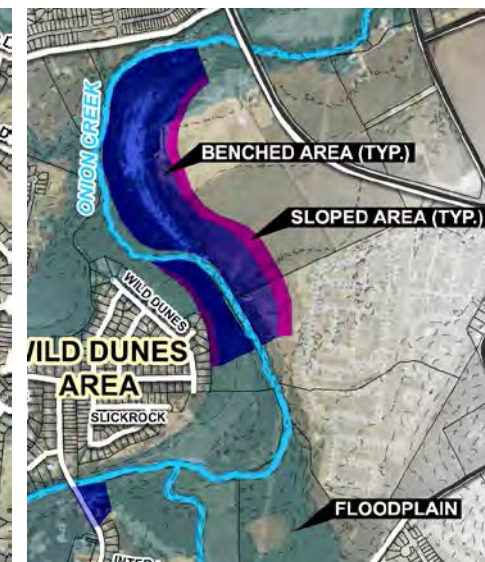
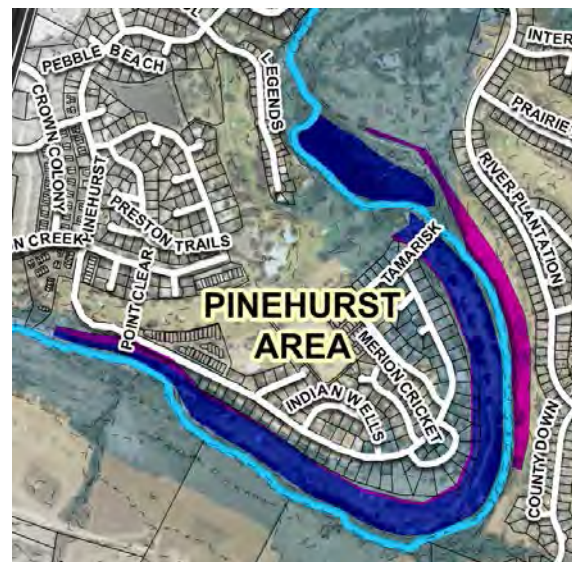
- 1.5 to 6 ft Water Surface Reduction
- Mitigated Structures
  - 105 Pinehurst
  - 18 Wild Dunes

## Constraints

- Perpetual Maintenance
- Stakeholder Coordination
- Property Purchase
- Environmental Impacts
- Golf Course Impacts
- Combined Alternative



**TYPICAL SECTION**



# Flood Protection Wall



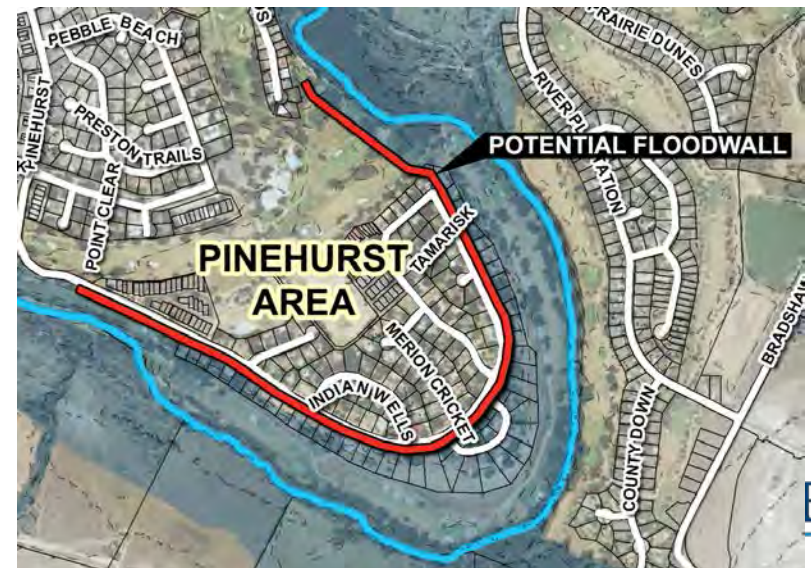
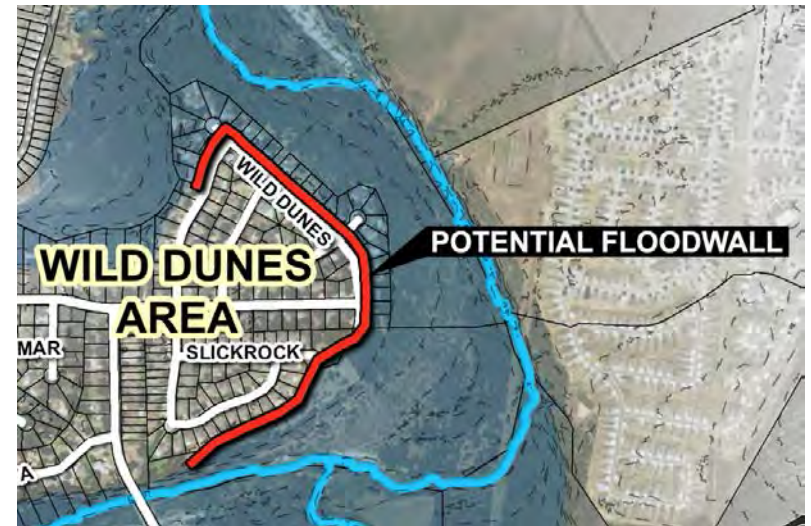
# Flood Protection Wall

## Benefits

- Mitigated Structures
  - 69 Pinehurst
  - 3 Wild Dunes
- Higher level of protection

## Constraints

- Stakeholder Coordination
- Property Purchase
  - 55 Pinehurst
  - 31 Wild Dunes
- Levee Compliance / Permitting
- Maintenance
- Environmental Impacts
- Golf Course Impacts





# Property Acquisition



# Property Acquisition

## Benefits

- Mitigated Structures
  - 114 Pinehurst
  - 18 Wild Dunes
- Scalable Protection

## Constraints

- Community Impacts
- Maintenance



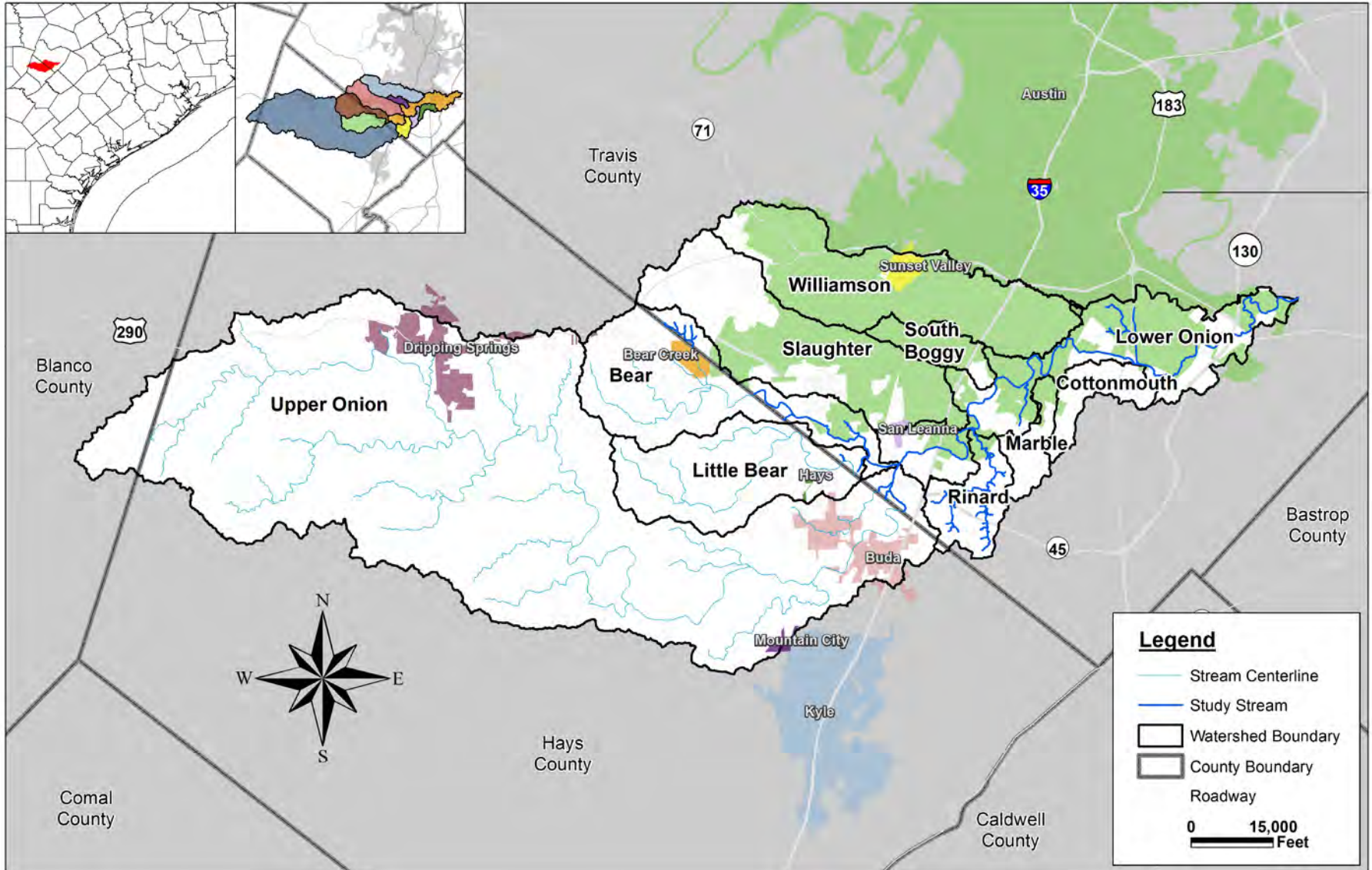
# Onion Creek Mitigation Alternatives

Mitigation Option	Preliminary Estimate of Cost*	No. of Mitigated Structures	Water Surface Elevation Reduction
	Pinehurst / Wild Dunes	Pinehurst / Wild Dunes	
Centex West Pond	\$34M	85 / 0	0.1 to 3.0 feet
IH-35 / Buda Pond	\$84M	95 / 8	1.0 to 3.0 feet
Channel Clearing	\$12M	78 / 7	0.5 to 2.5 feet
Channel Modification	\$74M	105 / 18	1.5 to 6.0 feet
Pinehurst Floodwall	\$49M	69 / NA	NA
Property Acquisition	\$69M / \$11M	114 / 18	NA

- Subsequent Analysis
  - Alternative Refinement, Combined Alternatives, Updated Estimations of Probable Cost, etc.

\*Preliminary Estimates of Probable Construction Costs are subject to change upon further project refinement.

# Onion Creek Regional Coordination



# Recovery Buyouts

- \$1.25M approved in this year's budget
- Prioritization based on depth of flooding in 2013 and ownership
- Contact initiated with property owners

# Next Steps

- Finalize feasibility study
  - Refine analyses, update costs
  - Level of protection
  - Combination of options
- Final alternative selection
- Preliminary Engineering & Design (if needed)
- Construction/Implementation
- Funding Options
  - Capital Improvement Program Budget
  - Bonds
  - Partnerships/Grants

# Questions?

## City of Austin Watershed Protection Department

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<http://austintexas.gov/departments/onion-creek-floodplain-and-flood-mitigation-study>