



City of Dallas

# Mill Creek/Peaks Branch/State Thomas Drainage Relief Tunnel

February 2013



THE TRINITY  
DALLAS

# Why are you here?

- Property owners have advocated to improve the stormwater drainage system and address flooding issues in east Dallas.
- A plan to address the flooding was identified.
- On November 6, 2012, the citizens of Dallas approved Proposition #2 to alleviate flooding issues along Mill Creek, Peaks Branch and State Thomas Watersheds.
- Prior to construction of the drainage relief tunnel that is essential to the plan, approximately 115 subsurface easements must be obtained.
- If you received a postcard, the City needs to talk to you about acquiring a subsurface easement under your property.

# Purpose of Briefing

- Inform property owners about area flooding and drainage relief tunnel construction project
- Answer questions about subsurface easements
- Provide project timeline



Hall Street – March 19, 2006

# Background: Mill Creek /Middle Peaks Branch

- Mill Creek was originally a stream draining from Mockingbird Lane to the Trinity River, and Middle Peaks Branch was originally a stream from Mockingbird Lane to White Rock Creek
- From the 1920's through the 1950's, these streams were enclosed in underground pipes to convey approximately the 2-year to 5-year storm events
- The consequence of only protecting against 2-5 year storm events is flooding, particularly on the streets within the affected area

**16 deaths blamed on storm**

**4 missing after floods; 100 hurt**

By Randy Lee Lottin and Nora López  
*Dallas Morning News Staff Writers*

The stunning violence of the latest spring storm in Texas through the Dallas area became clear Saturday: At least 16 people were dead and as much as \$60 million worth of property damaged after Friday night's rain-pump.

Among the victims of one of the area's deadliest, most destructive storms in history were five members of an Ohio Coast family who drowned when floodwaters washed away their car.

At least seven people drowned in other flooded areas. A lightning-rod fire killed a Dallas woman, and a lightning strike killed an Irving boy. Last Sunday, at least four people were missing and feared dead.

Last Saturday, searchers continued going through a mess of debris.

**911 response times criticized**

By Nora López and Jason Fickles  
*Dallas Morning News Staff Writers*

During Friday's devastating rain and hail, hundreds of motorists were stranded in city areas as emergency workers waded feet of water. Roads collapsed under the strain of heavy rain. Families watched in horror as loved ones were swept away in storm drains. Usually all turned to 911 for help. Many times, all they got was a long delay.

City officials said the demand for city services was so great late Friday that the only slightly overbooked 911 system, resulting in long delays and delayed response times of up to 30 min.

No practices: No 911: No study: And no reports: Please see CALL911 on Page 2B.

**Lives lost, families torn**

Storm victims from all walks of life, neighborhoods

By Bill Marozaglio and Retic Garcia  
*Dallas Morning News Staff Writers*

The remaining storm survivors are huddled when it claimed the victims.

There was the elderly woman who quietly asked for the account in her neighborhood. The uncle who had proudly posed for a recent photo with his young children. The lady of five swept away as they looked for a restaurant.

The woman was saved from the flooding — only to be hospitalized. Please see FLOODS on Page 2B.

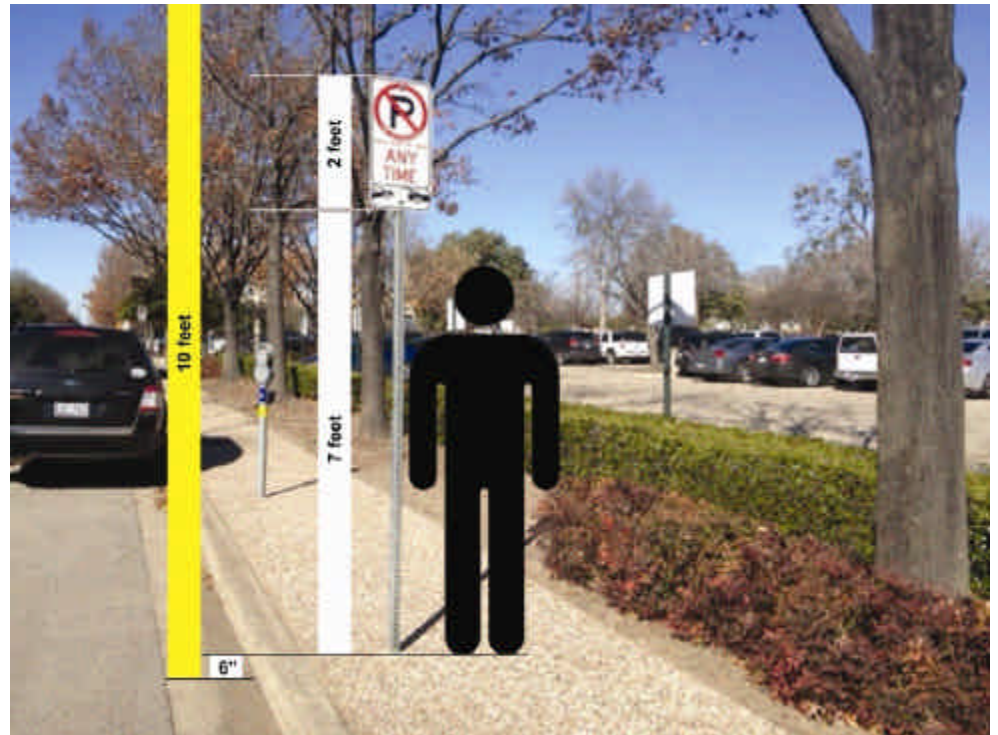
**NORTH TEXAS STORMS**

■ Storm rainfall: 2BA	■ Coolings: 2BA
■ Worst storms: 2BA	■ TV coverage: 2BA
■ The damage: 2BA	■ Effect on traffic: 2BA
■ How to help: 2BA	■ Coverage areas: 2BA
■ Vignettes: 2BA	■ Fair Park: 2BA
■ PW's damage: 2BA	■ Driving tips: 2BA
■ Business impact: 2BA	■ Weather: 2BA

Fair Park (May 5, 1995)

## Background: Mill Creek /Middle Peaks Branch

- In a 100-year event (1% annual chance):
  - The streets in these areas look like rivers
  - Approximately 3,800 properties are currently impacted by one foot or more of flooding in the Mill Creek/Peaks Branch area due to inadequate pipe systems
  - Flood depths are up to 10 feet high in some areas





# Flooding – March 19, 2006



Skillman  
near  
Oram



Baylor - Worth at Hall



Munger

## Flooding of IH-30 – March 19, 2006



## Background: State-Thomas

- Re-development over the years in the State-Thomas area has strained the capacity of local drainage systems and the existing Woodall Rodgers pressure sewer
  - Local drainage systems (undersized for current conditions) result in flows that back-up along the surface streets
  - Additional capacity is needed in the Woodall Rodgers pressure sewer to accept additional run-off from neighborhood drainage system

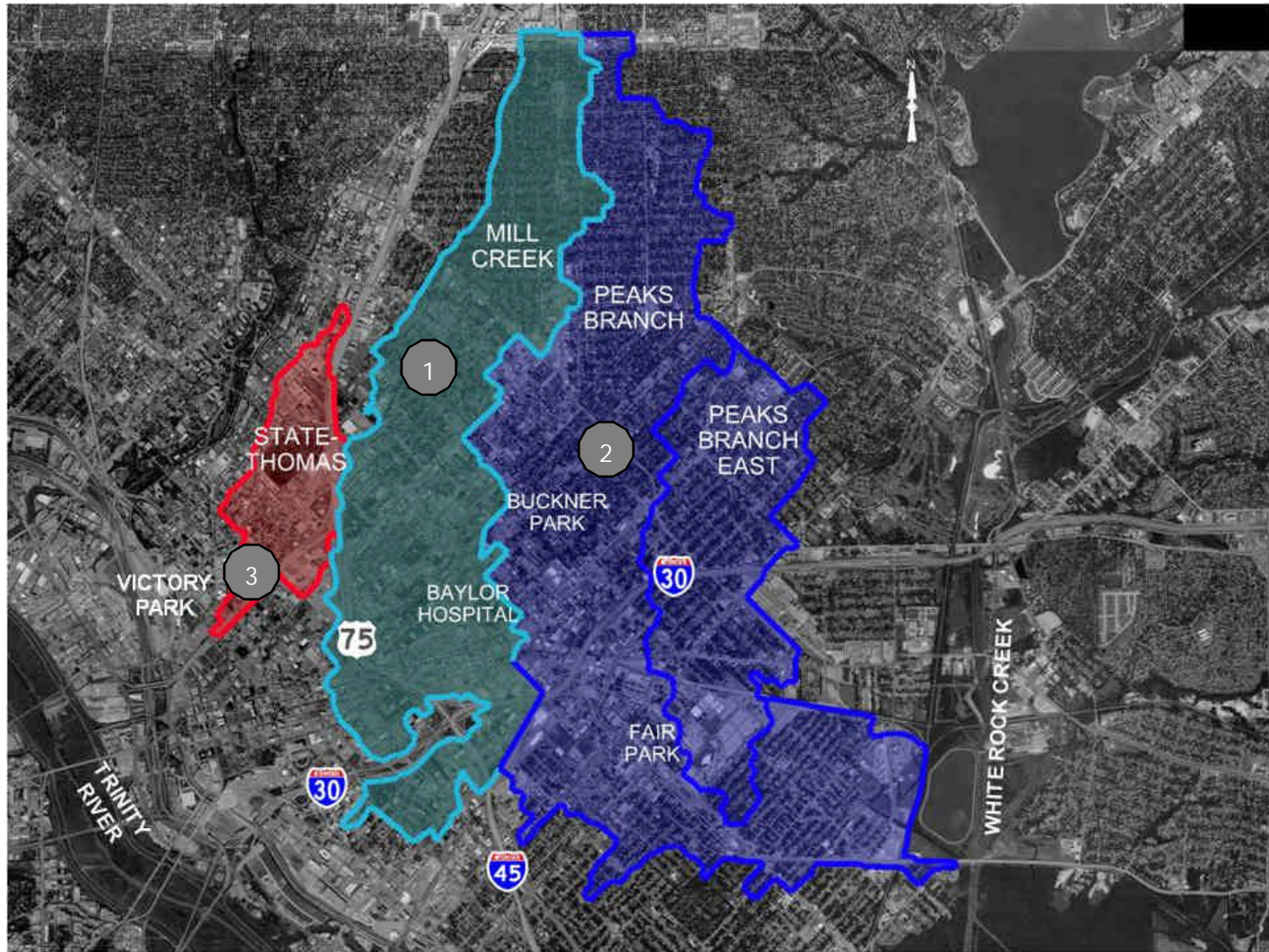


## Background: State-Thomas Area



Example of typical flooding from McKinney to Field – stormwater that cannot get into the undersized system flows along the surface streets

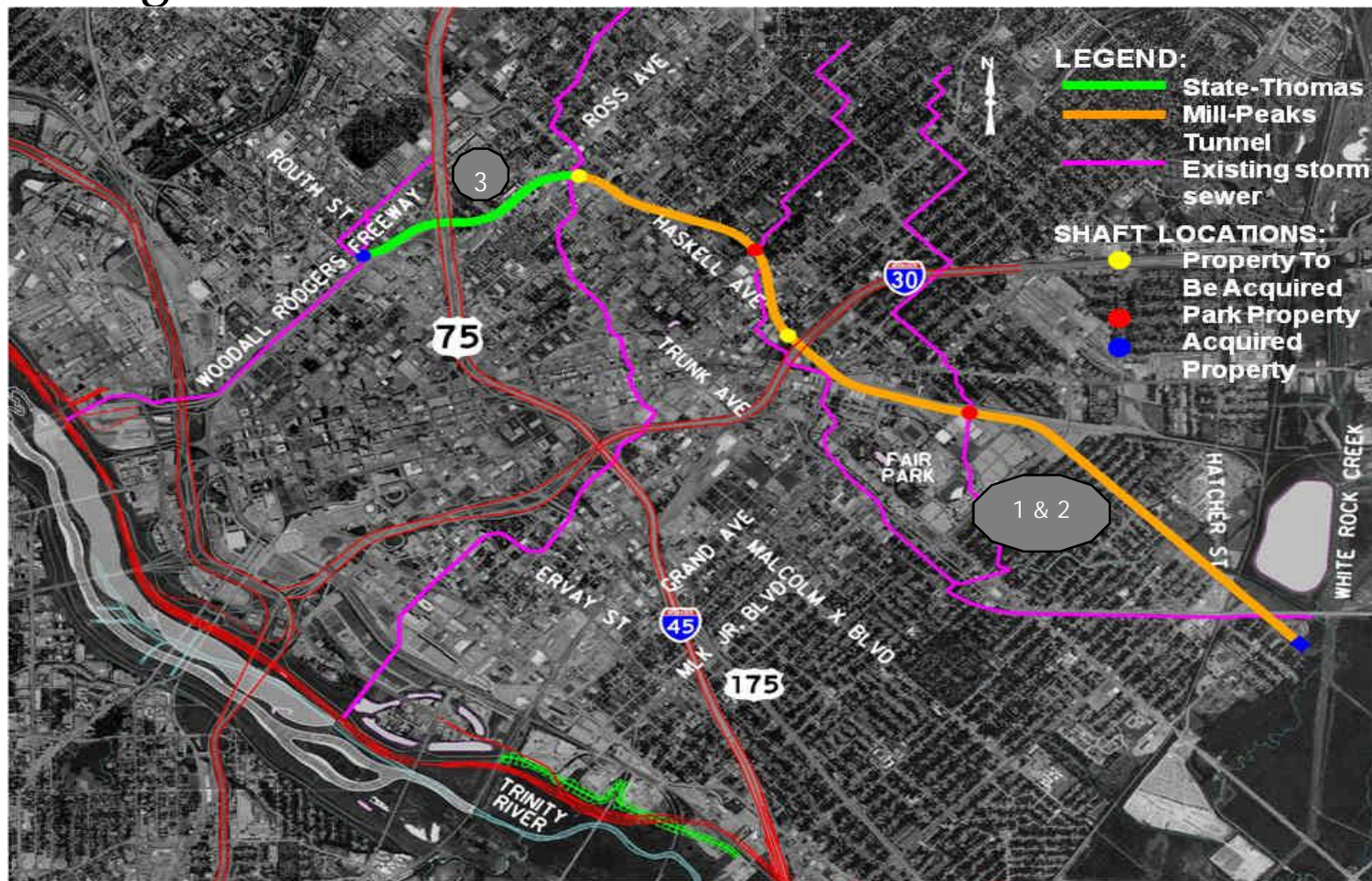
# (1) Mill Creek, (2) Peaks Branch and (3) State-Thomas Watersheds





# Flood Mitigation

- To help address the flooding throughout the southern portions of Mill Creek, Peaks Branch and State Thomas, a drainage relief tunnel will be built.



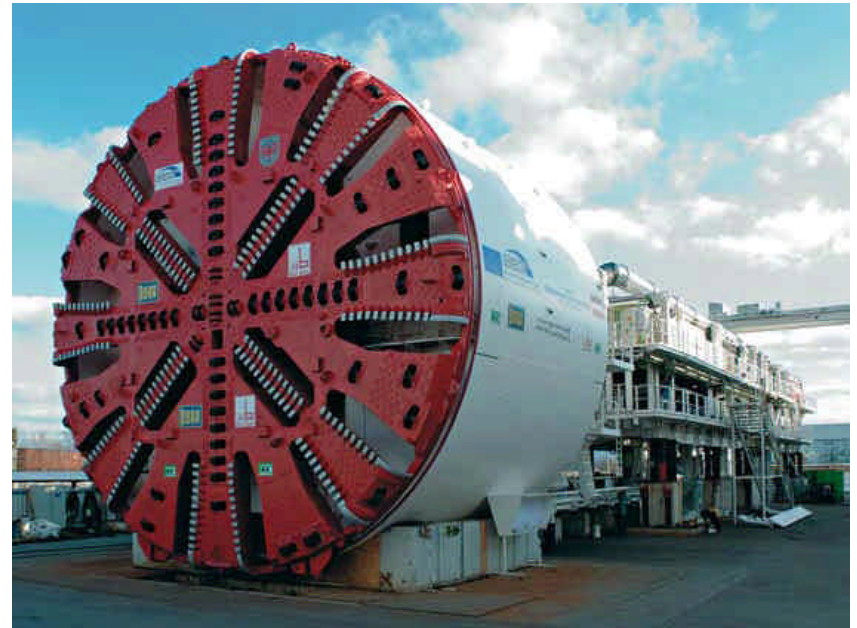
## Deep Tunnel Construction

- The total tunnel length is approximately 5 miles.
- The tunnel diameter is 30 feet.
- The minimum tunnel depth is approximately 100 feet.
- The project will outfall to White Rock Creek, south of Scyene Road.
- Once constructed, it is anticipated that the areas downstream of the tunnel will have sufficient stormwater capacity to meet the 100-year storm event.
- The tunnel will be built using a Tunnel Boring Machine.
- This methodology allows for minimal surface disruptions.

# Deep Tunnel Construction

## Advantages to tunneling:

- Minimal utility relocation
- Reduced ROW acquisition
- Minimal street replacement
- Minimal traffic impacts



Tunnel Boring Machine (TBM)



## Deep Tunnel Construction

- The tunnel is located in rock (Austin Chalk). The Austin Chalk is an ideal material for this type of construction.
- Construction will not affect current conditions during storm events.
- Similar construction took place for the Cityplace DART Light Rail Station, the Cole Park Detention project, and the North Central Expressway Drainage Tunnel.

## DART News Release

December 15, 2000

With the help of engineering vision and expertise, the 80-million-year-old Austin Chalk underneath North Central Expressway provides a solid foundation for the very first subway station in the southwest -- Cityplace Station.

The new Cityplace Station is a marvel of underground engineering. Magnificent designs provide a structurally sound, functional and aesthetic station. The tri-level facility reaches depths of 120 feet underneath the expressway.



## Cole Park Detention Vault

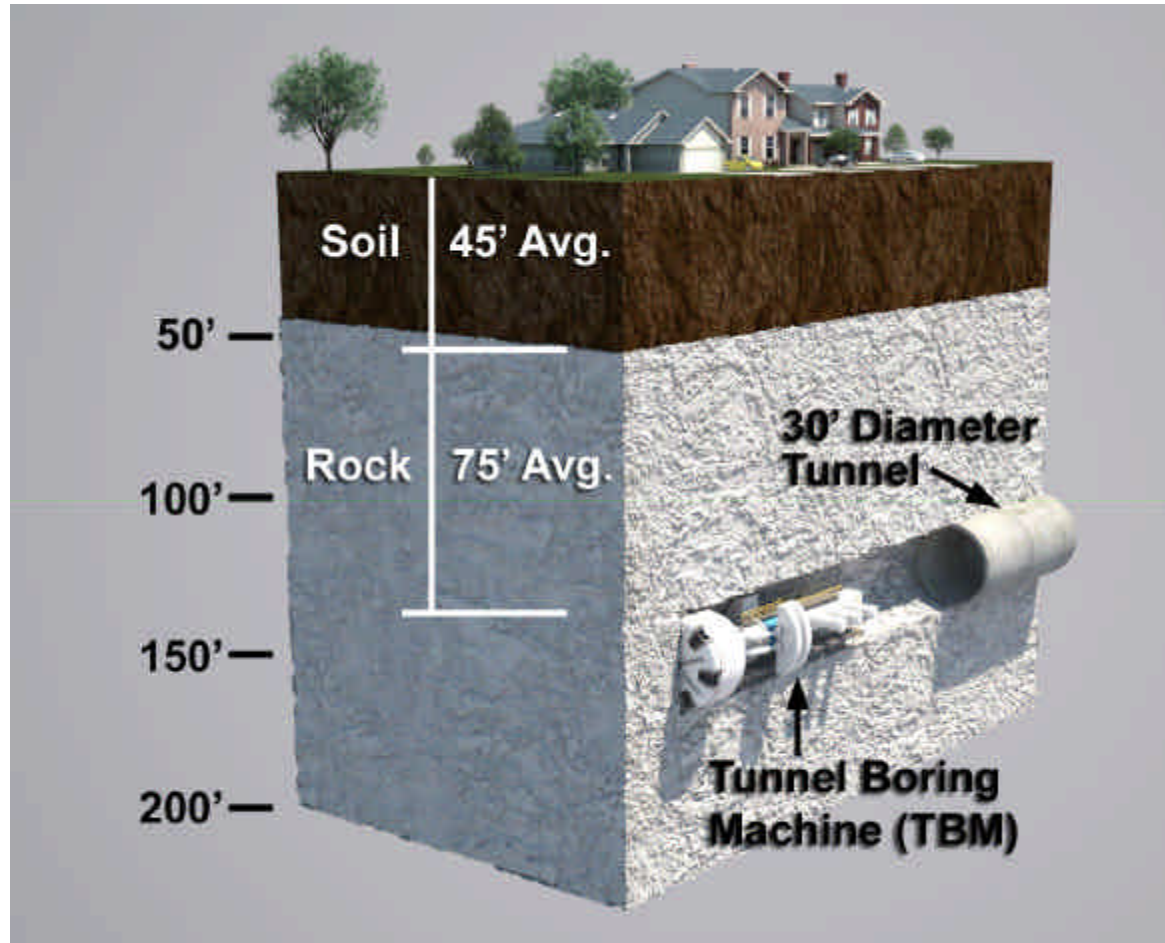
The Cole Park Detention Vault is a storm water detention facility, built between 1990 and 1993, and constructed 100 feet under an existing city park.

The storm water vault provides 218 acre-feet of storage capacity in 13 parallel galleries, each 842 feet long, 40 feet by 24 feet wide, and separated by a 16-foot rock pillar.



The storage vault and bypass tunnels were constructed within the Austin Chalk limestone approximately 100-feet beneath Cole Park with 30 feet of sound rock cover.

# Deep Tunnel Model

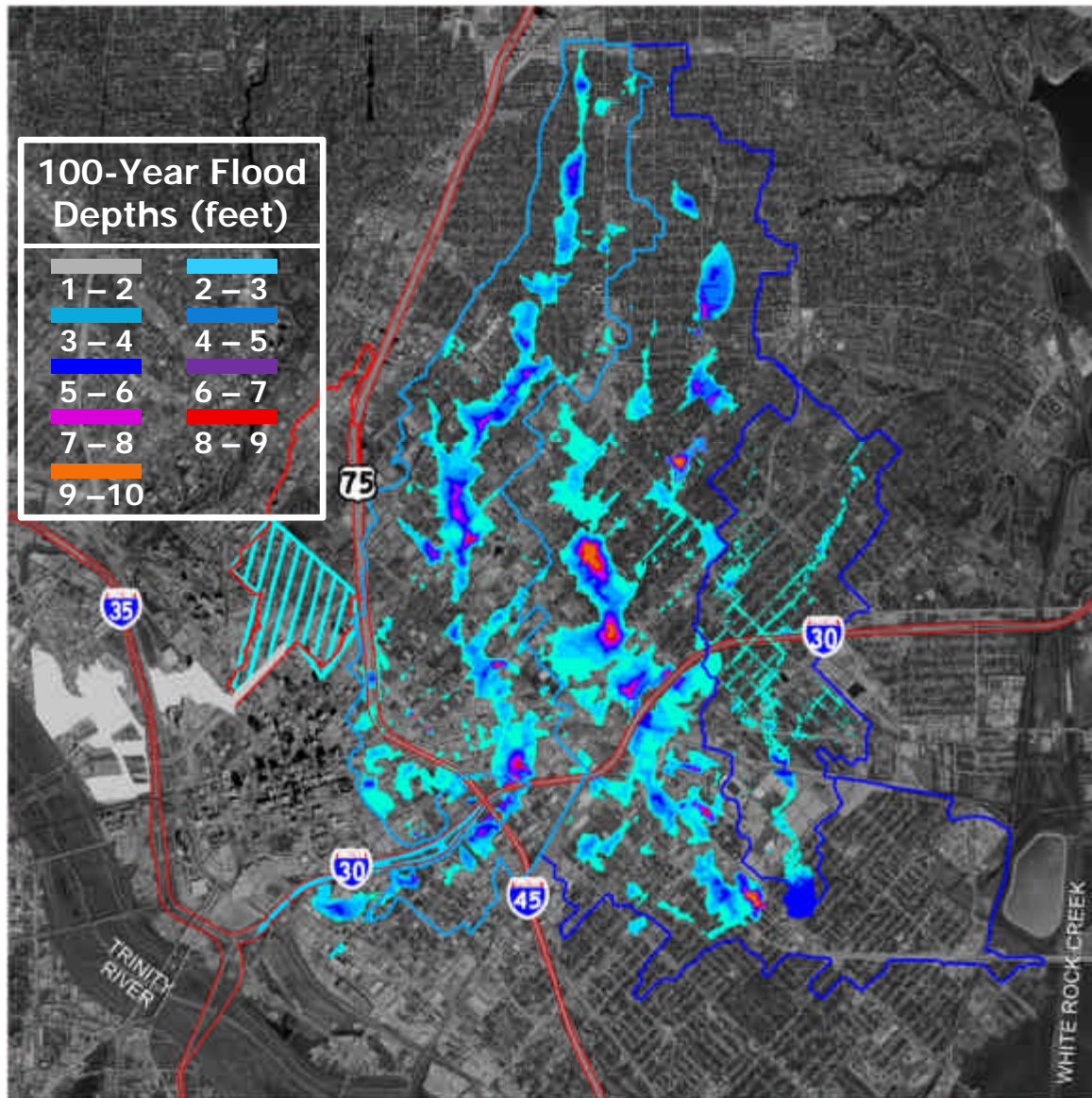


This slide illustrates construction and the general location of the tunnel. The easement envelope varies along the tunnel in regards to depth and width, and the easement envelope is not shown on this slide.



# Areas Currently Subject to 100-Year Flooding in Mill Creek, Peaks Branch and State-Thomas Watersheds

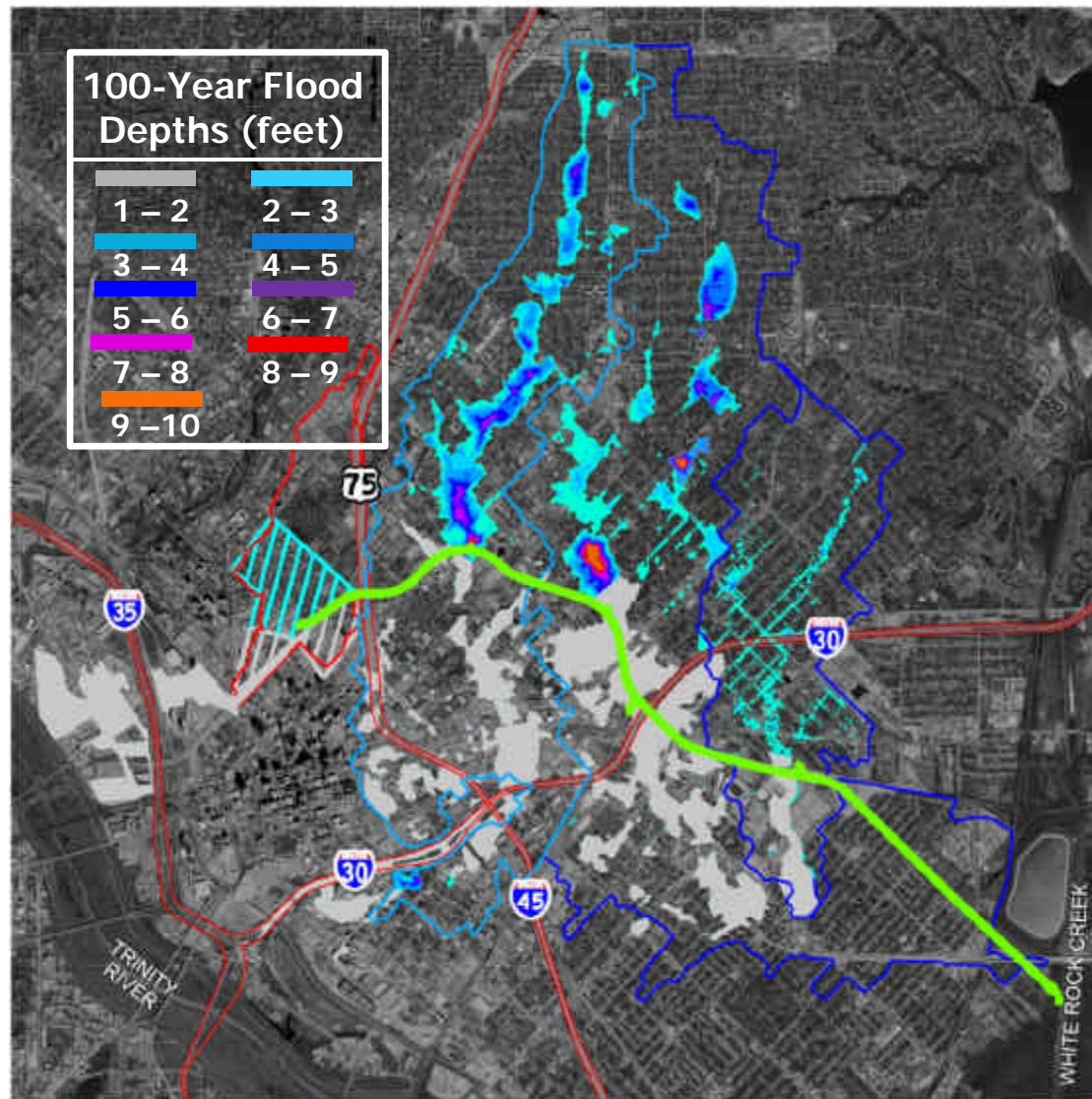
Note:  
Cross hatched area denotes known street flooding in the State Thomas area





# 60% of the Areas Removed from 100-Year Flooding After Mill Creek, Peaks Branch and State-Thomas Tunnel is constructed

Note: Additional lateral/inlets will be needed to capture the water from the streets.



## Status

- City authorized design for the recommended plan which provides a combined relief system for Mill Creek, Peaks Branch and State Thomas.
- Acquiring the right-of-way needed for the tunnel project
  - Total ownership (fee simple) for drop shaft areas
  - Subsurface Easements for the relief tunnel
- The area that will be tunneled includes some private subsurface property and, therefore, the community needs your participation to facilitate construction.

## Subsurface Easements

- A subsurface easement will be necessary to allow for the tunnel to be located under your property.
- The subsurface easement places a very limited burden on the surface use:
  - No excavation greater than approximately 50 feet in depth
  - Construction of greater than 250 feet high, approximately 20 stories, will require plan review and approval by the City to confirm no impact on the tunnel (in the majority of cases, current zoning is more restrictive than this height limitation)
  - To confirm no negative impact from construction, an indoor and outdoor inspection of each property will be performed before and, if necessary, after construction
  - Mineral exploitation at greater depths will not be restricted provided the tunnel is not impacted

## Subsurface Easements

- The City typically may not pay greater than “fair market value” for the easements rights acquired.
- However, the City will gratefully accept donations of the needed subsurface easements.
- The City will mail notices to each property owner within six months.

## Project Timeline

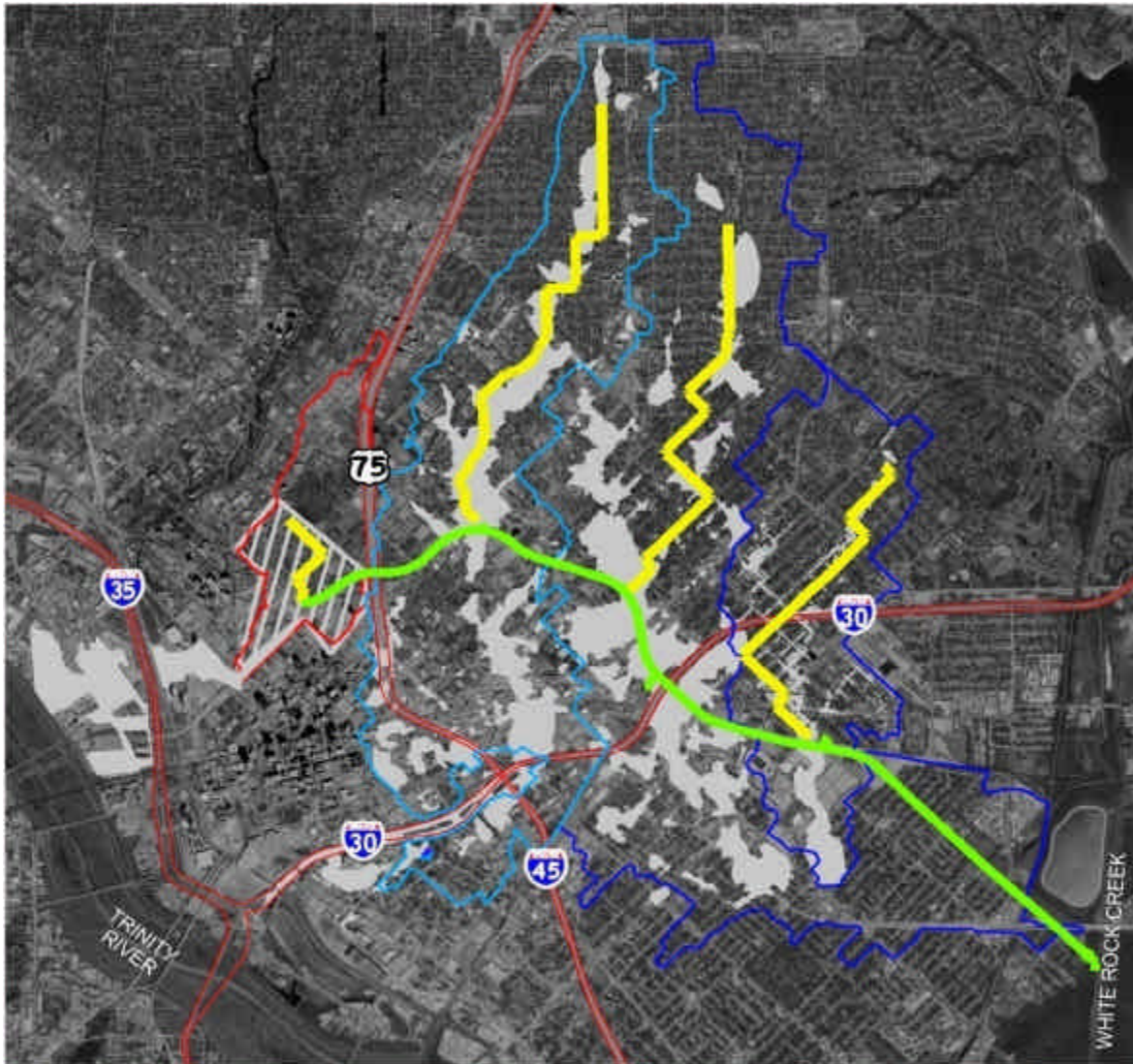
- 1 year of design remains
- 2 years to obtain easements, advertise and bid project (concurrent with design)
- Construction is anticipated to begin in early 2015
- Construction is anticipated to be complete in 2019



June 2009: view from residential front door in Bryan Place



# Remaining 100-Year Flooding Removed By Future Bond Projects



Note:  
The extensions in yellow  
are to be implemented  
by future bond  
programs

- Mill Creek Phase III
- Upper Peaks  
Branch