# Downtown Historic Area Drainage Master Plan

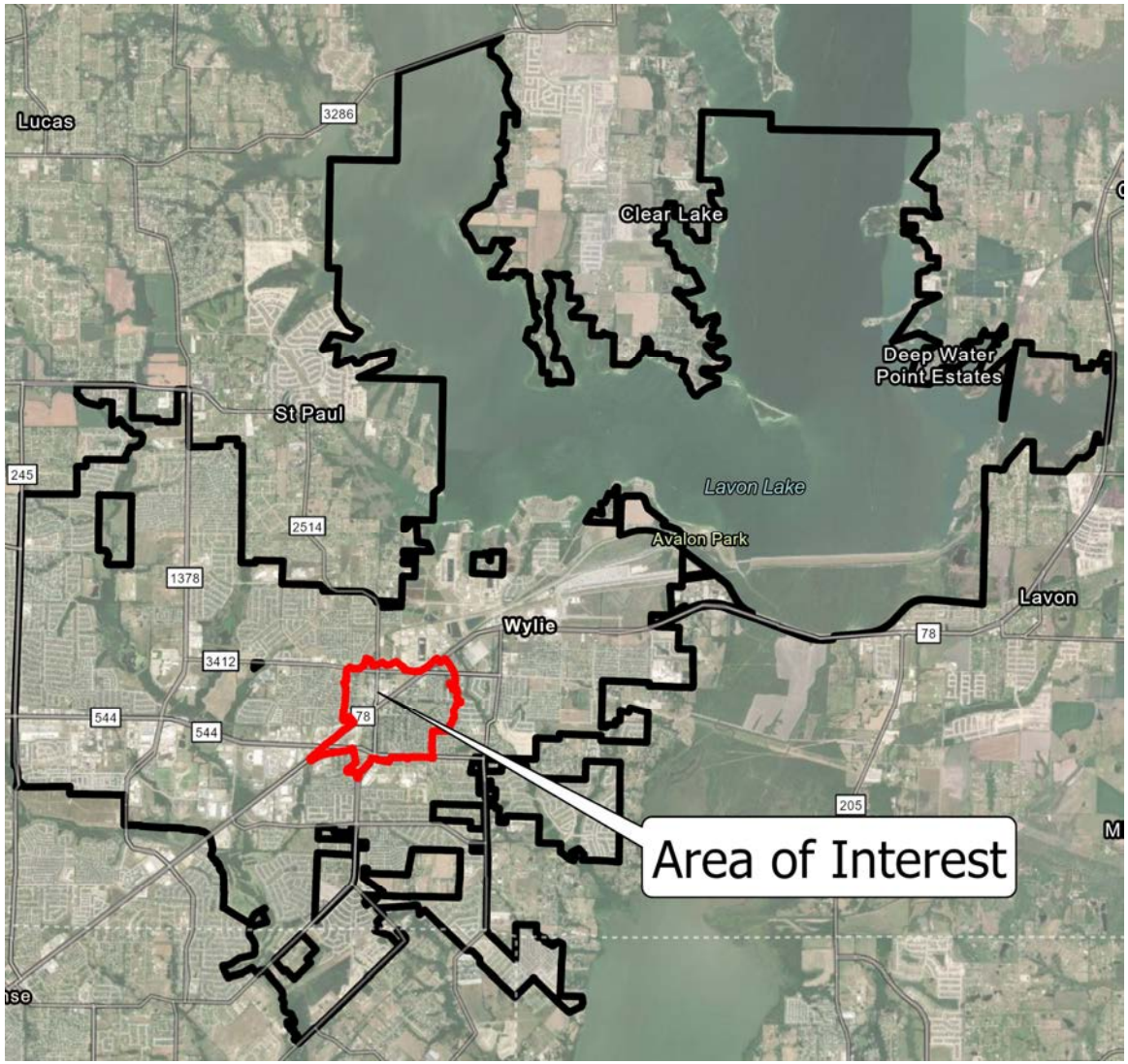
CITY COUNCIL WORK SESSION
APRIL 25, 2023

CITY OF WYLIE

HUITT ZOLLARS

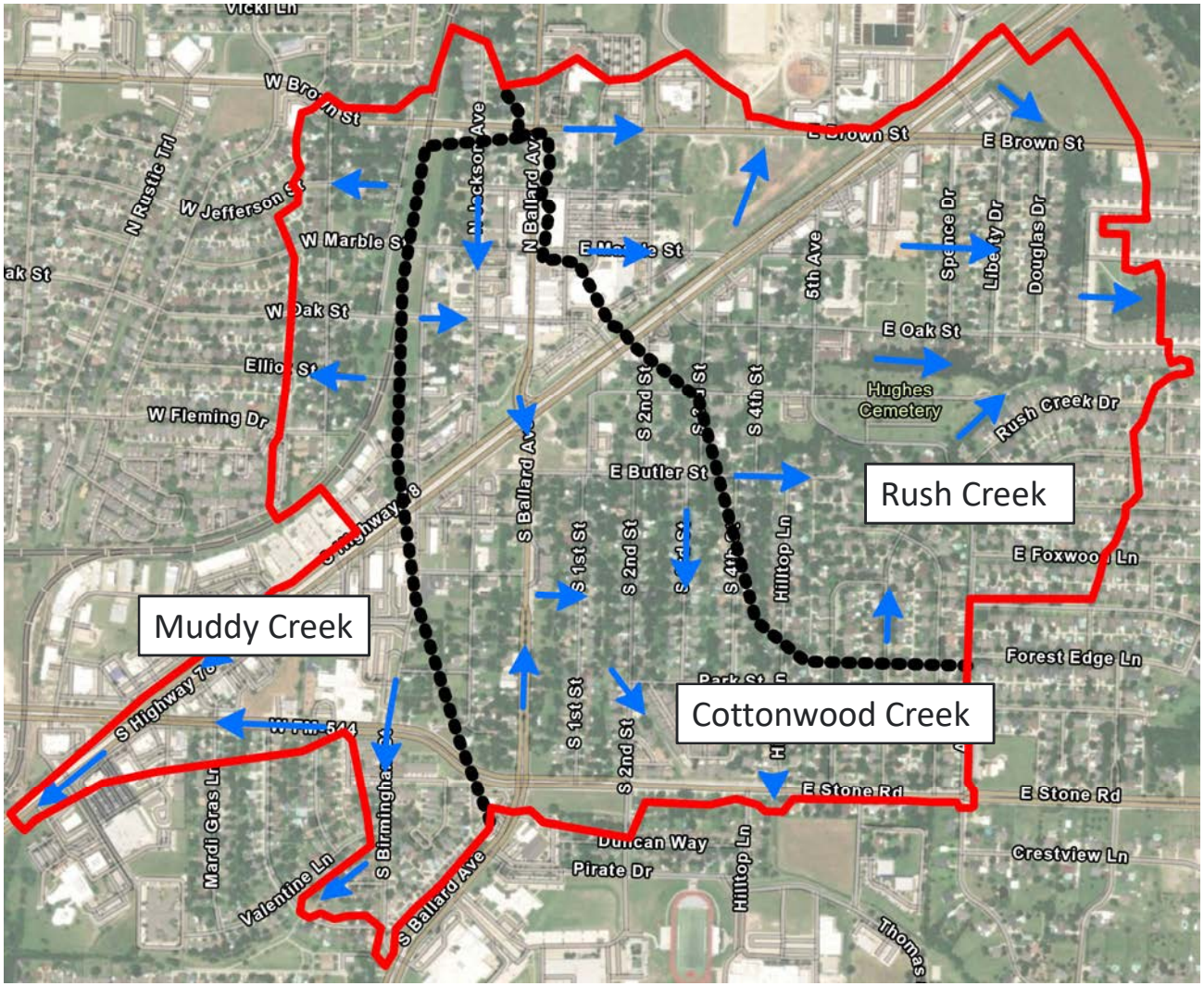
# Project Background

- 541 acres



# Project Background

- 3 Drainage Basins
  - Rush Creek
  - Cottonwood Creek
  - Muddy Creek



# Goals

1. Improve flood conditions in downtown area during a 100-yr event
2. Mitigate impacts of future developments in downtown area

# Presentation Overview

Existing Conditions

Fully Developed Conditions

Proposed Improvements

Alternative Solutions

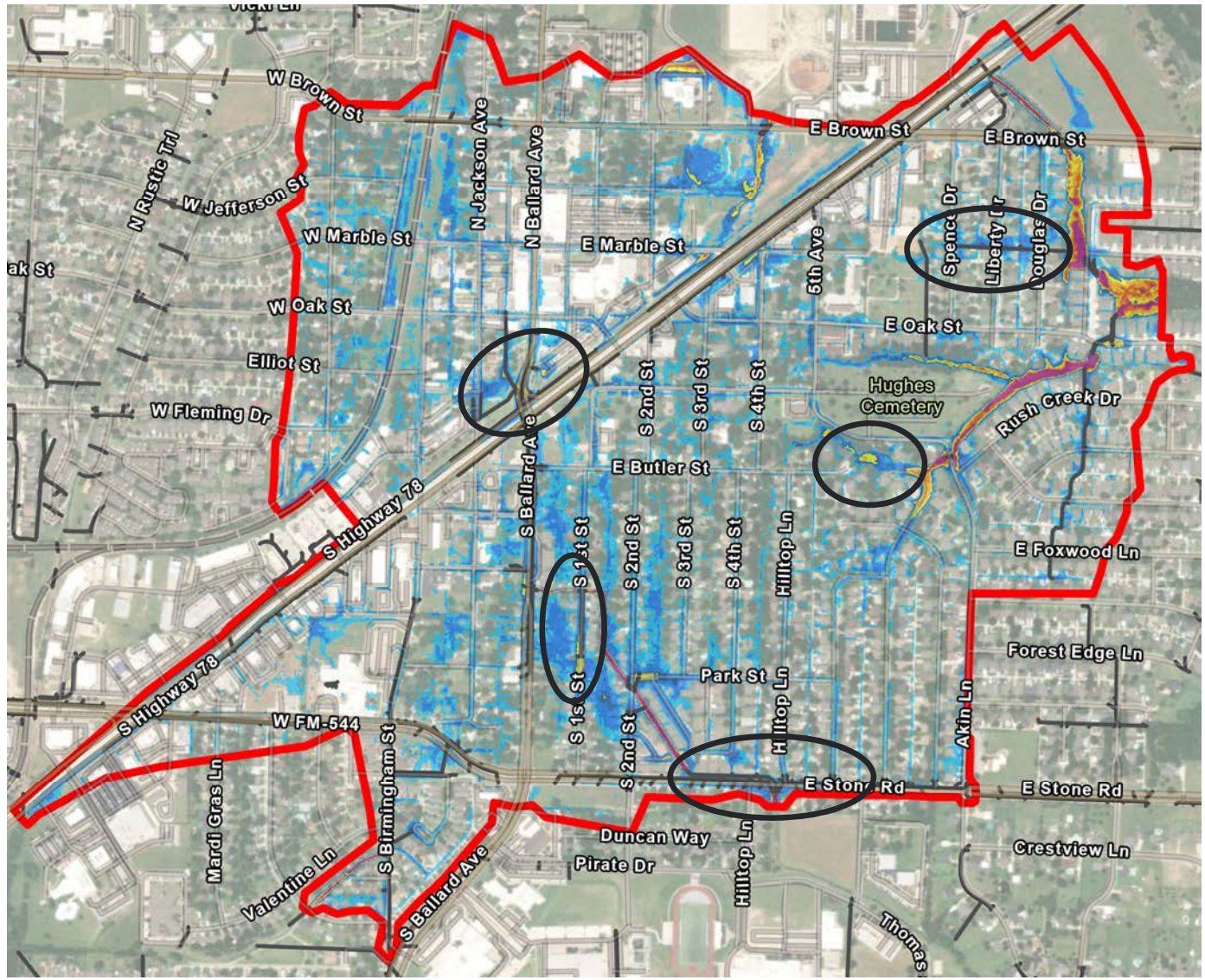
Cost Estimate Summary

Additional Areas

# Existing Conditions

# Existing Conditions

## 1% Annual Exceedance Probability (AEP)




**Legend**

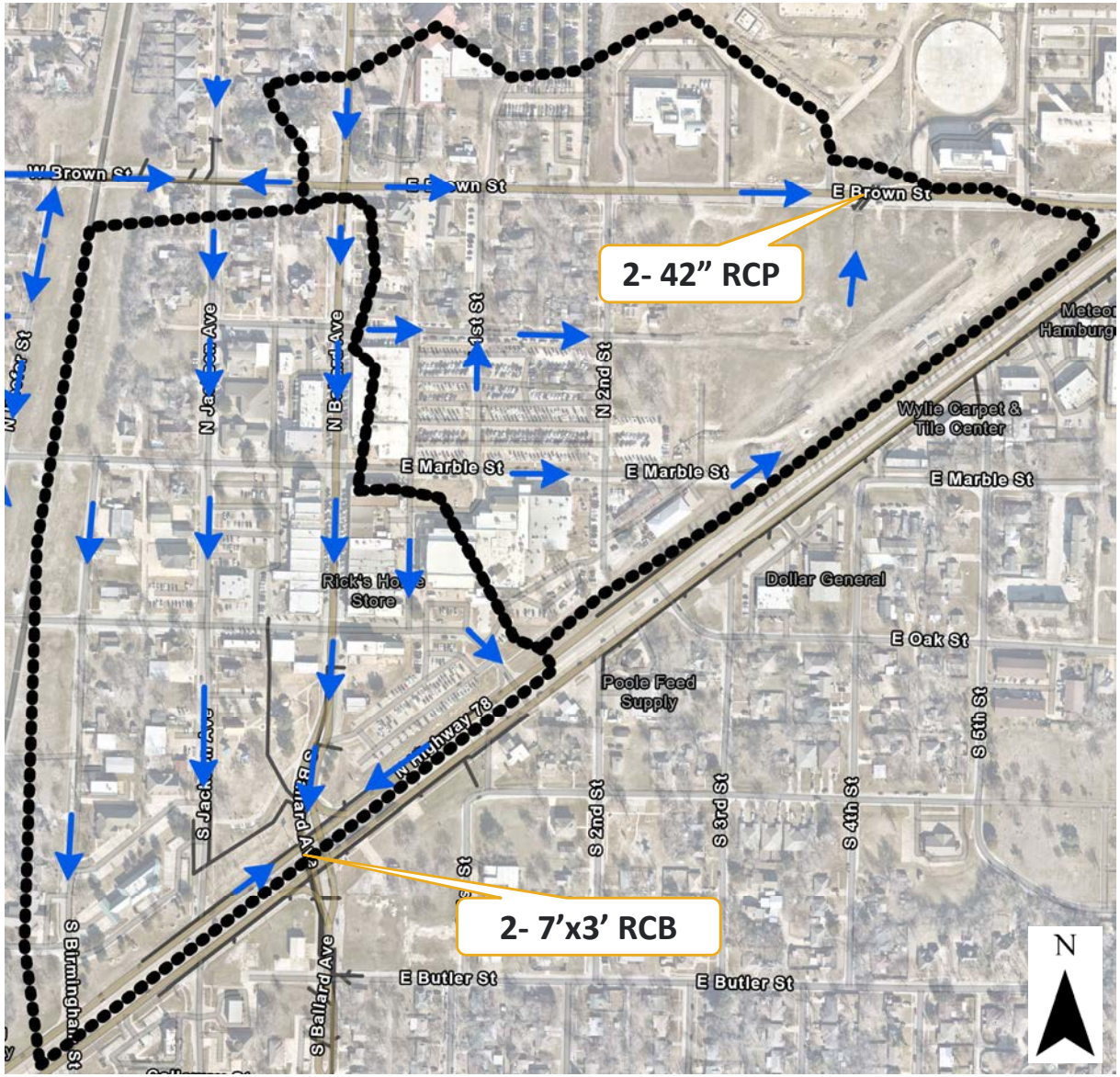
- Study Area
- Existing Storm Drain

Existing Depth (ft)

- 0
- 0.25' - 0.50'
- 0.50' - 1.0'
- 1.0' - 1.5'
- 1.5'- 2.0'
- 2.0' - 2.5'
- 2.5' - 3.0'
- 3.0'- 5.0'
- 5.0'- 10'

# Project Area- Downtown East & West

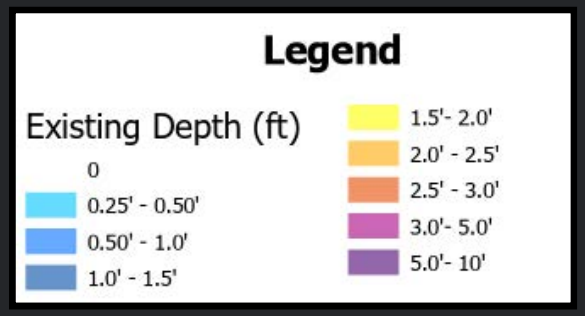
- East Outfall
  - 45 acres
  - Outfall: 2- 42" RCPs
- South Ballard Discharge Point
  - 44 acres
  - 2- 7’x3’ RCBs

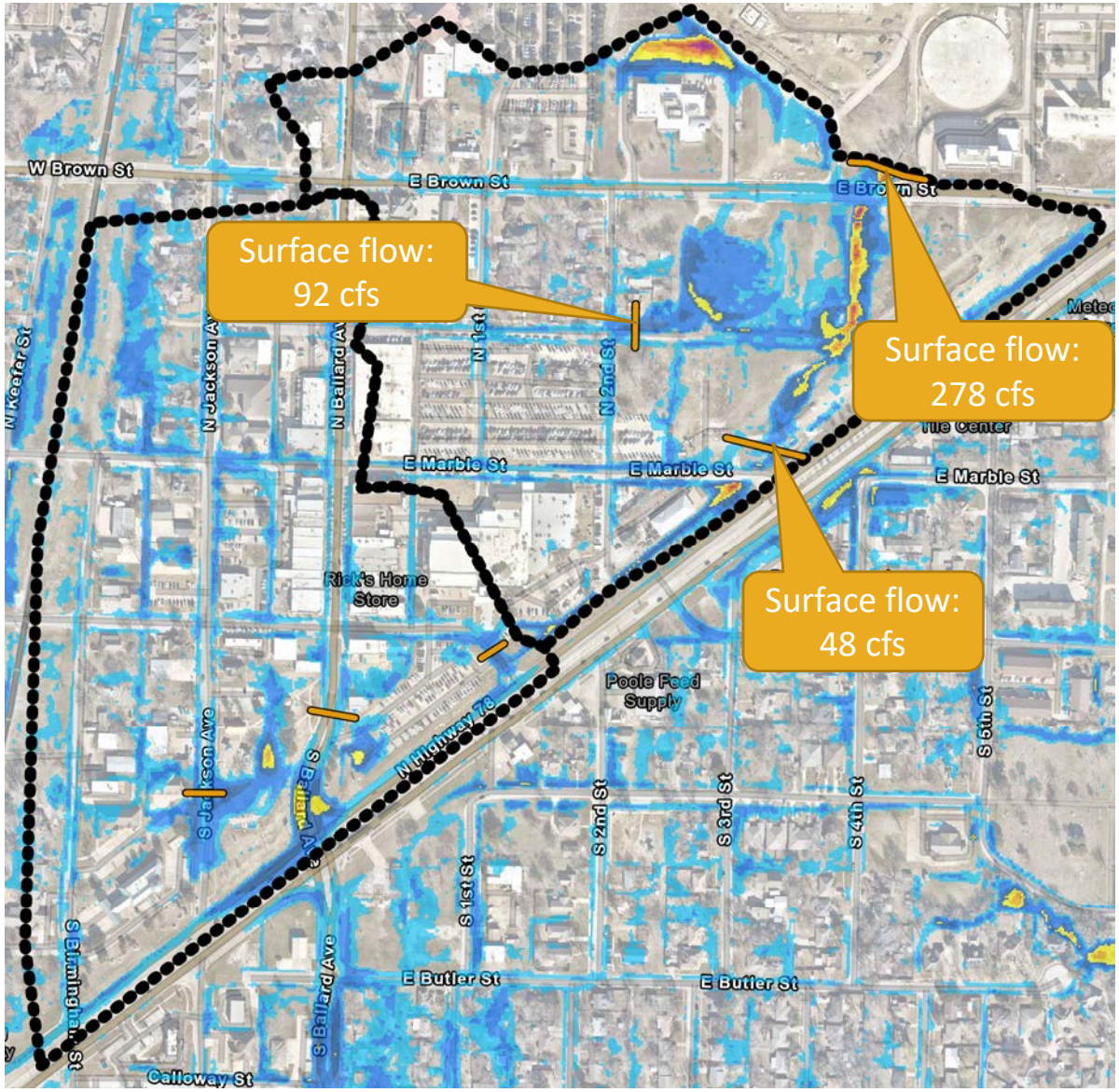


# Downtown East

## East Outfall
(Existing - 1% AEP)

- Brown Street Channel
- East Jefferson Street
- North 3rd Street

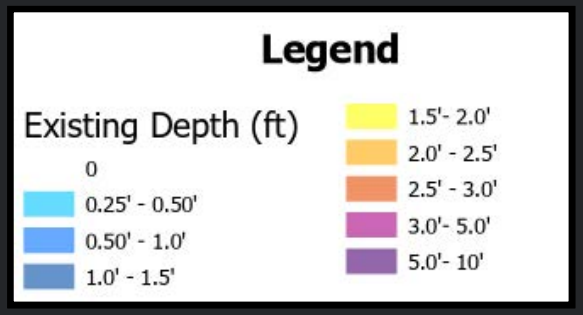


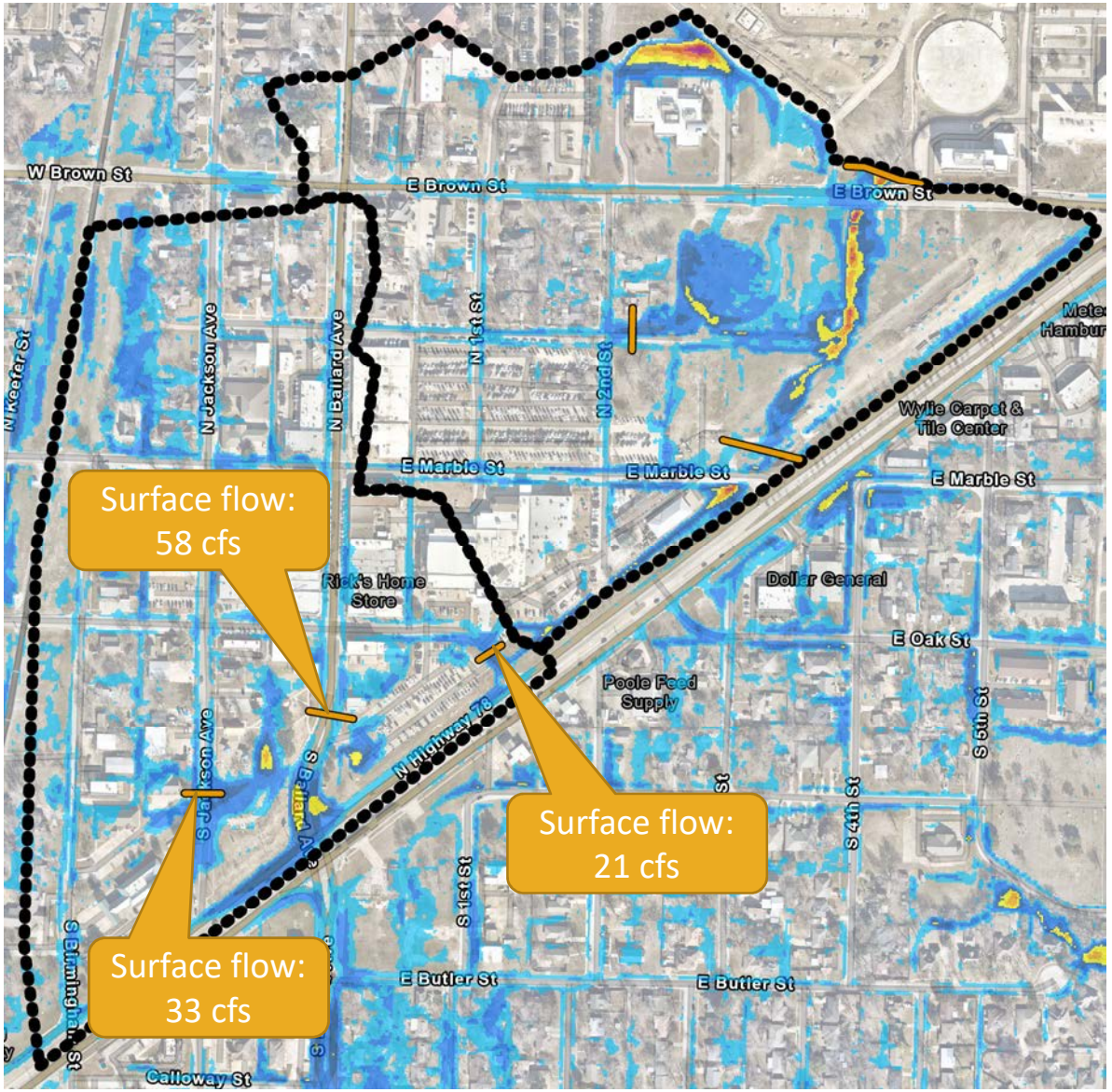



# Downtown West

## South Ballard Discharge Point
(Existing - 1% AEP)

- Oak Street
- South Ballard Avenue
- South Jackson Avenue



# Fully Developed Conditions

# Future Downtown Development

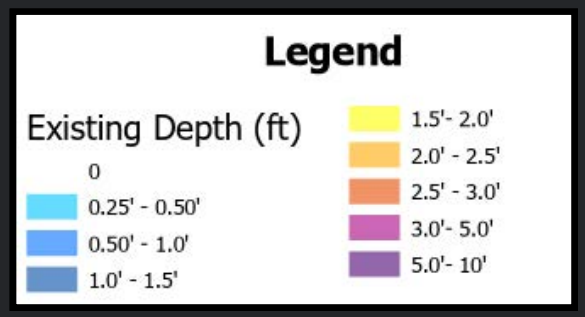
## Legend

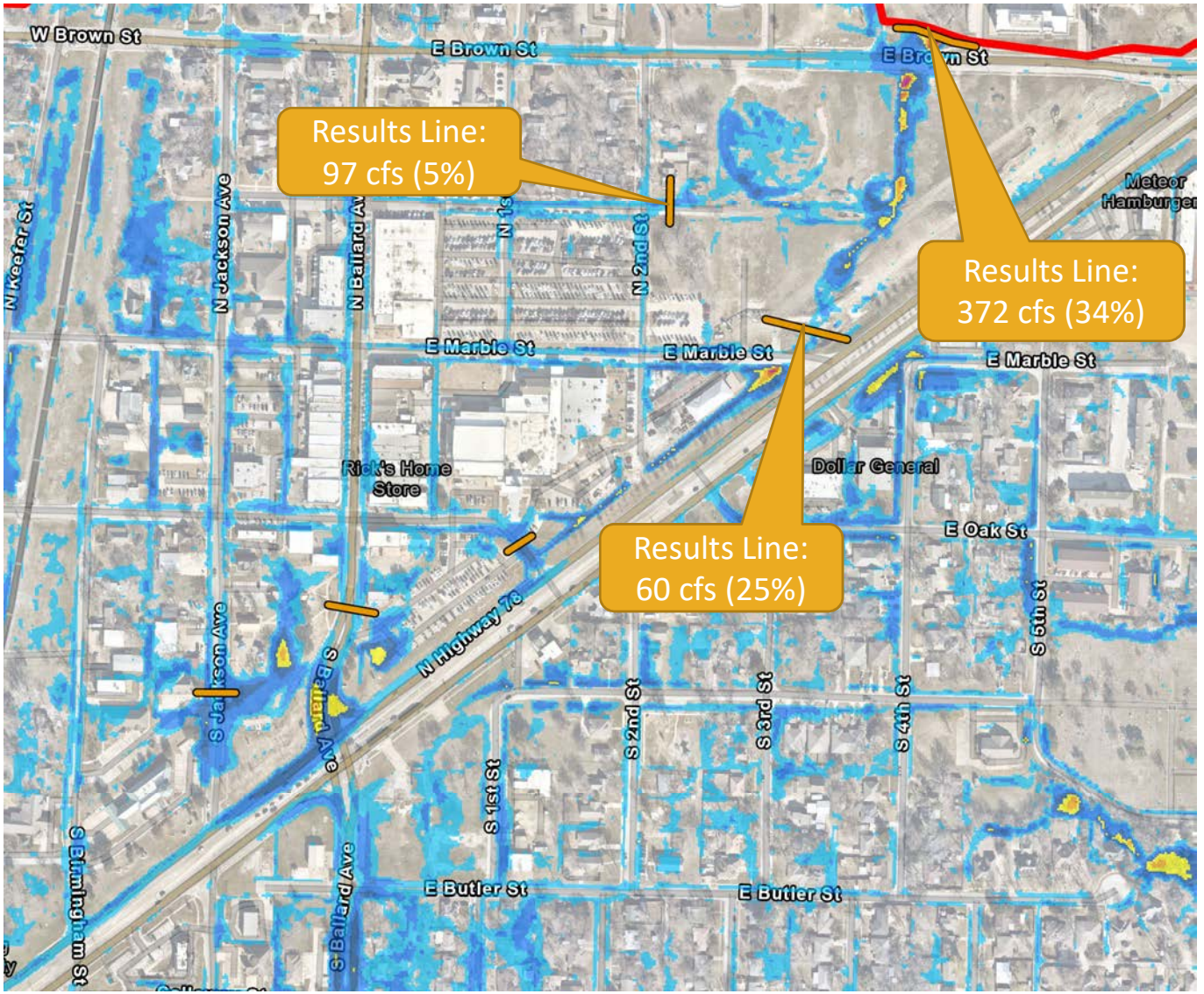
- Existing Structures
- Existing Impervious Area
- Future Development

# Downtown East

## East Outfall
(Future - 1% AEP)

- Brown Street - 94cfs
- East Jefferson Street - 5cfs
- North 3rd Street - 12cfs



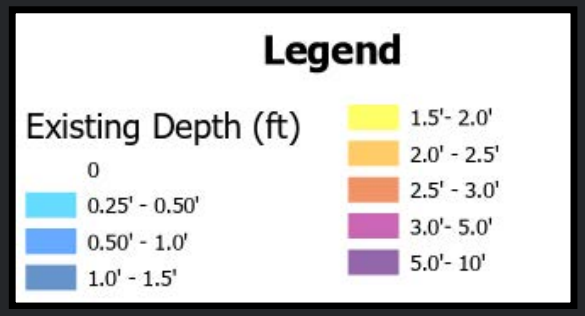



# Downtown West

## South Ballard Discharge Point

(Future - 1% AEP)

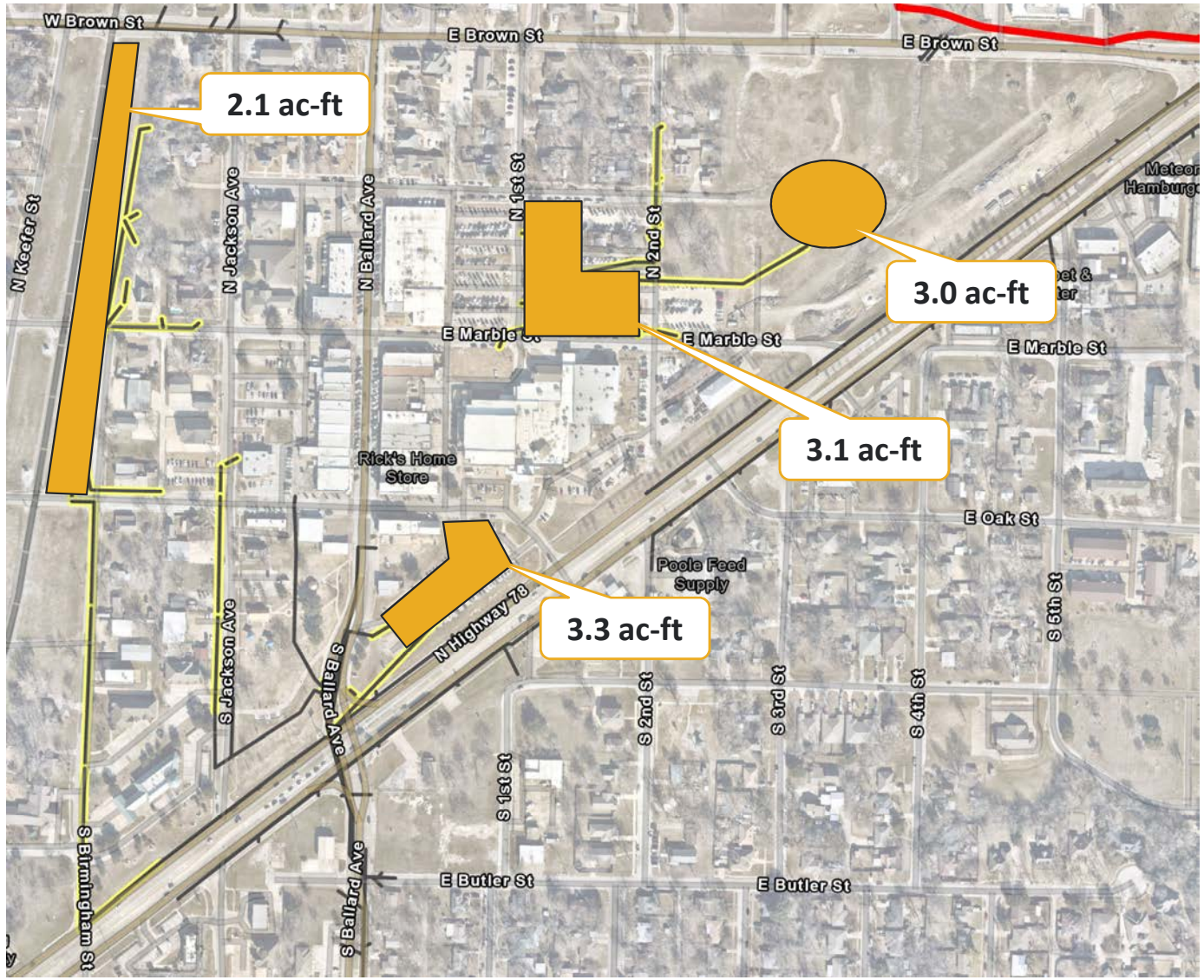
- Oak Street
- South Ballard Avenue (-2cfs)
- South Jackson Avenue (1cfs)




# Proposed Improvements

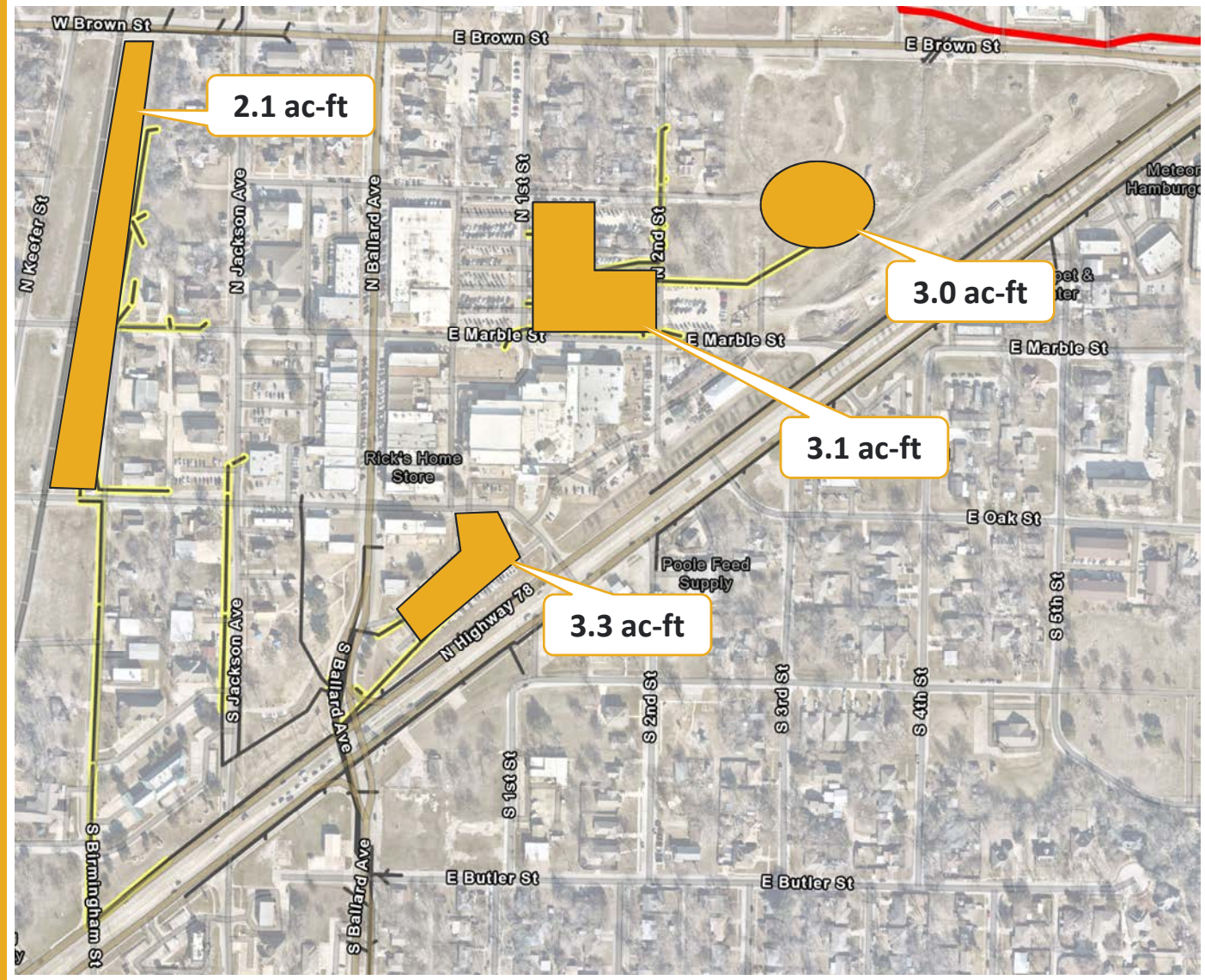
# Option 1:
## Underground Detention

- East Outfall:
  - 3.1 ac-ft (Underground)
  - 3.0 ac-ft (Aboveground – By Others)
- South Ballard Discharge Point:
  - 3.3 ac-ft (Underground)
- West Discharge Point:
  - 2.1 ac-ft (Underground & Surface)



# Option 1:
## Underground Detention

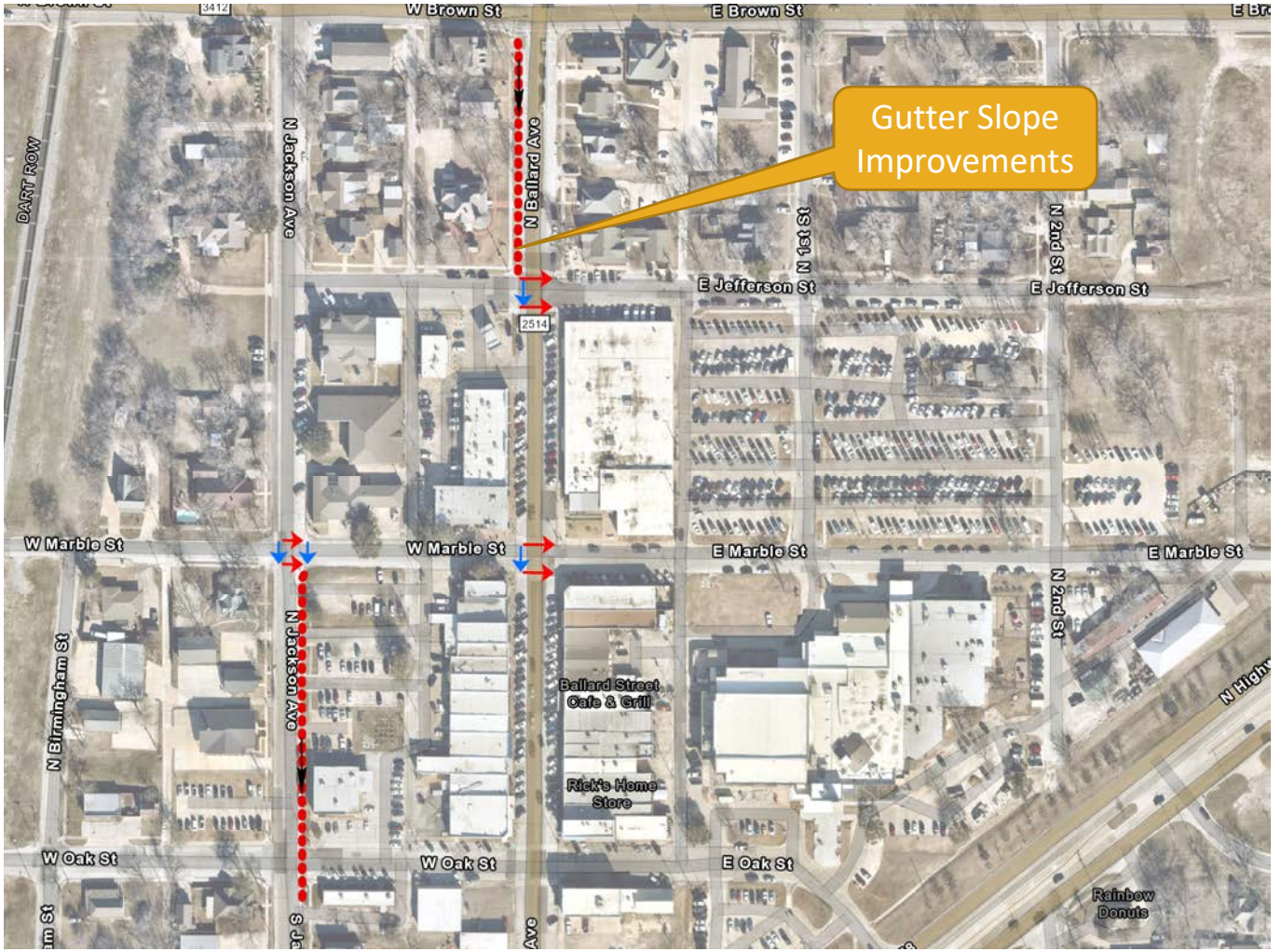
- Estimated Construction Cost:
  - $7,300,000
  - Includes 30% Contingency
- Estimated Design Fee:
  - $460,000



# Other Improvements: Gutter & Intersection Grade Adjustments

## Legend

- Existing Flow Path
- Proposed Flow Path
- Gutter Improvements

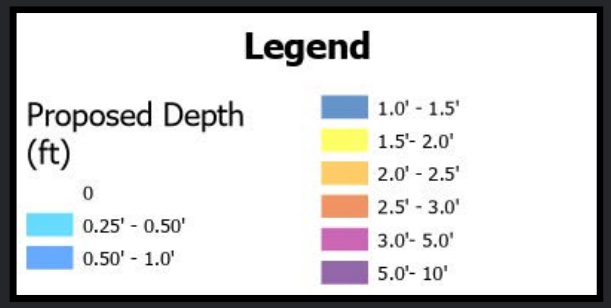


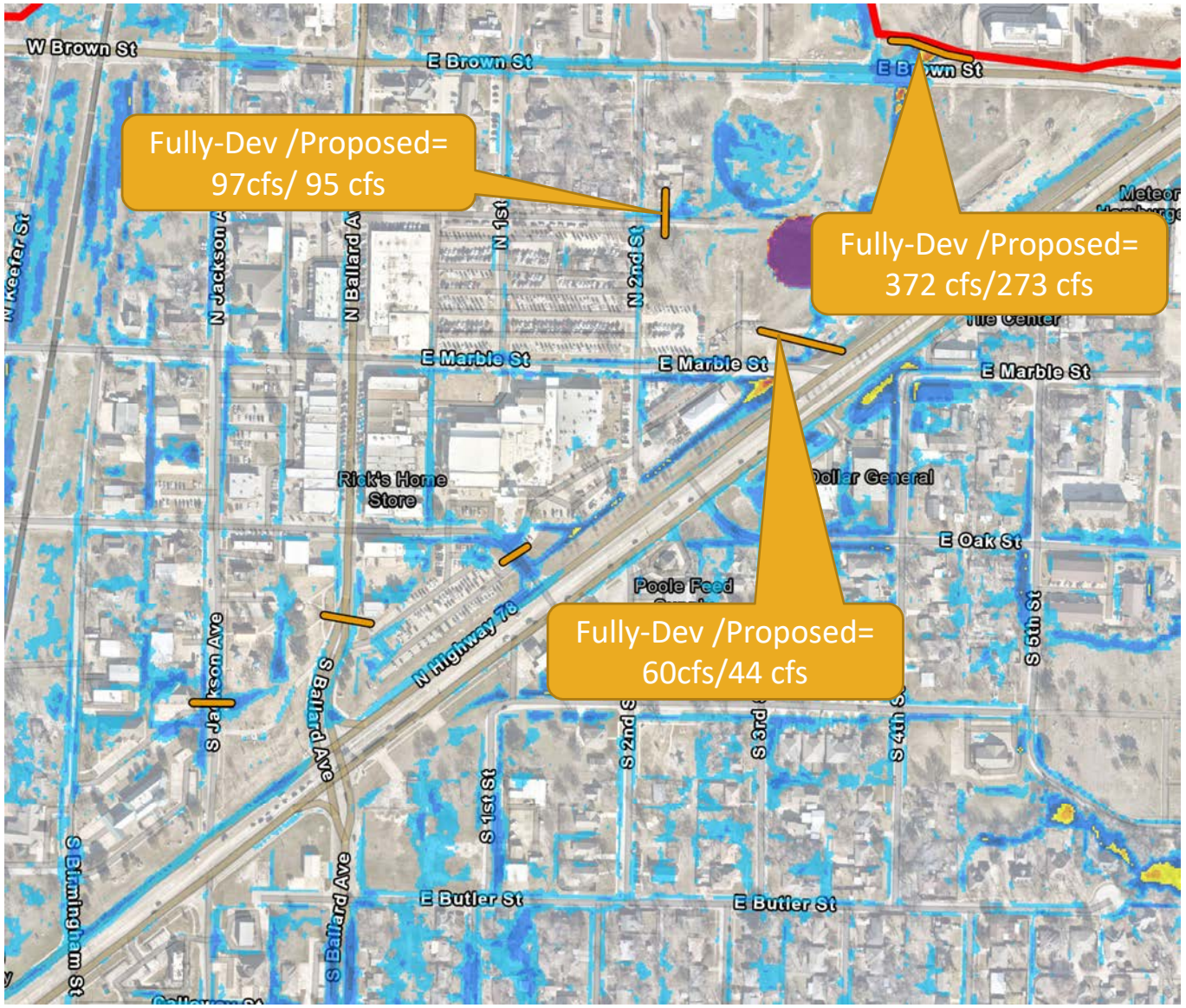
# Downtown East

## East Outfall

(Proposed - 1% AEP)

- Brown Street Channel (-99cfs)
- East Jefferson Street (-2cfs)
- North 3rd Street (-16cfs)



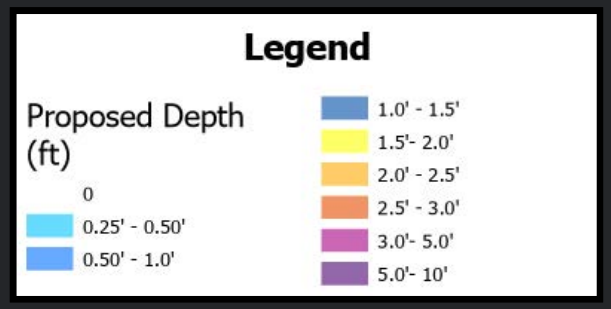



# Downtown West

## South Ballard Discharge Point

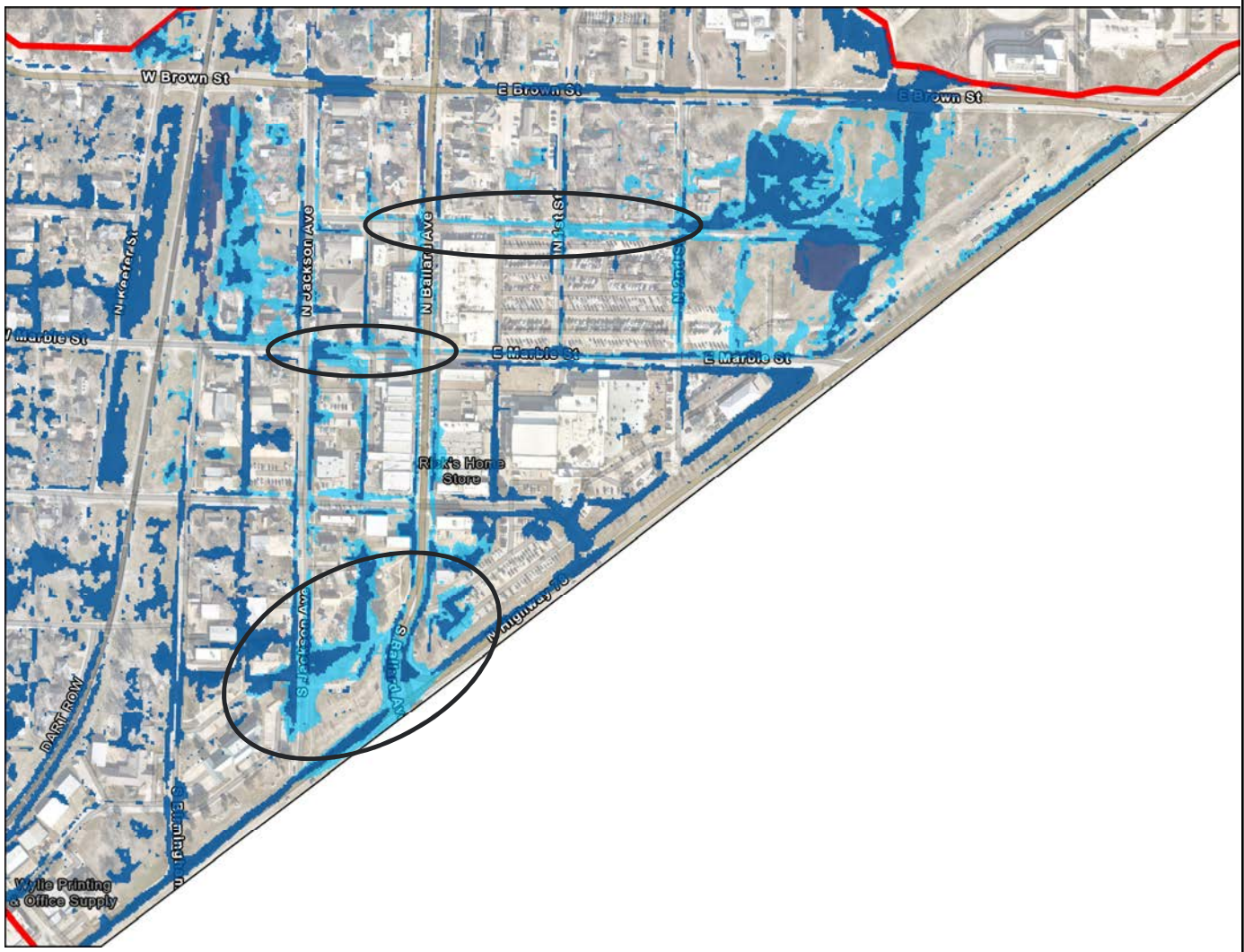
(Proposed - 1% AEP)

- Oak Street
- South Ballard Avenue (-46 cfs)
- South Jackson Avenue (-9 cfs)




# Inundation Extent Comparison

(1% AEP)




**Legend**

Existing Inundation

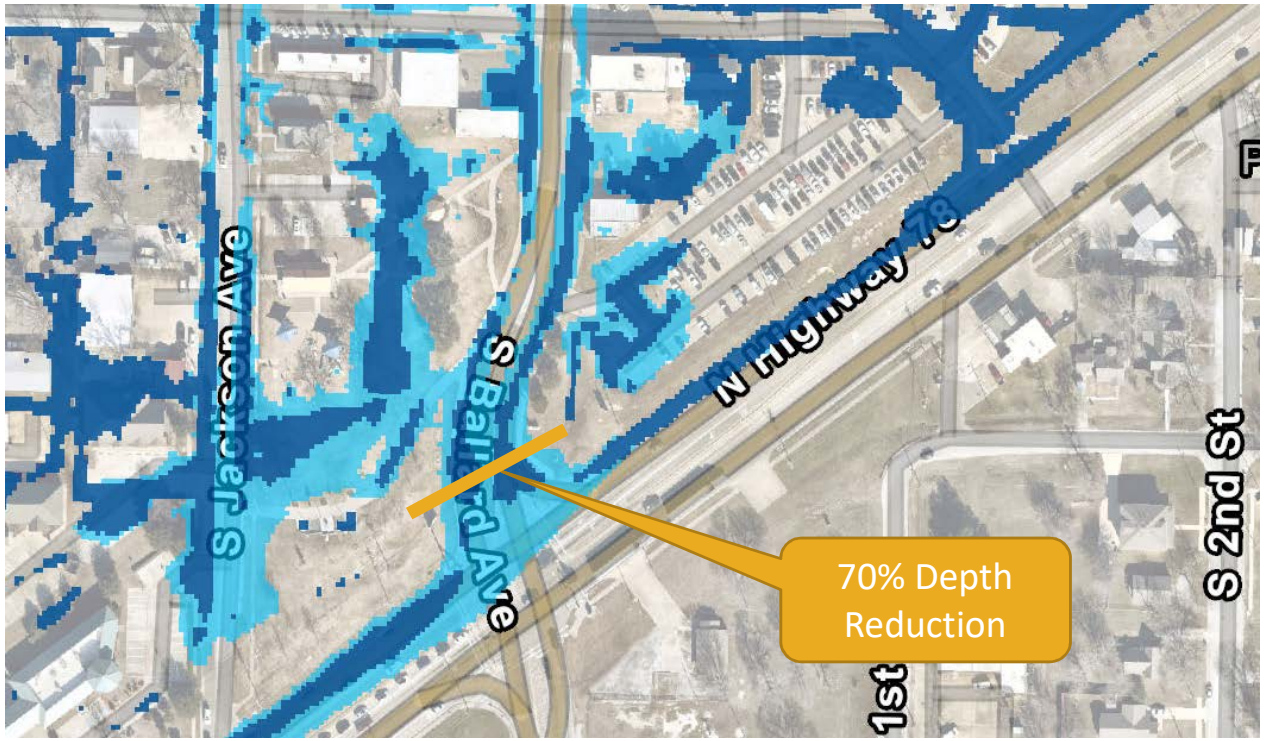
Proposed Inundation

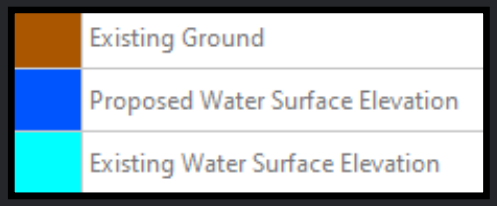
# Inundation Extent Comparison
(1% AEP)

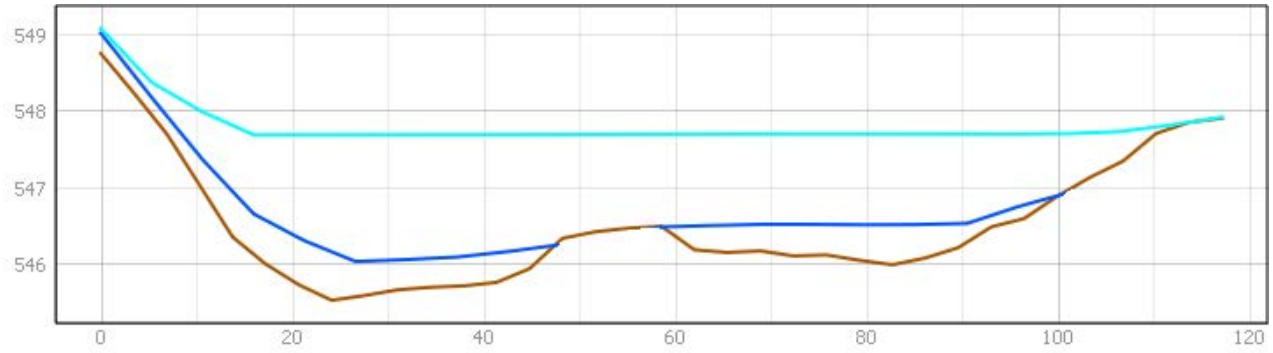
**Legend**

Existing Inundation

Proposed Inundation



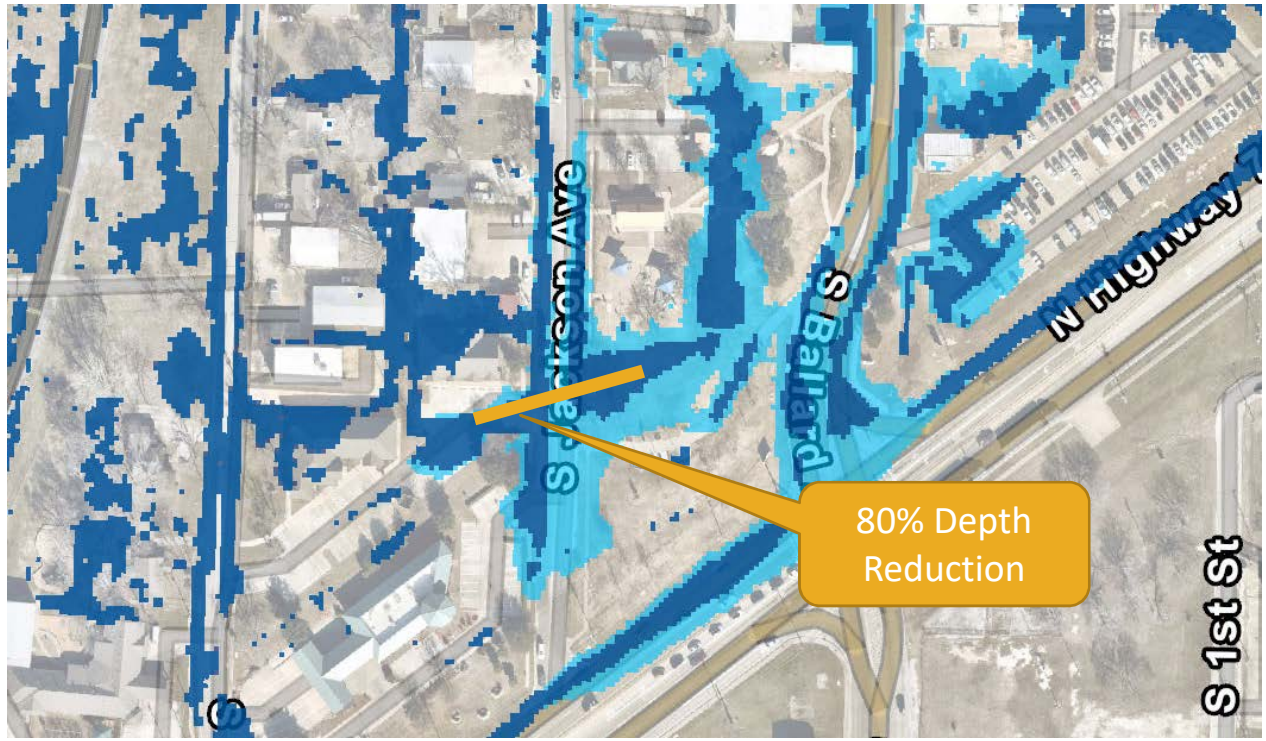



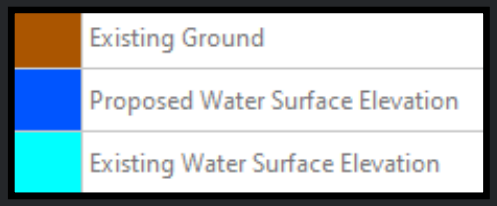
# Inundation Extent Comparison
(1% AEP)

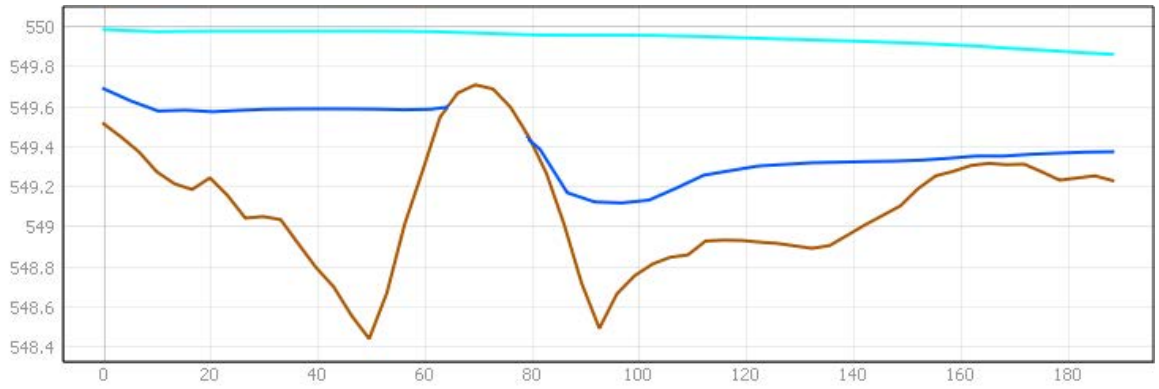
**Legend**

Existing Inundation

Proposed Inundation



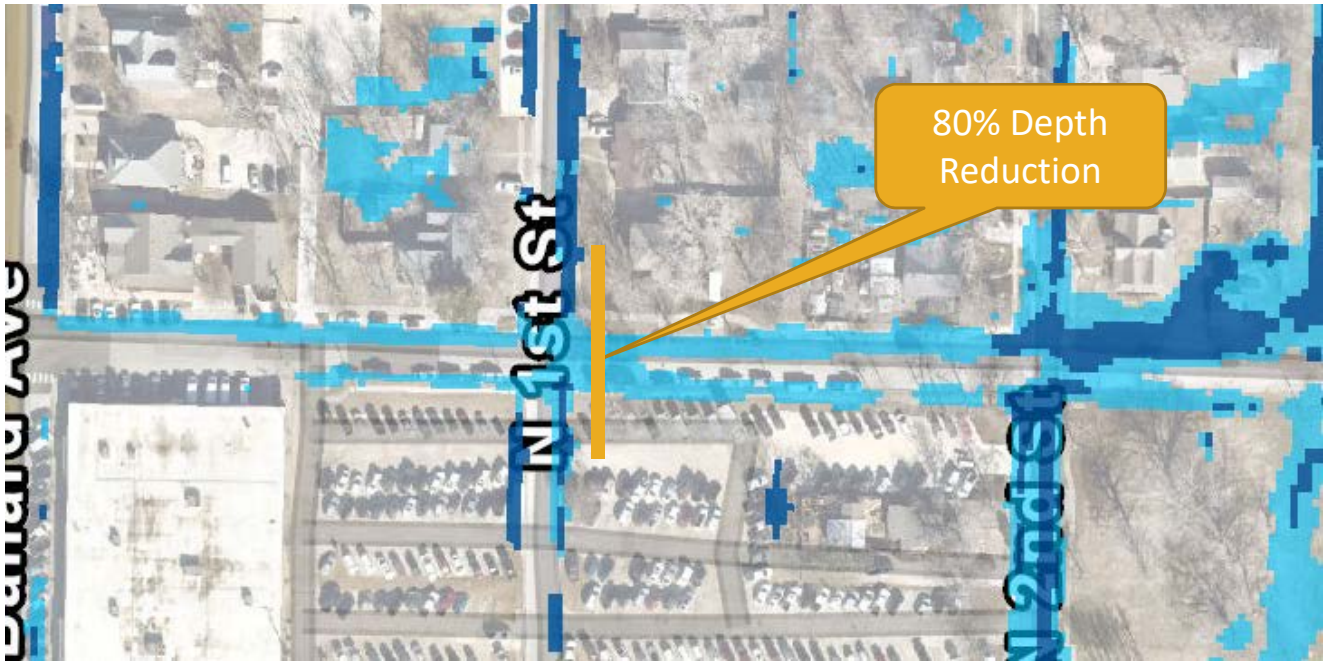



# Inundation Extent Comparison
(1% AEP)

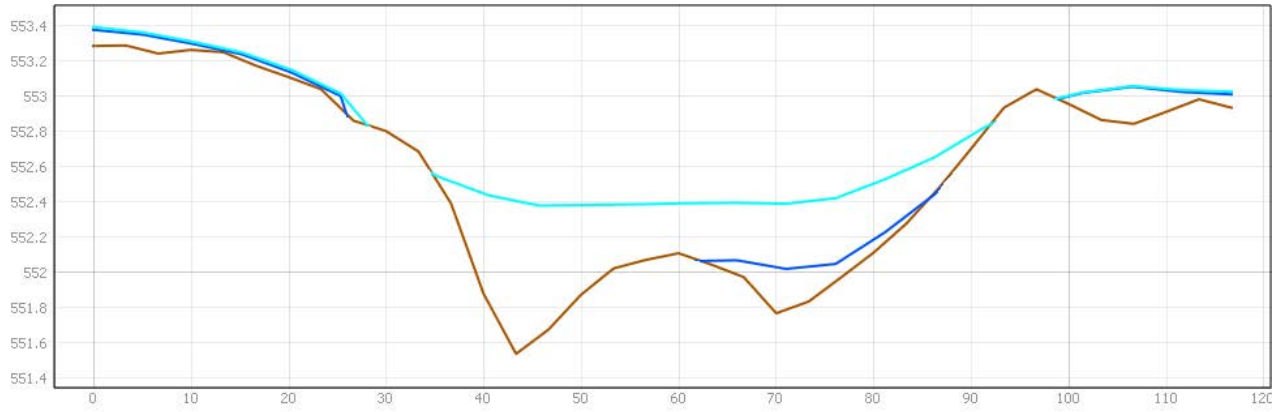
**Legend**

Existing Inundation

Proposed Inundation




| |
|---|
| Existing Ground |
| Proposed Water Surface Elevation |
| Existing Water Surface Elevation |

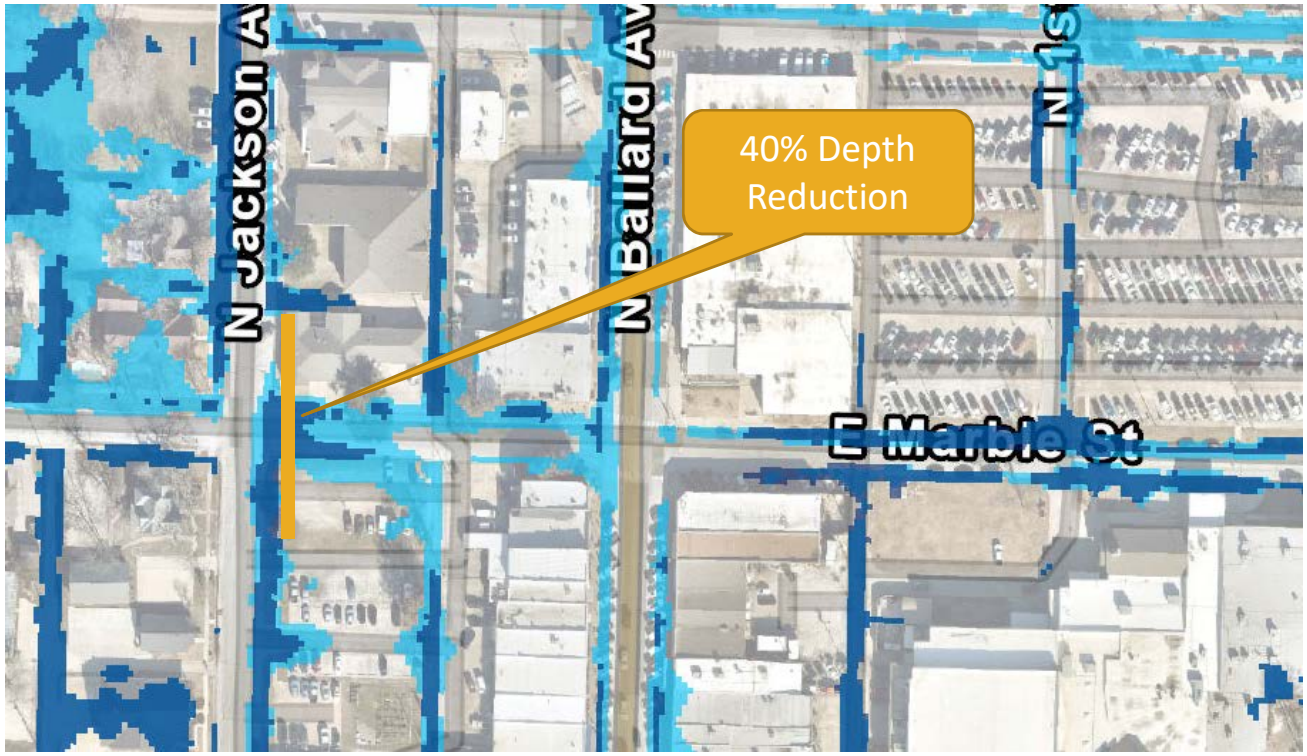


# Inundation Extent Comparison
(1% AEP)

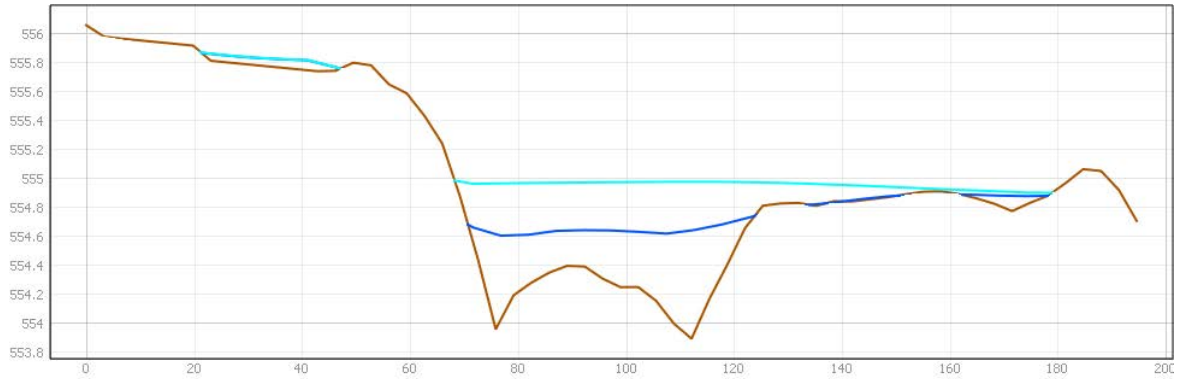
**Legend**

Existing Inundation

Proposed Inundation



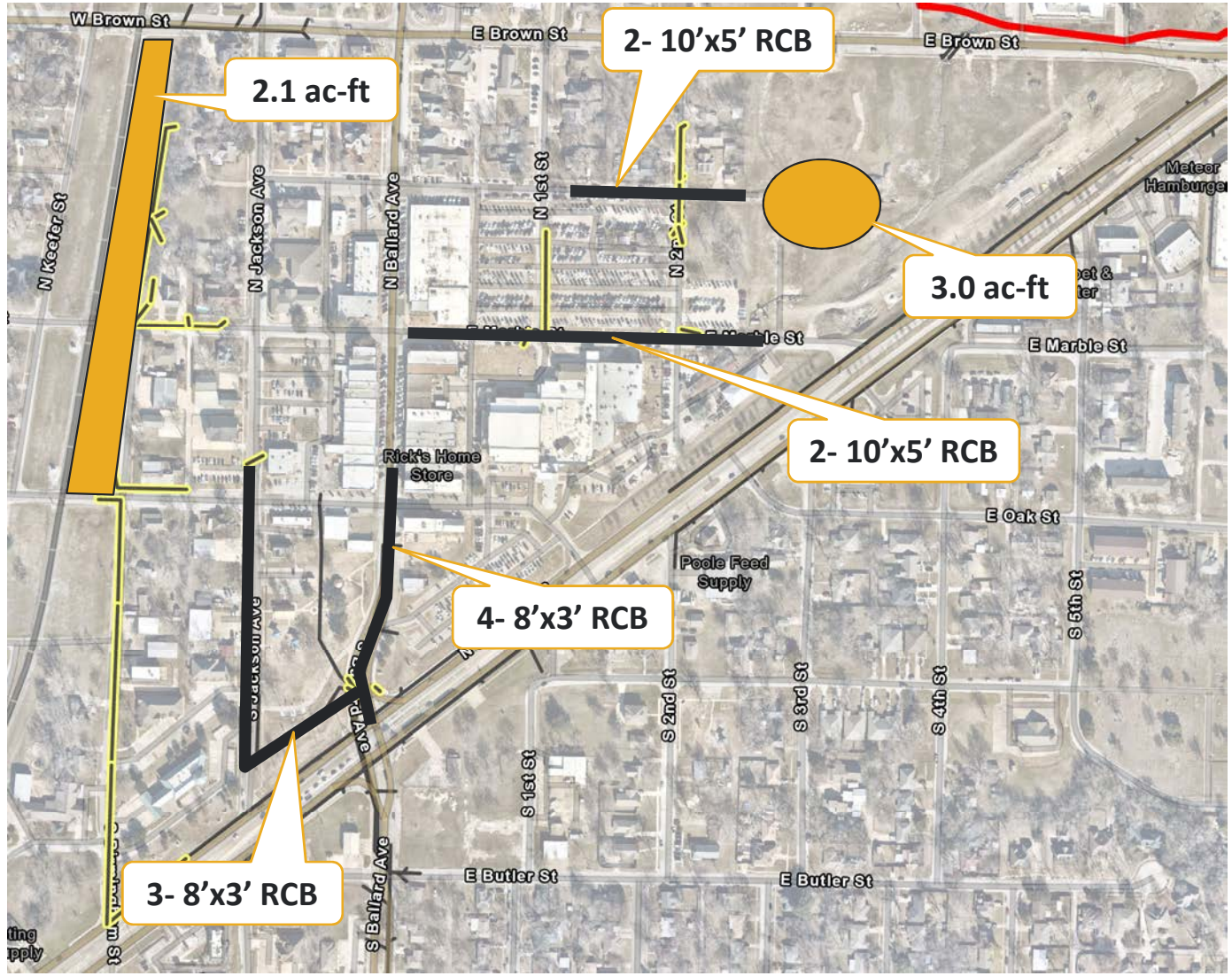

| |
|---|
| Existing Ground |
| Proposed Water Surface Elevation |
| Existing Water Surface Elevation |



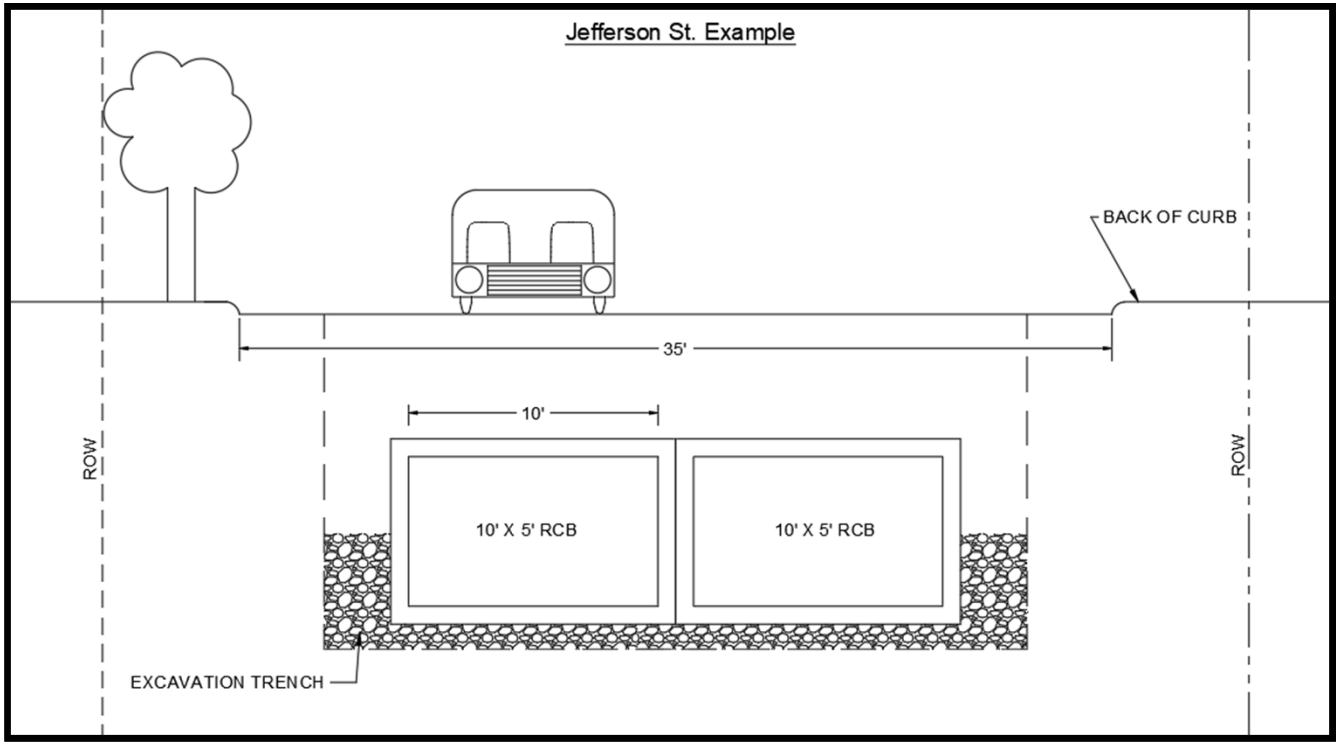
# Alternative Solutions

# Option 2:
## Reinforced Concrete Box (RCB) Storage Under Streets

- East Outfall:
  - 2,800 LF of 10'X 5' RCB (Under Street)
  - 3.0 ac-ft (Aboveground – By Others)
- South Ballard Discharge Point:
  - 5,900 LF of 8' X 3' RCB (Under Street)
- West Discharge Point:
  - 2.1 ac-ft (Underground & Surface)

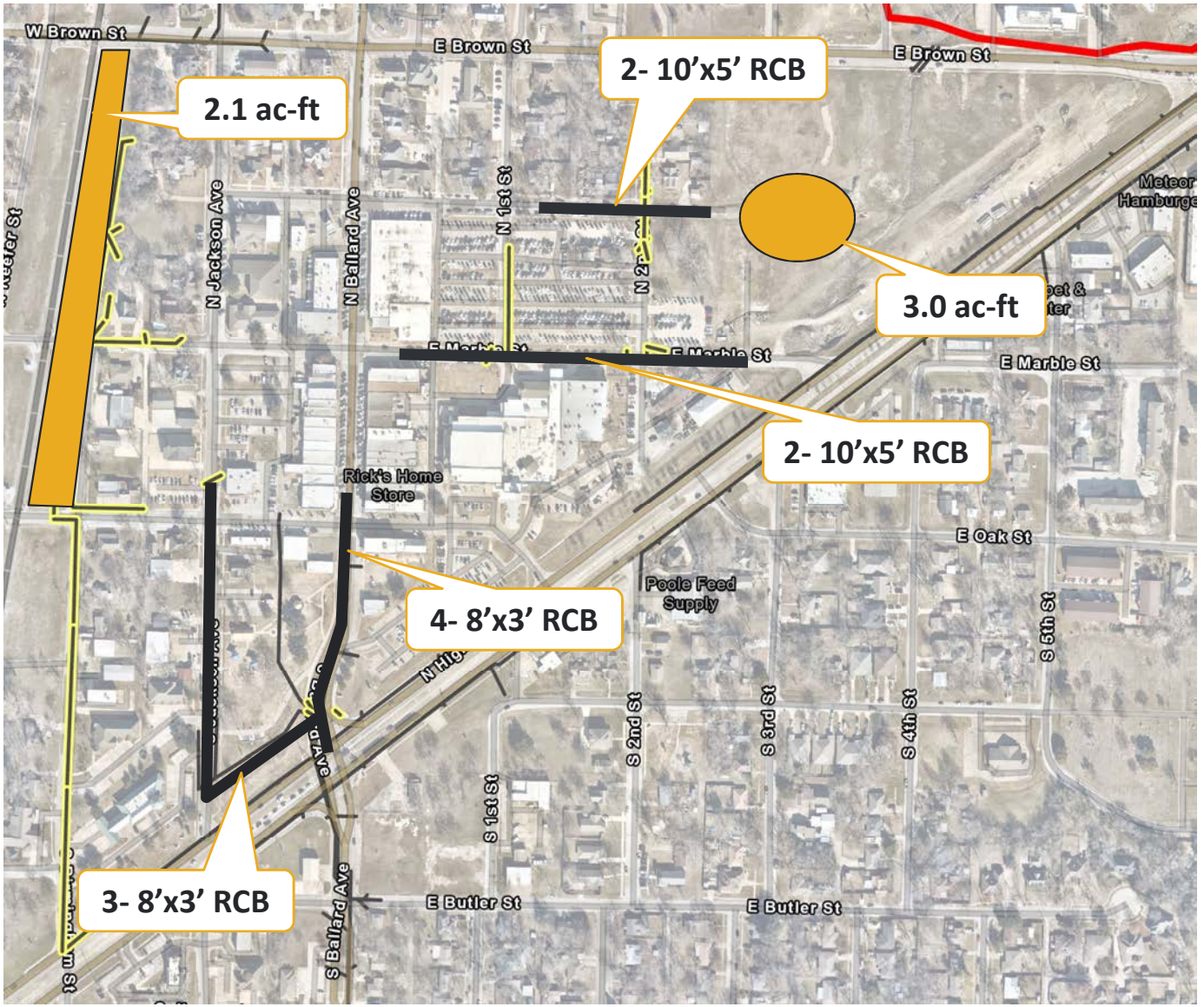


# Option 2 RCB Storage Under Streets



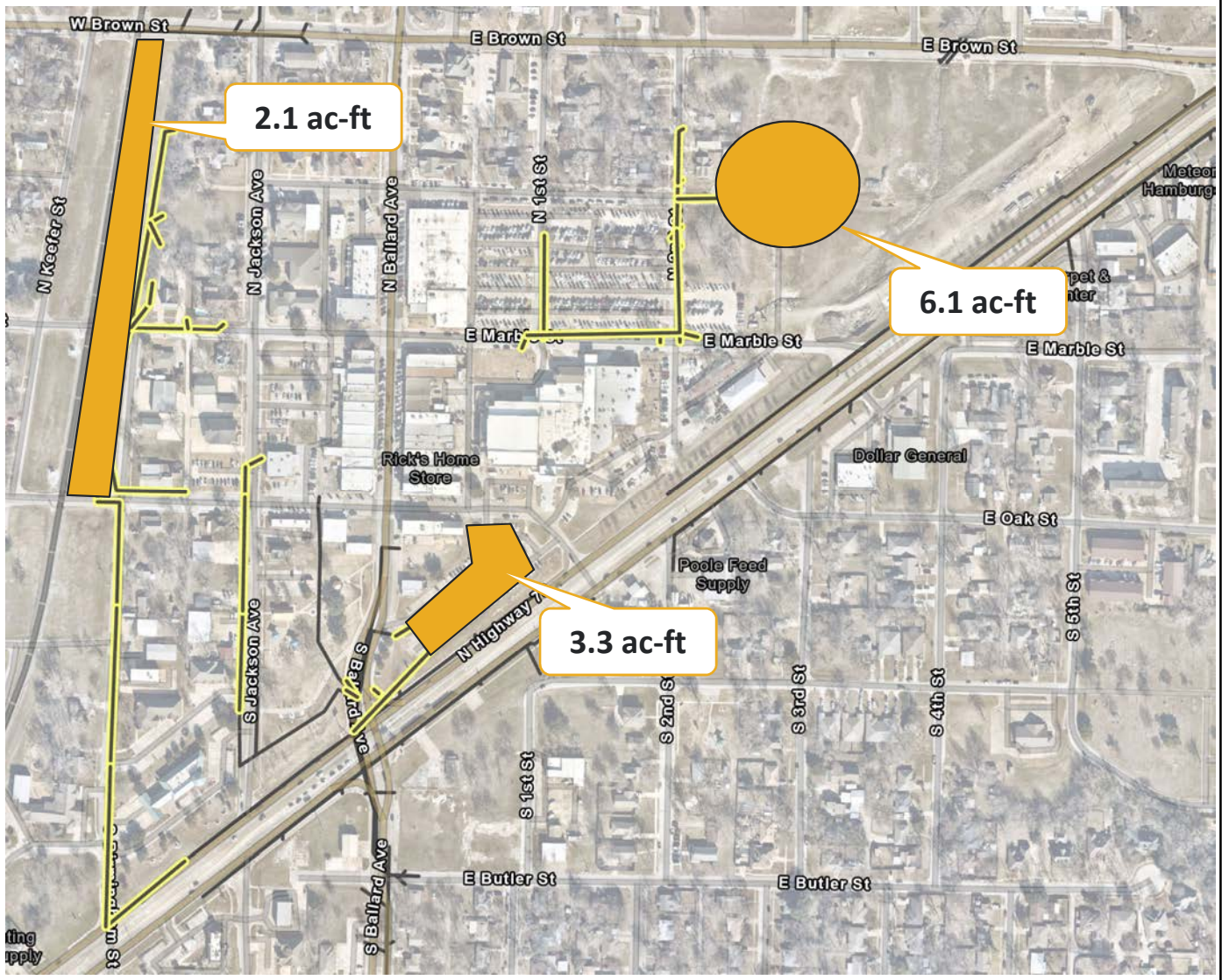
# Option 2:
## RCB Storage Under Streets

- Estimated Construction Cost:
  - $17,400,000
  - Includes 30% Contingency
- Estimated Design Fee:
  - $1,150,000



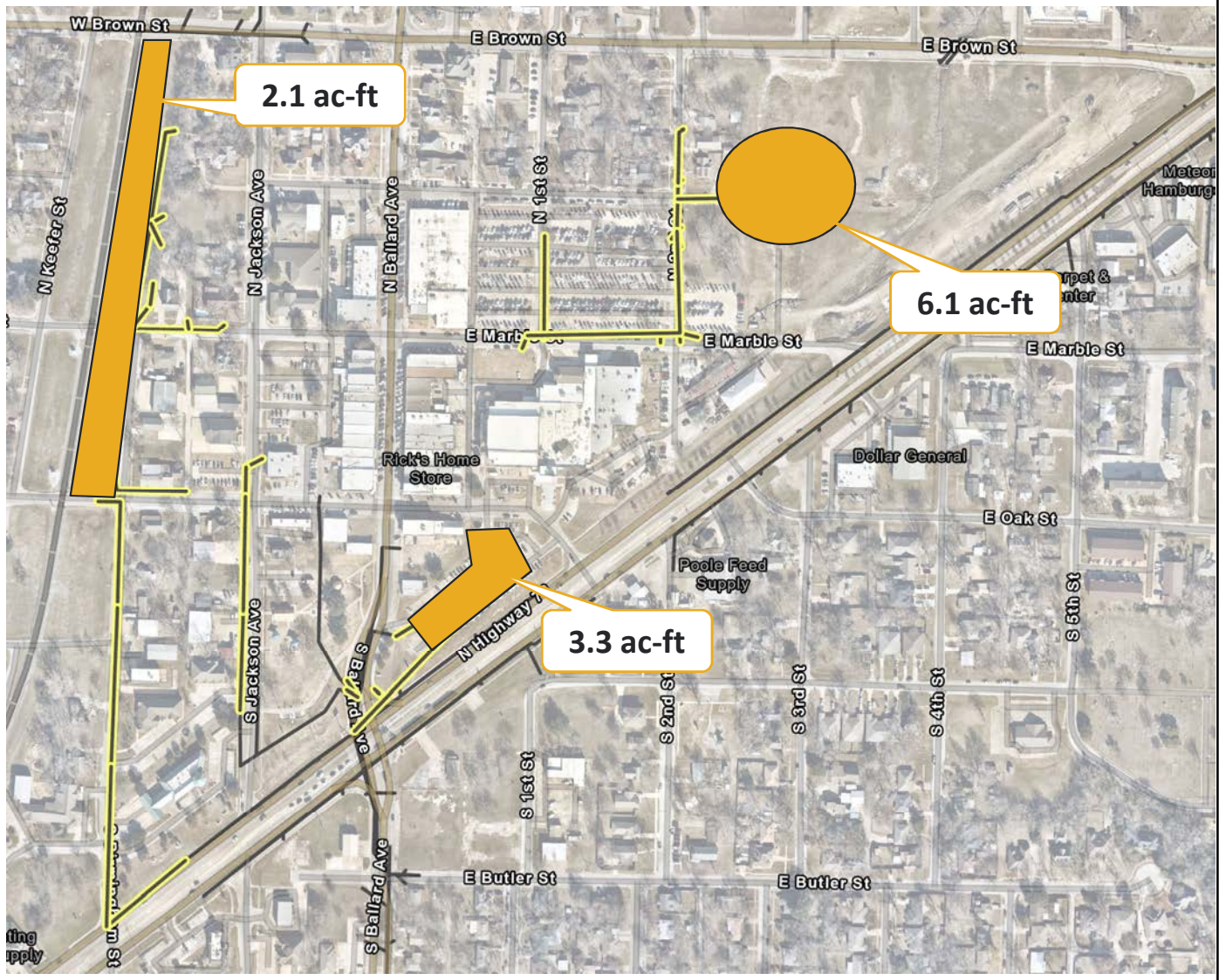
# Option 3:
## Aboveground & Underground Detention

- East Outfall:
  - 6.1 ac-ft (Aboveground)
  - Includes detention requirements by others (east commercial development)
- South Ballard Discharge Point:
  - 3.3 ac-ft (Underground)
- West Discharge Point:
  - 2.1 ac-ft (Underground & Surface)



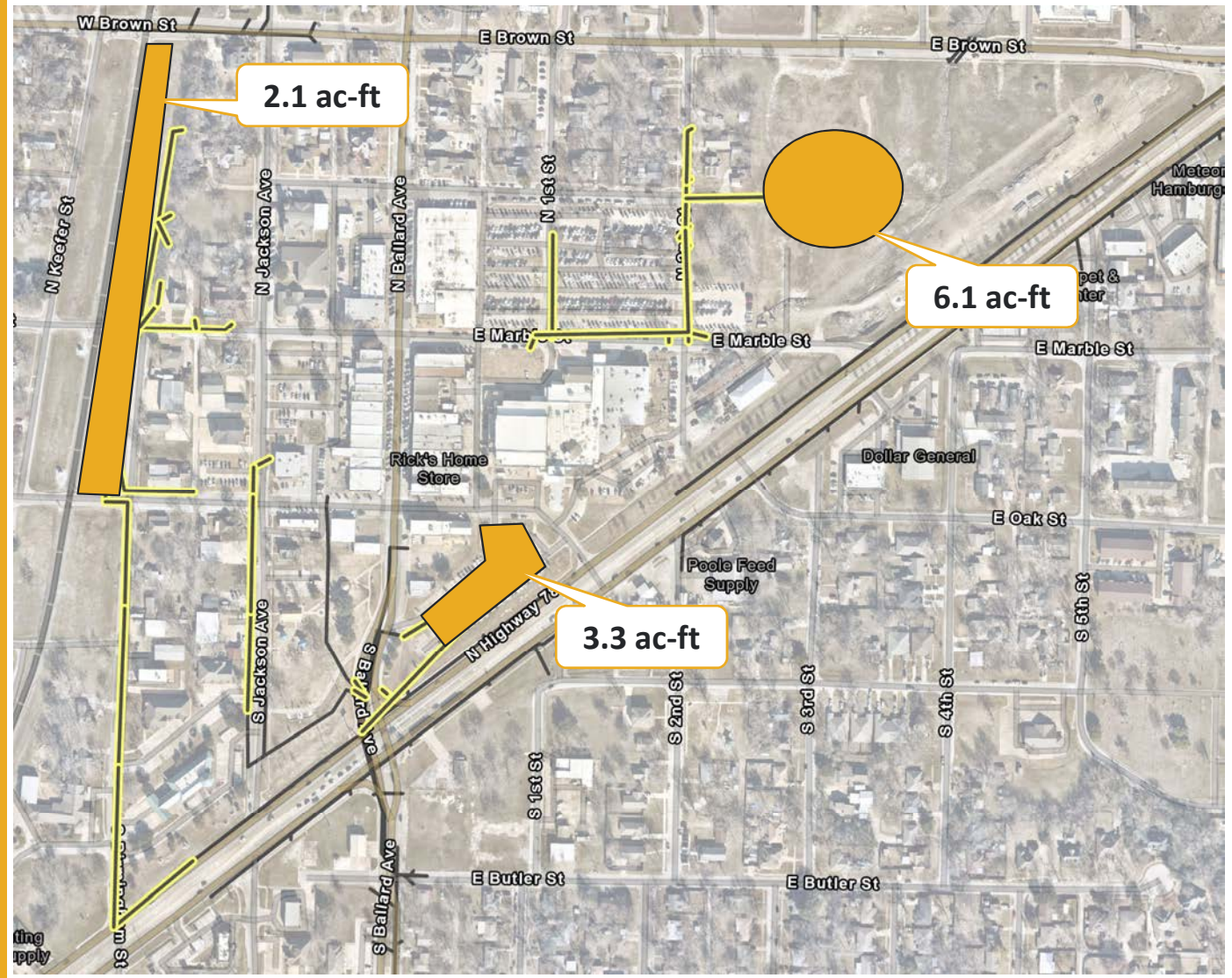
# Option 3:
## Aboveground & Underground Detention

- Estimated Construction Cost:
  - $5,600,000
- Estimated Design Fee:
  - $340,000



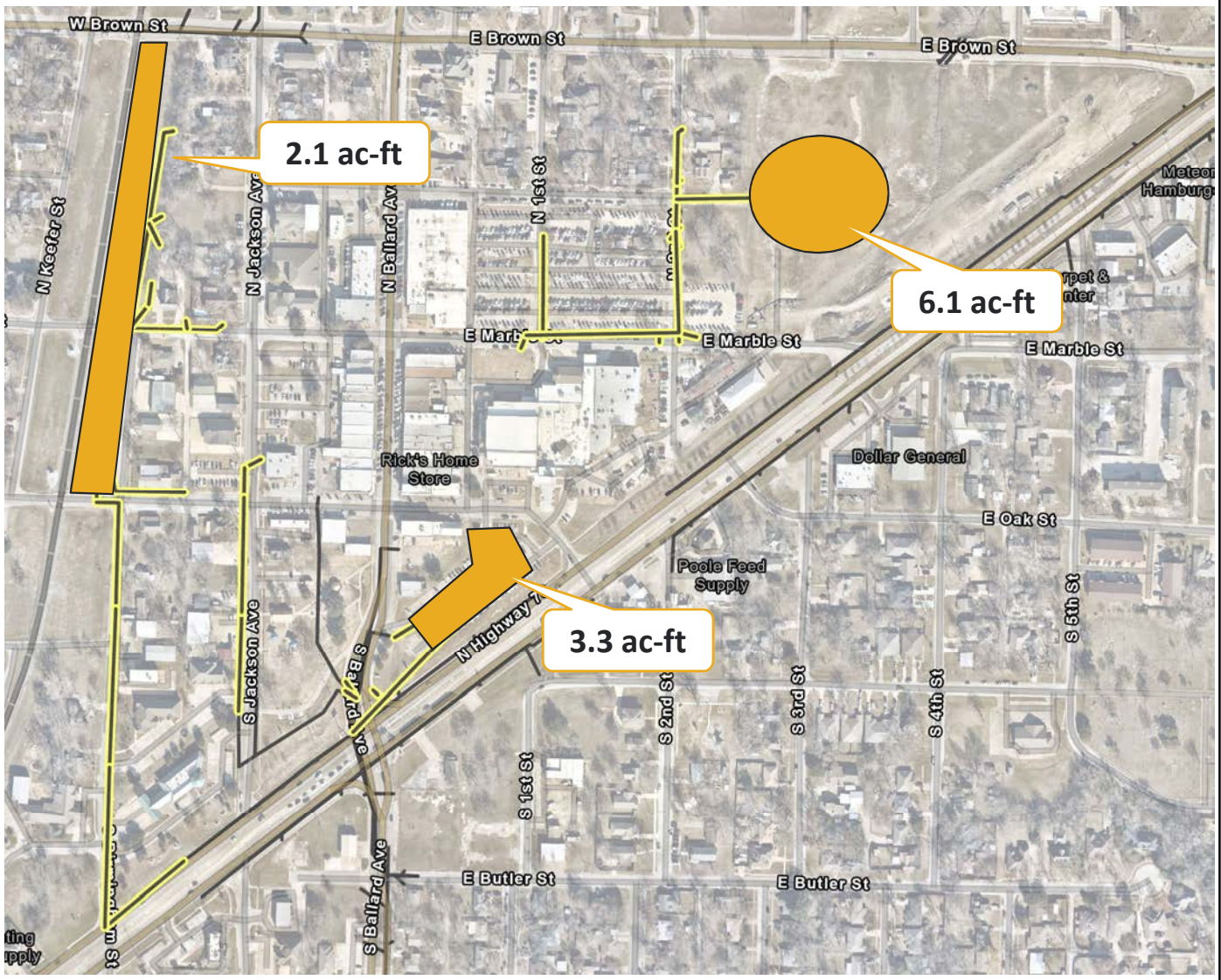
# Option 3A:
## Aboveground (vertical walls) & Underground Detention

- East Outfall:
  - 6.1 ac-ft (Aboveground w/ vertical walls)
  - Includes detention requirements by others (east commercial development)
- South Ballard Discharge Point:
  - 3.3 ac-ft (Underground)
- West Discharge Point:
  - 2.1 ac-ft (Underground & Surface)



# Option 3A:
## Aboveground & Underground Detention

- Estimated Construction Cost:
  - $6,100,000
- Estimated Design Fee:
  - $370,000



# Cost Estimate Summary

# Cost Estimate Summary

Option 1- Underground Detention
- Construction: $7,300,000
- Design: $460,000

Option 2- RCB Storage under Streets
- Construction: $17,400,000
- Design: $1,150,000

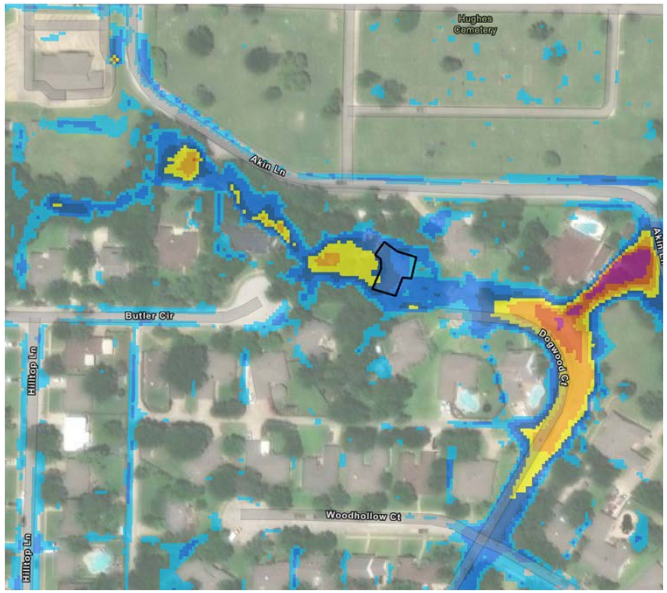
Option 3- Underground & Above Ground Detention
- Construction: $5,600,000
- Design: $335,000

Option 3A- Above Ground Storage w/ Vertical Walls
- Construction: $ 6,100,000
- Design: $ 370,000

# Concepts for Areas Outside of Downtown

# Areas Outside of Downtown

## DOGWOOD COURT/ AKIN LANE




## POTENTIAL IMPROVEMENTS

Add curb along south side of street on Akin Ln

Collect via drop inlet

Improve roadside ditch along north side of Akin Ln

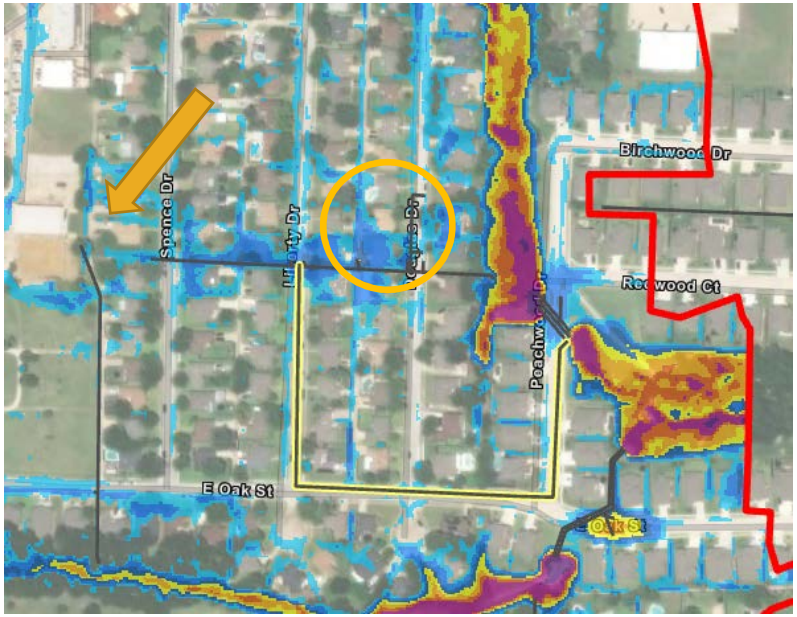
Divert runoff to existing concrete flume

Improve existing concrete flume

High-Level Improvement Cost Estimate: $175,000

# Areas Outside of Downtown

DOUGLAS DRIVE




POTENTIAL IMPROVEMENTS

Divert runoff via separate storm drain alignment on E Oak St

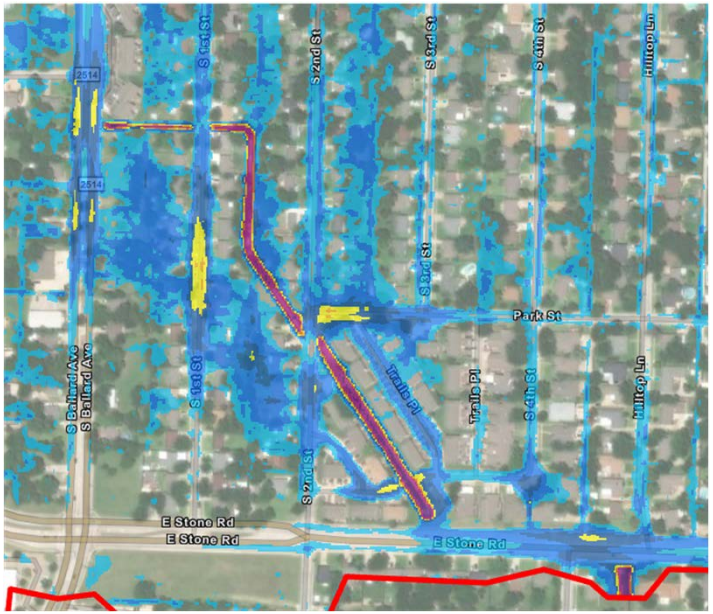
Increase inlet capture capacity at key locations

Add new inlets at key locations

High-Level Improvement Cost Estimate: $2,100,000

# Areas Outside of Downtown

## 1ST STREET/ STONE RD




## POTENTIAL IMPROVEMENTS

Increasing existing storm drain size on 1st St

Incorporate additional inlets

Add additional storm drain line discharging into channel in alley

Adding storm drain lateral and inlets on Stone Rd

Reconfigure connection for a couple of inlets

Improve 4,000 LF of downstream channel to lower tailwater and improve conveyance capacity

High Level Improvement Cost Estimate: $1,000,000

# Questions?

HUITT ZOLLARS