



# Lower Buttermilk Branch Stream Restoration

**PUBLIC MEETING**

**July 25, 2024**

[www.AustinTexas.gov/Buttermilk](http://www.AustinTexas.gov/Buttermilk)



# Welcome and Agenda

- Introductions
- Watershed Protection Department
- Project Status
- Preliminary Engineering Report Summary
- Schedule and Next Steps
- Questions & Comments



# Introductions

**Sponsoring Department: Watershed Protection Department**

**Project Sponsor: Donald Heisch, P.E., CFM**

**Sponsor Manager: Eric Loucks, P.E.**

**Communications: Becca Villarreal**

**Managing Department: Capital Delivery Services**

**Project Manager: Minda Sarmiento, P.E.**

**Consulting Engineer: Carollo Engineers Inc.**

**Project Manager: TJ Rhoads, P.E., CFM**

# Watershed Protection Department

## Mission:

Protect lives, property, and the environment of our community by reducing the impact of:

- Flooding
- Erosion
- Water Pollution







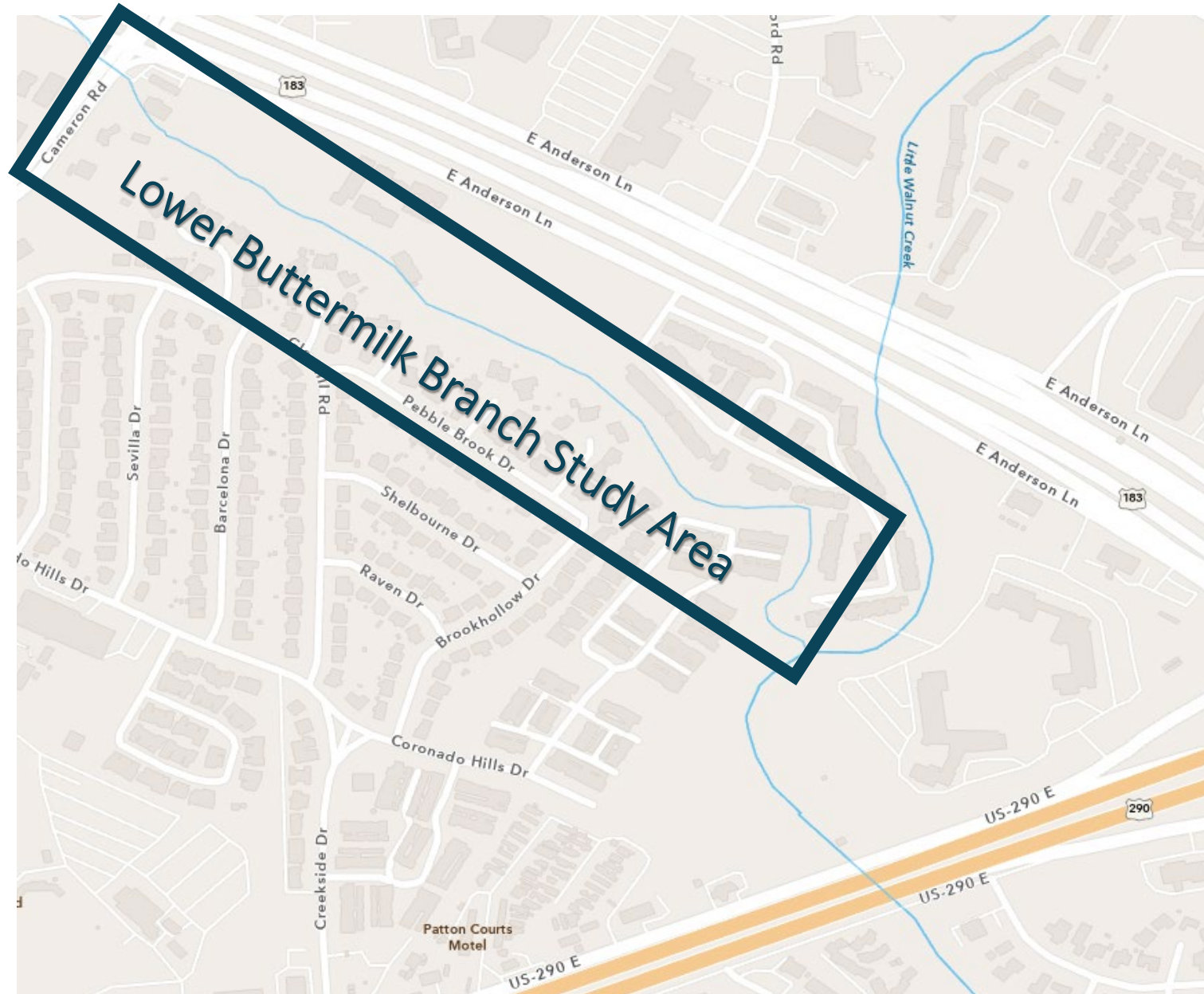
# Creek Assessment

- Creek bottom and banks eroding
- Public and private property threatened by erosion
- Water quality pollution
- Degradation of stream

# Project Goals

- Stabilize and repair creek banks
- Protect properties from erosion damage
- Protect the ecology of the creek
- Plant native vegetation
- ***The project will not worsen flooding***







# Project Status



## **February 2023 – Completed Initial Geomorphic Assessment**

- Identified Erosion Sites

## **Spring 2023 – Initiated Preliminary Engineering**

- Hydraulic Modelling
- Geotechnical Investigations
- Environmental Investigations
- Alternatives Analysis

## **Spring 2024 – Completed Preliminary Engineering Report**

- Recommended Actions
- Conceptual Designs for Each Improvement



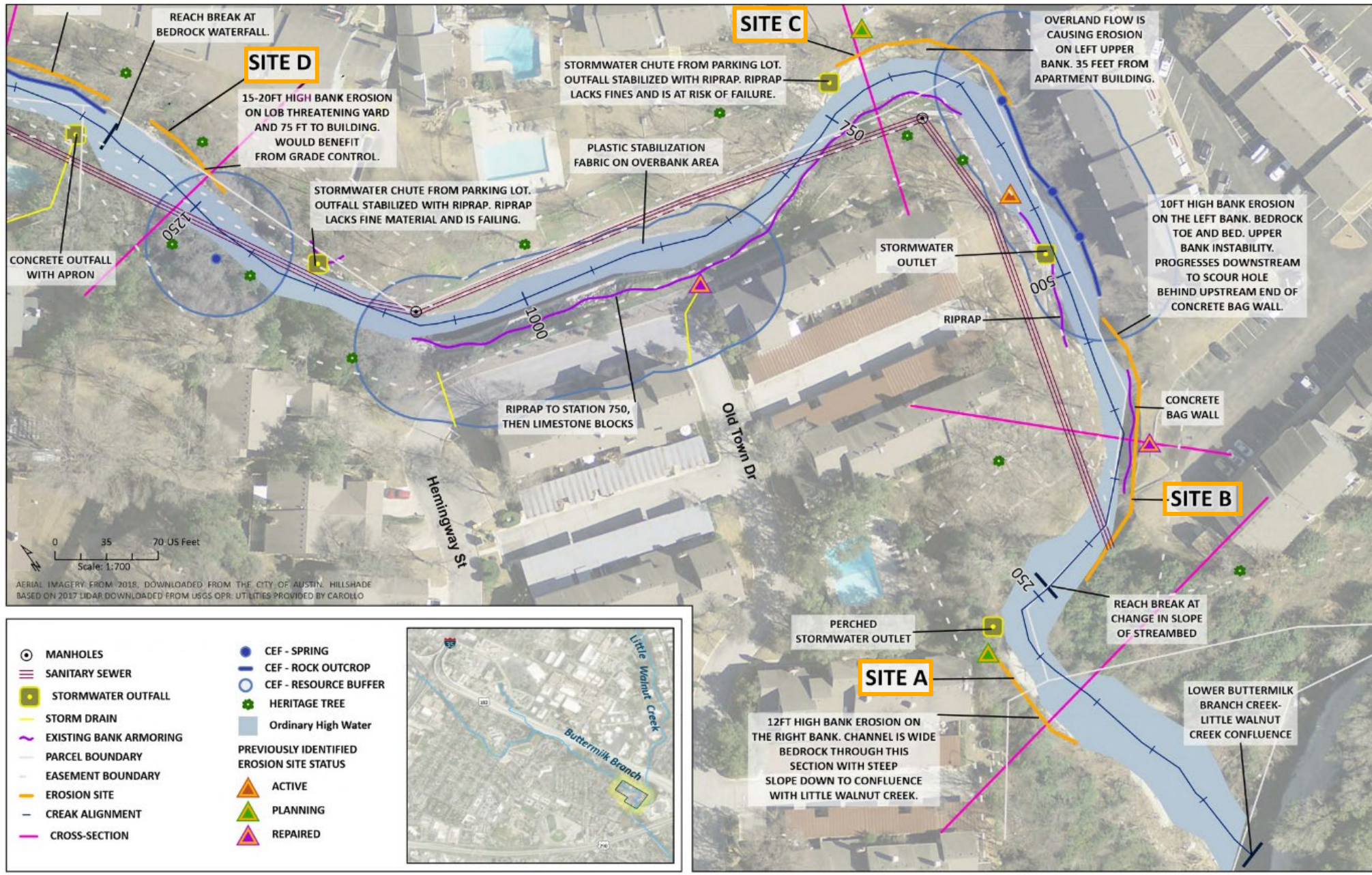
# Preliminary Engineering Report Summary



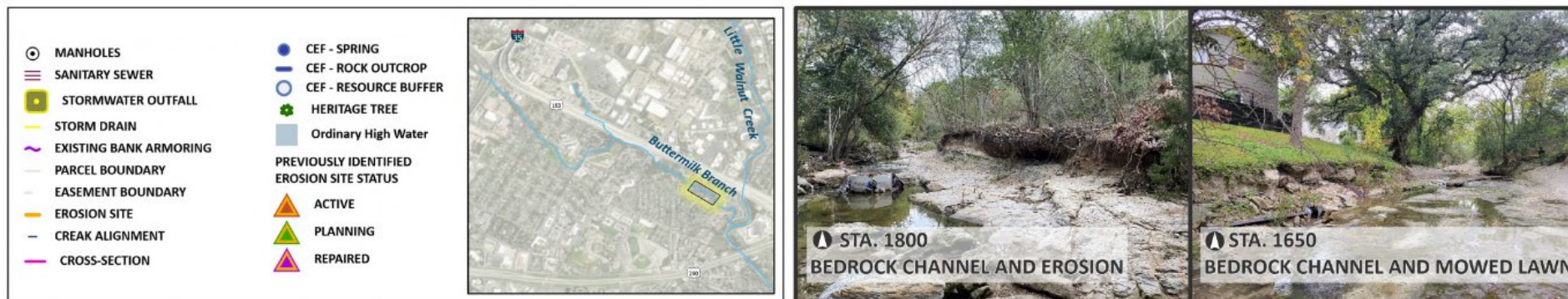
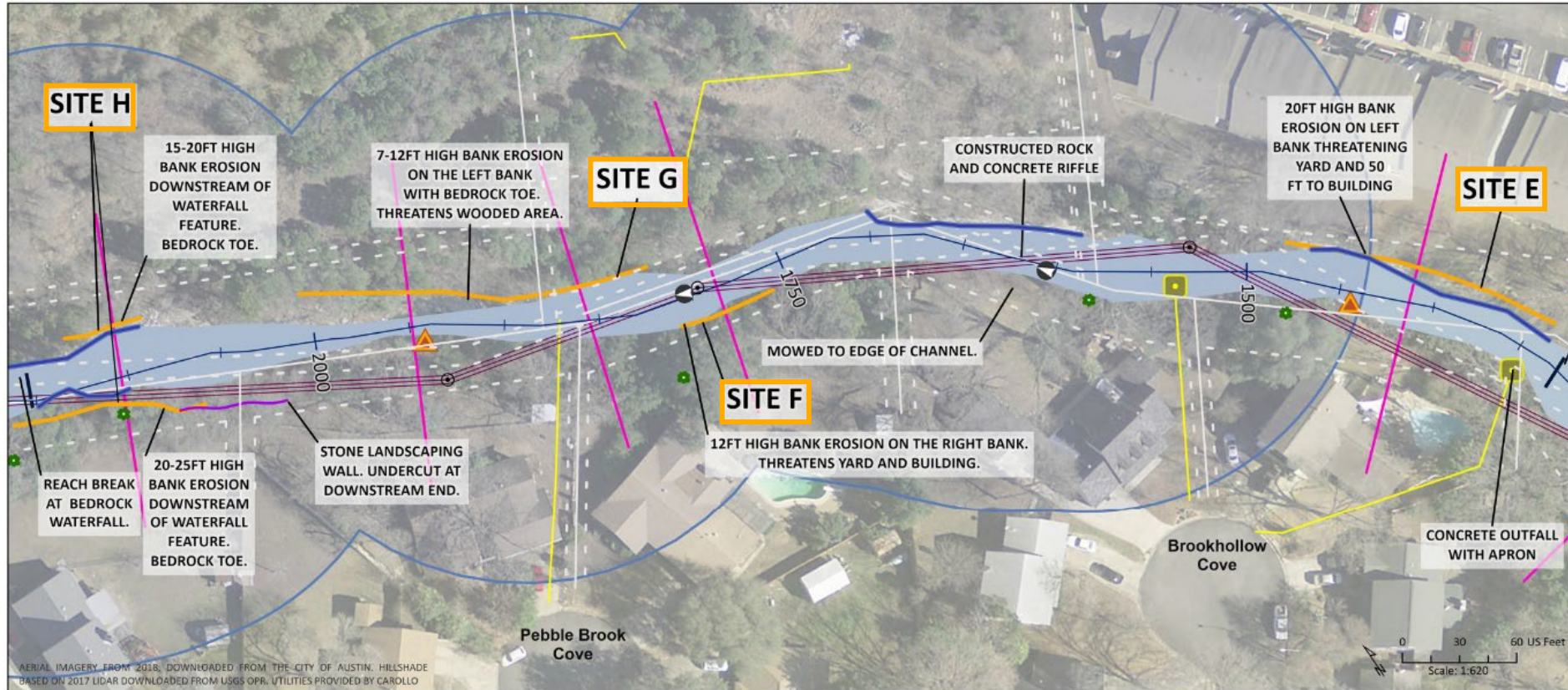
## Widespread downcutting (to bedrock), channel widening, and bank erosion

- Geomorphic Assessment
  - Identified 14 active erosion sites (A through N)
- Erosion Site Screening and Project Prioritization (4 Steps)
  - Data compilation
  - Site screening
  - Site prioritization
  - Project site recommendations

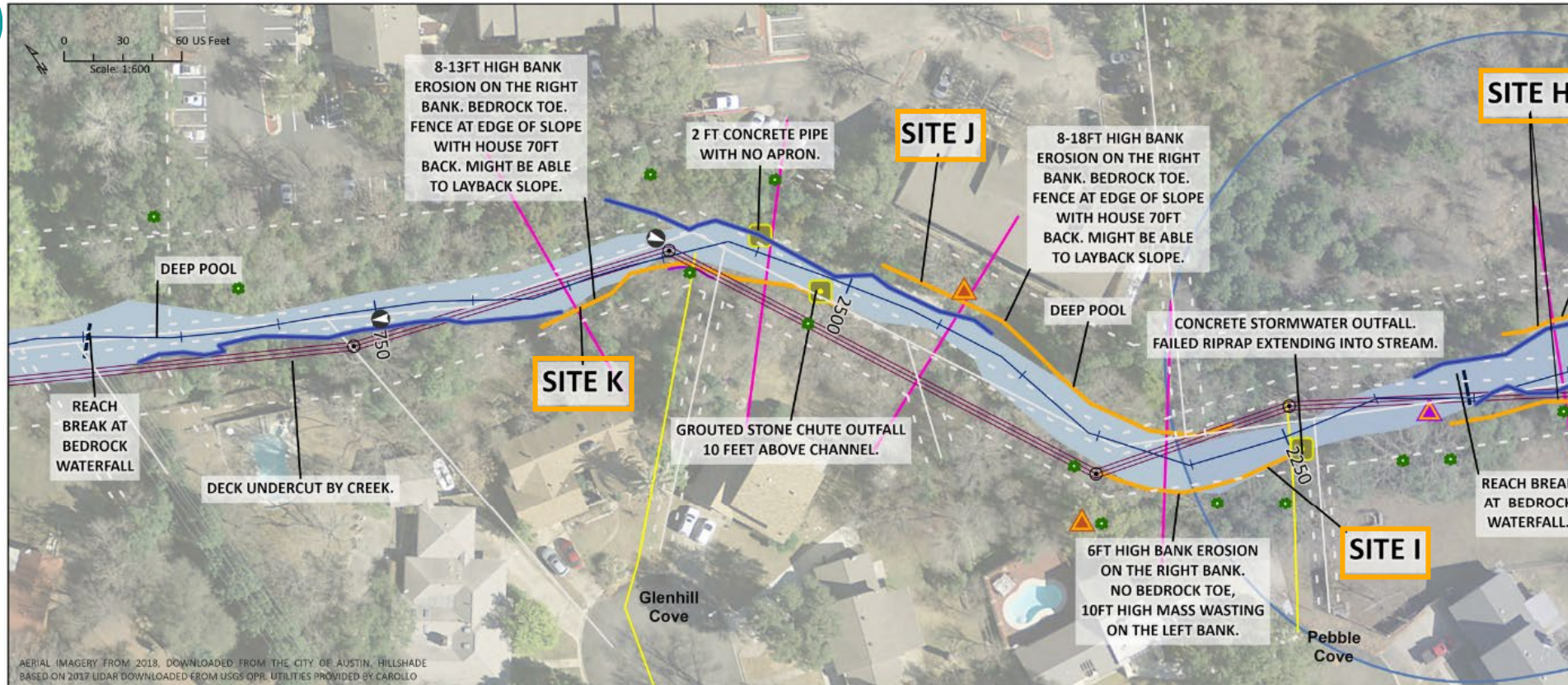






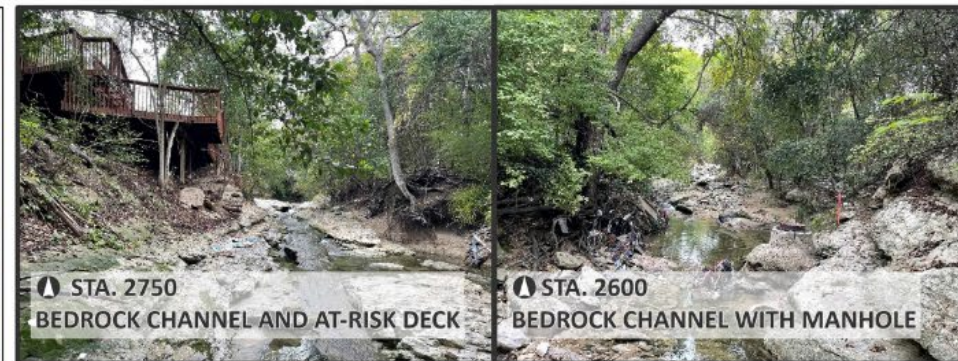
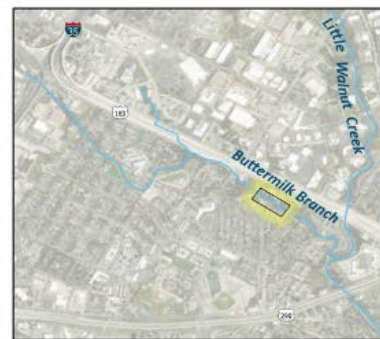




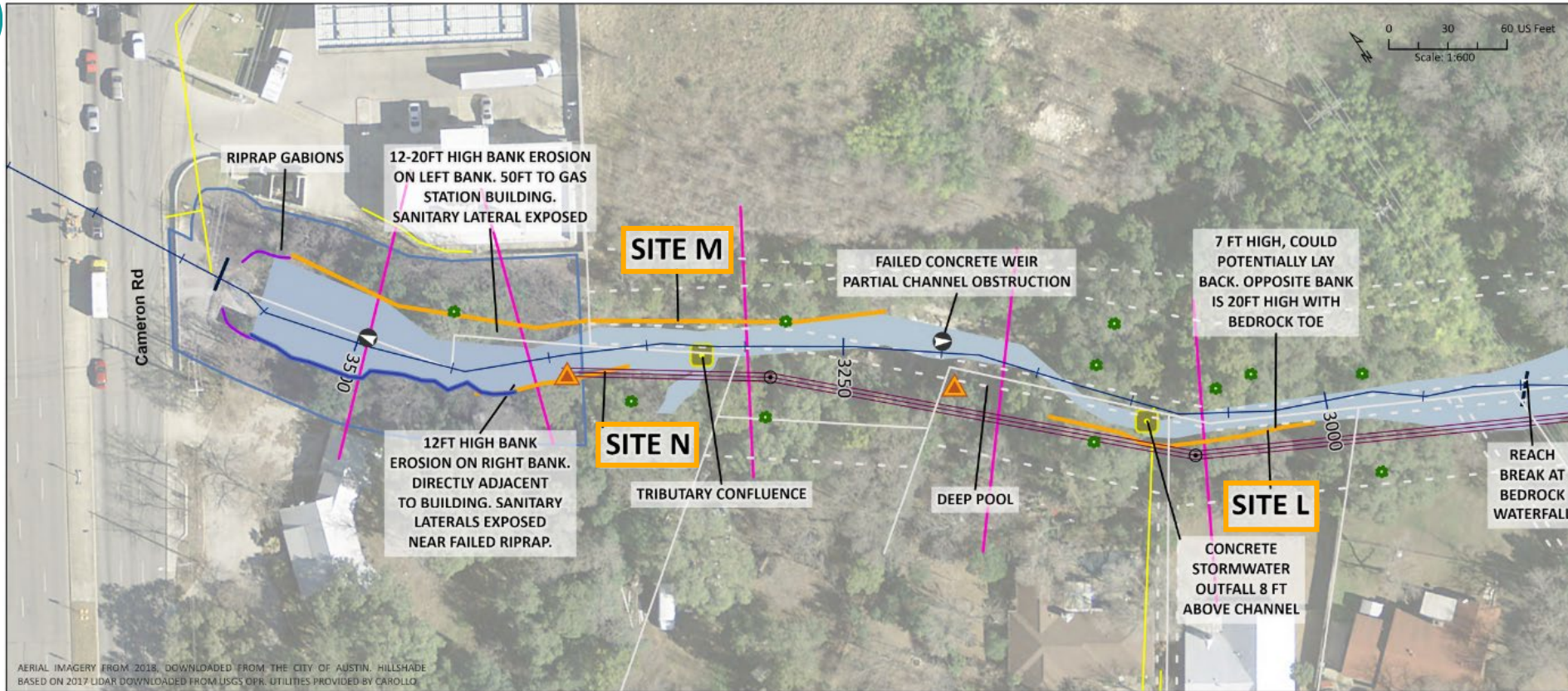


AERIAL IMAGERY FROM 2018, DOWNLOADED FROM THE CITY OF AUSTIN. HILLSHADE BASED ON 2017 LIDAR DOWNLOADED FROM USGS QPR. UTILITIES PROVIDED BY CAROLLO

- MANHOLES
- SANITARY SEWER
- STORMWATER OUTFALL
- STORM DRAIN
- EXISTING BANK ARMORING
- PARCEL BOUNDARY
- EASEMENT BOUNDARY
- EROSION SITE
- CREEK ALIGNMENT
- CROSS-SECTION
- CEF - SPRING
- CEF - ROCK OUTCROP
- CEF - RESOURCE BUFFER
- HERITAGE TREE
- Ordinary High Water
- PREVIOUSLY IDENTIFIED EROSION SITE STATUS
  - ACTIVE
  - PLANNING
  - REPAIRED







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- ACTIVE
  - PLANNING
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# Recommended Projects

- Selected Sites

- Six sites were selected to move forward (A, B, C, E, F, and I)
- Top priority sites: A, B, C, and E
  - Needs extensive bank repairs
- Sites: F and I
  - Typical bank repairs (i.e. Mechanically Stabilized Earth (MSE) block walls and vegetated riprap)





# Site A

## Description:

- 12 ft high, steep bank erosion threatens adjacent building
- Proposed improvements are within existing drainage easement
- ± 200 linear feet of improvements
- Existing stormwater outlet near improvements to be modified
- No Critical Environmental Features (CEFs) or heritage trees identified within the immediate vicinity



*Site A (bank in the background)*





# Site A



## Drilled Shaft Wall

- **Description:**
  - Drilled shaft wall, with H-pile and concrete lagging
  - Limestone facing options
  - Top of wall to extend at least 0.5 ft above the 100-yr storm water surface elevation (WSEL)
  - Opposite bank grading
  - 3:1, vegetated shelf to existing grade
- **Estimated Costs ~ \$2,100,000**



*Similar project completed in 2017*

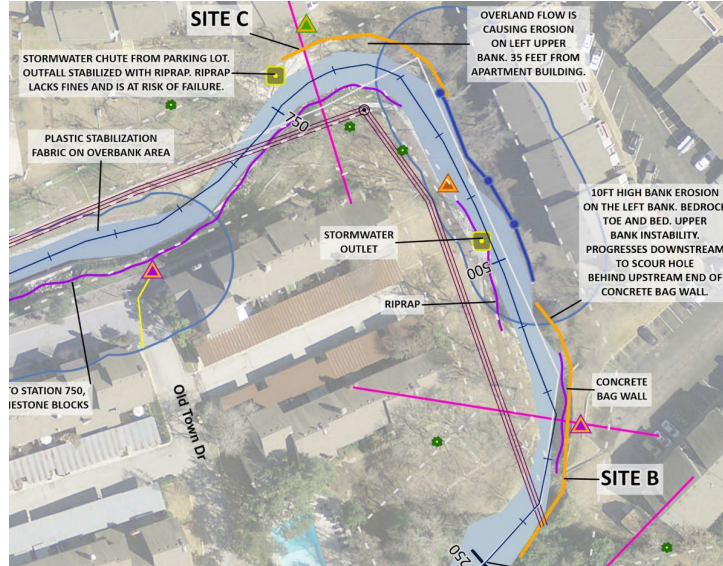




# Sites B & C

## Description:

- Scour upstream and downstream of existing bank armoring
- Additional easement may be required
- Nearby CEFs include seeps and a rock outcrop, just upstream of site
- Improvements to be extended between both sites B & C
- $\pm$  530 linear feet of improvements (Sites B and C combined)



*Typical segment of Sites B and C*



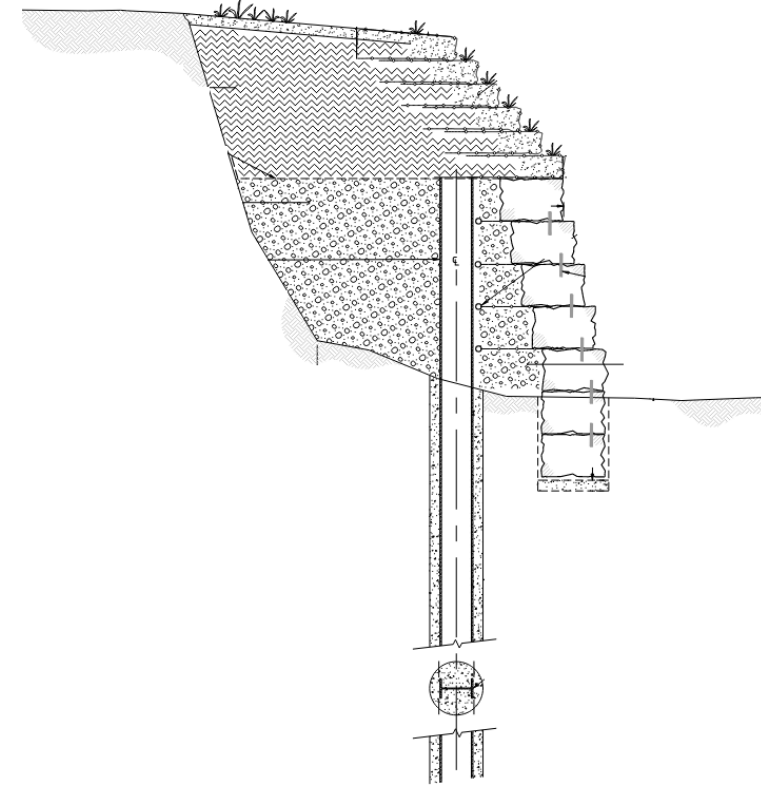


# Sites B & C



## Drilled Shaft Wall

- **Description:**
  - Drilled shaft wall, with H-pile and concrete lagging
  - Limestone facing options
  - Top of wall to extend at least 0.5 ft above the 10-yr storm water surface elevation
  - Opposite bank grading
  - 3:1, vegetated shelf to existing grade
- **Estimated Costs (Sites B & C combined) ~ \$3,800,000**



*Schematic of Drilled Shaft Wall*

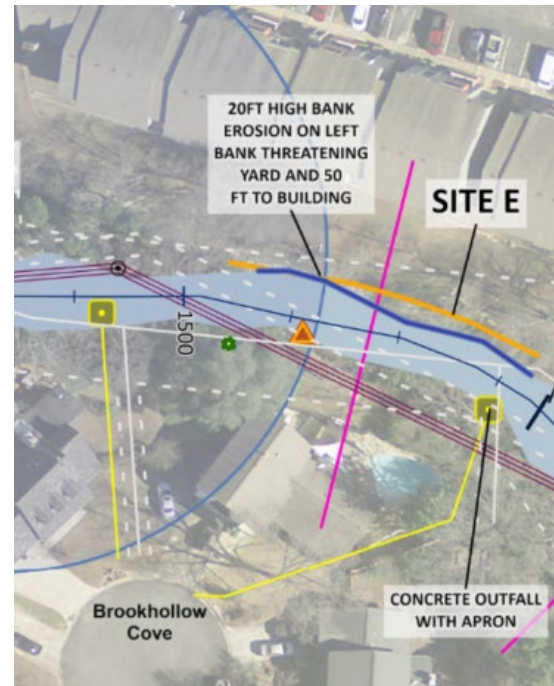


# Site E



## Description:

- 20 ft high bank erosion threatens nearby apartment buildings
- Improvements likely to be situated within an existing easement
- Nearby CEF includes rock outcrop extending along the site
- 1 nearby heritage tree threatened with construction
- ± 200 linear feet of improvements



*Site E Typical Conditions*





# Site E



## Drilled Shaft Wall

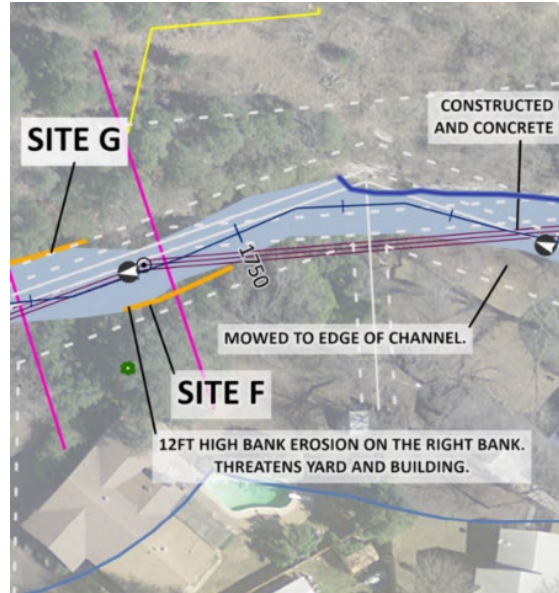
- **Description:**
  - Drilled shaft wall, with H-pile and concrete lagging
  - Limestone facing options
  - Top of wall to extend at least 0.5 ft above the 10-yr storm WSEL to protect against higher shear stresses
  - Opposite bank grading
  - 3:1, vegetated shelf to existing grade
- **Estimated Costs ~ \$1,900,000**



# Site F

## Description:

- 12 ft high bank erosion threatens a private yard and residential building
- Proposed improvements are likely to be situated within an existing easement
- Site falls within 150 ft of a rock outcrop;
- 1 nearby heritage tree not likely to be threatened by improvements
- ± 135 linear feet of improvements



*Site F Typical Conditions*





# Site F

## Mechanically Stabilized Earth (MSE) Block Wall

- **Description:**
  - Stacked limestone block with geogrid.
  - 3:1, vegetated shelf to existing grade.
- **Estimated Costs ~ \$1,400,000**



*Example of MSE Block Wall*



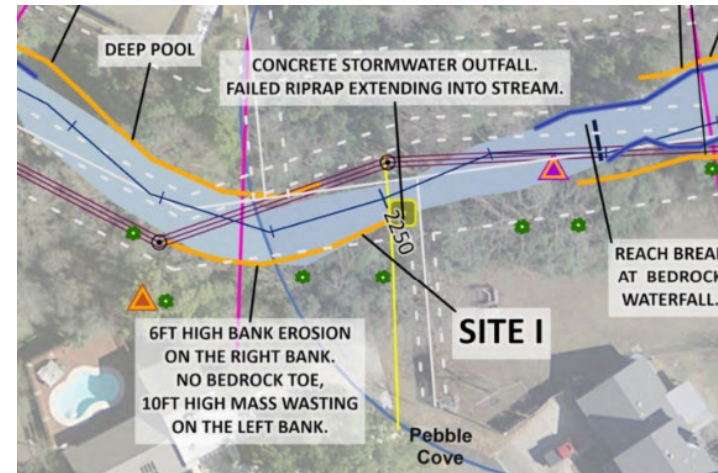
# Site I

## Description:

- 6 ft high bank erosion threatens yard
- Proposed improvements will likely extend beyond the existing easement
- Additional easement may be required
- Nearby fault according to state-sponsored mapping system
- Site I falls within 150 ft of a rock outcrop
- 4 nearby heritage trees. It's likely some of these will be removed for construction
- $\pm 110$  linear feet



## Site I





# Site I



## Vegetated Riprap

- **Description:**
  - Riprap installed at a 2:1 slope
  - Riprap filled with topsoil and vegetated
- **Estimated Costs ~ \$1,000,000**



*Example of Vegetated Riprap*





# Anticipated Schedule and Next Steps

## Fall 2024

- Detailed Design Phase: Sites A, B, & C
- Watershed in-house project delivery assignment: Sites F & I
- Pending capital improvement Funding: Site E

## Fall 2026 – Bid Phase

## Summer 2027 – Construction Phase



# Questions & Comments





# Contact Information

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