

**SPECIAL MEETING AGENDA  
MOUNTAIN BROOK CITY COUNCIL**

**CITY COUNCIL CHAMBER (A108)  
56 CHURCH STREET  
MOUNTAIN BROOK, AL 35213**

**MAY 2, 2023, 5:30 P.M.**

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**As a matter of convenience, members of the public are invited to listen and observe in public meetings by Internet video conference. Presenters and others interested in a particular matter for discussion are required to attend the meeting in-person. The City is not responsible for technical issues that may occur that interfere with the virtual meeting. The City Council, at its sole discretion, may proceed with its in-person business meeting regardless of whether virtual attendees can hear and/or observe the proceedings. The City intends to make the meeting available by way of the Zoom app (re: Meeting ID 801-559-1126, password 05022023).**

1. Public Discussion: Drainage options for Richmar Drive and Mountain Avenue
2. Announcement: The next regular meeting of the City Council is May 8, 2023 at 7:00 p.m.
3. Adjourn

## **The Cut-Drainage Study**

November 20, 2022

Revised: February 9, 2023

Revised: April 4, 2023

The area near the intersection of Richmar Drive and Mountain Lane, locally known as “The Cut”, is the focus of this study. For clarity, the study area has been divided into three areas, as described below. Development of the study has utilized recent field survey data, pictures and accounts from affected citizens in the area, and multiple site visits.

The hydrologic modeling used for this study leveraged and extended the previous modeling in the downstream-areas, allowing for the evaluation of downstream effects. This study considers the planned stormwater improvements in and around the Junior High campus to be complete and in-place.

### Area 1-Mountain Lane and Montevallo Lane Intersection, “The Cut” Open Channel Area

Flood water has been observed in the intersection of Mountain Ln and Montevallo Ln, at the immediate upstream end of The Cut. Overland floodwater has also been observed crossing the front lawn of 26 Montevallo Ln as it flows to The Cut.

Field survey shows a 48” pipe entering from the northeast across Mountain Ln, and at least three more smaller pipes entering The Cut and originating from just south of the intersection.

The drainage area to this point is approximately 77 acres: 56 acres originating in the direction of the 48” pipe, and the remaining 21 acres from south of Mountain Lane.

A lack of surface collection inlets and associated piping is believed to be the primary cause of the excess surface water in this area.

A schematic plan has been developed to capture the surface water on Mountain Ln and Montevallo and direct it through a series of new pipes to the open channel in The Cut. A dependent improvement to the open channel in The Cut will be needed to accommodate the improvements. This work would include clearing the existing vegetation, performing grading, and some minor structural modifications to the headwall of the 48” pipe that drains the channel.

The channel occupies a city alley way that contains available area that could allow the channel volume to be expanded. This additional volume, in combination with some improvements to the headwall of the 48” pipe would provide some increase in overall capacity of the system for the smaller, more frequent storms. However, this is not intended to mitigate the flooding that can result from larger events.

**Estimated Probable Construction Cost      \$ 620,000**

Area 2- Richmar Drive and Mountain Lane "The Cut" and Area 3- Open Channel Between Lots on Richmar Drive and Hilldale Road

Prior work in this study identified the 48" pipe in The Cut channel as deficient. The improvement presented included replacing the pipe with a larger one, depending on certain site conditions. These improvements were deemed not viable for the reasons outlined below:

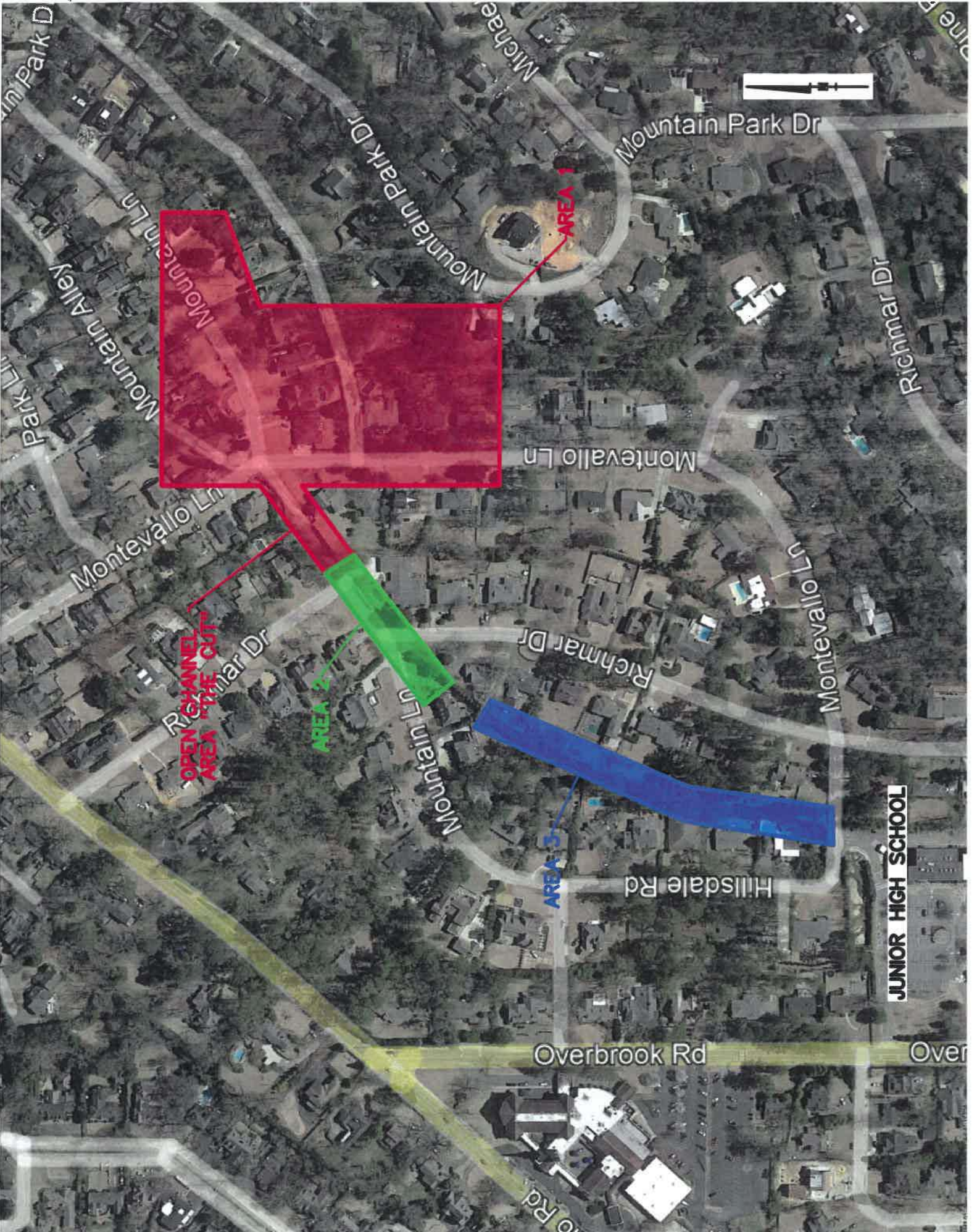
- The receiving channel between the lots on Richmar Dr and Hilldale Road would require significant upgrades to mitigate the expected increases in peak flow and volume that would occur during a peak event. However, general maintenance to the channel is still recommended to ensure the channel functions at capacity.
- The analysis showed that replacing the pipe at The Cut would result in increases in peak flows downstream of the area, with no reasonable option to mitigate these increases, either by upgrading the primary conveyance system or by creating some type of detention system.

In consideration of these conditions, focus shifted with the goal to manage the potential flood water on Richmar Dr during a peak flood event.

Richmar Dr is lined with valley gutters intended to direct the stormwater south to Montevallo Ln. The lots on the west side of Richmar Dr generally sit at or below the elevation of the road (the east side lots are much higher than street elevation). In the front lawn of several of the lots, there is an elevated area, somewhat like a berm just behind the valley gutter. This increases the depth to which water must rise in the street before it enters the lot. However, near the upper end, a couple of lots do not contain this landscape feature. Also, most driveways contain driveway spanners located in the valley gutter which reduces the water carrying capacity of the gutter. This is especially problematic for the lots that do not contain the natural or built-in protective feature. During a heavy storm event, water can be ejected by the gutter, especially near the spanners, and allowed to flow down gradient into the lots.

One solution is to elevate the area behind the curb in select areas, and for or a couple of the lots, this will include elevating a portion of the driveway.

An alternative option was considered to add a new inlet and pipe network along Richmar Dr that would capture and convey the floodwater south to Montevallo Ln. This would require a significant number of inlets and a long pipe network. The improvements to the lots mentioned previously (to some degree) would also be required, otherwise the potential would still exist for water to enter the lots. A pipe and inlet system like this would be a significant cost and the addition of such would primarily be intended to manage floodwater during peak events.



AREA 1

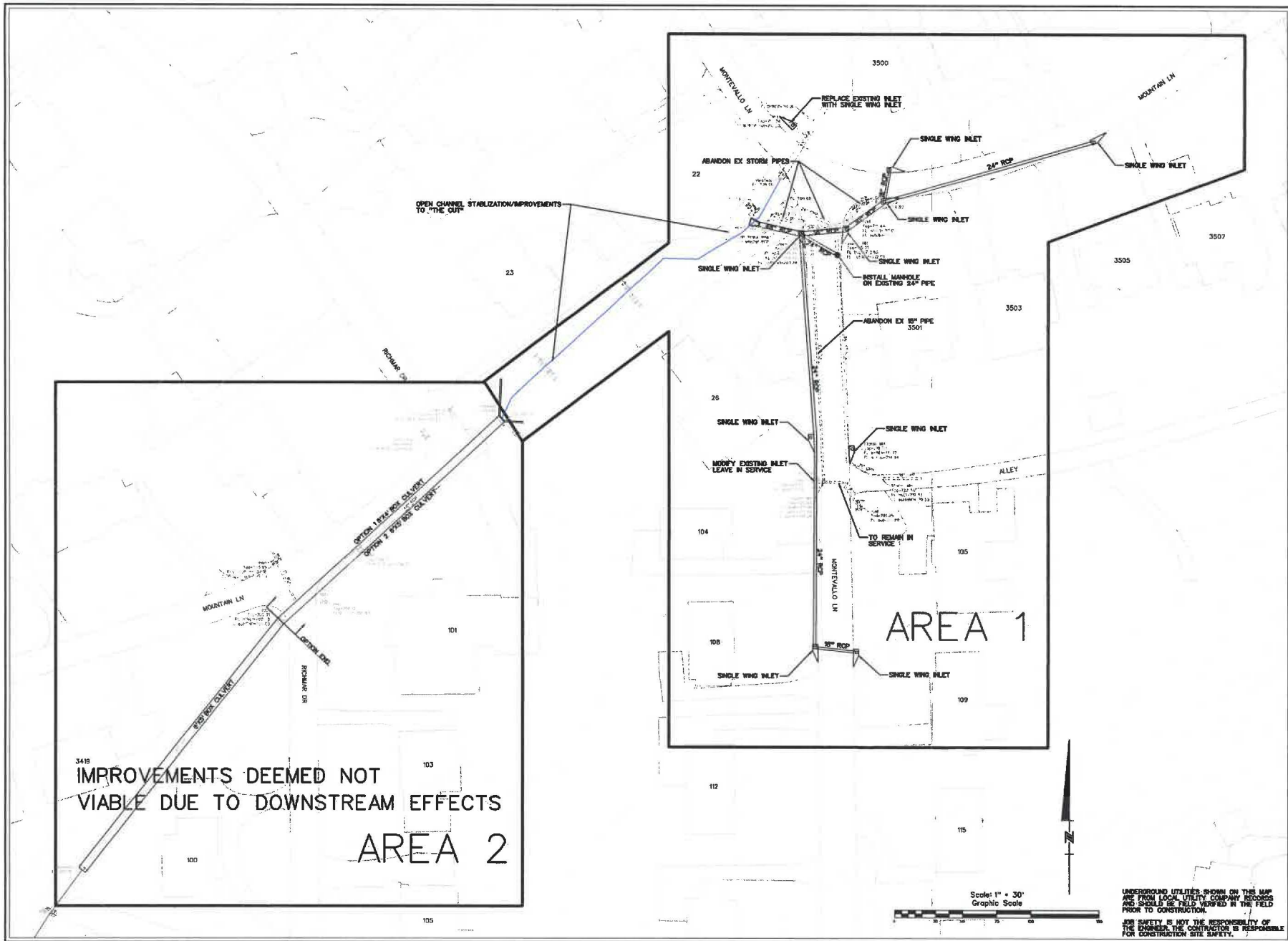
AREA 2

AREA 3

OPEN CHANNEL  
AREA "THE CUT"



JUNIOR HIGH SCHOOL



**RICHMAR DR AND MOUNTAIN LN  
 "THE CUT"  
 DRAINAGE IMPROVEMENTS  
 MOUNTAIN BROOK, ALABAMA**

DRAWING SET:

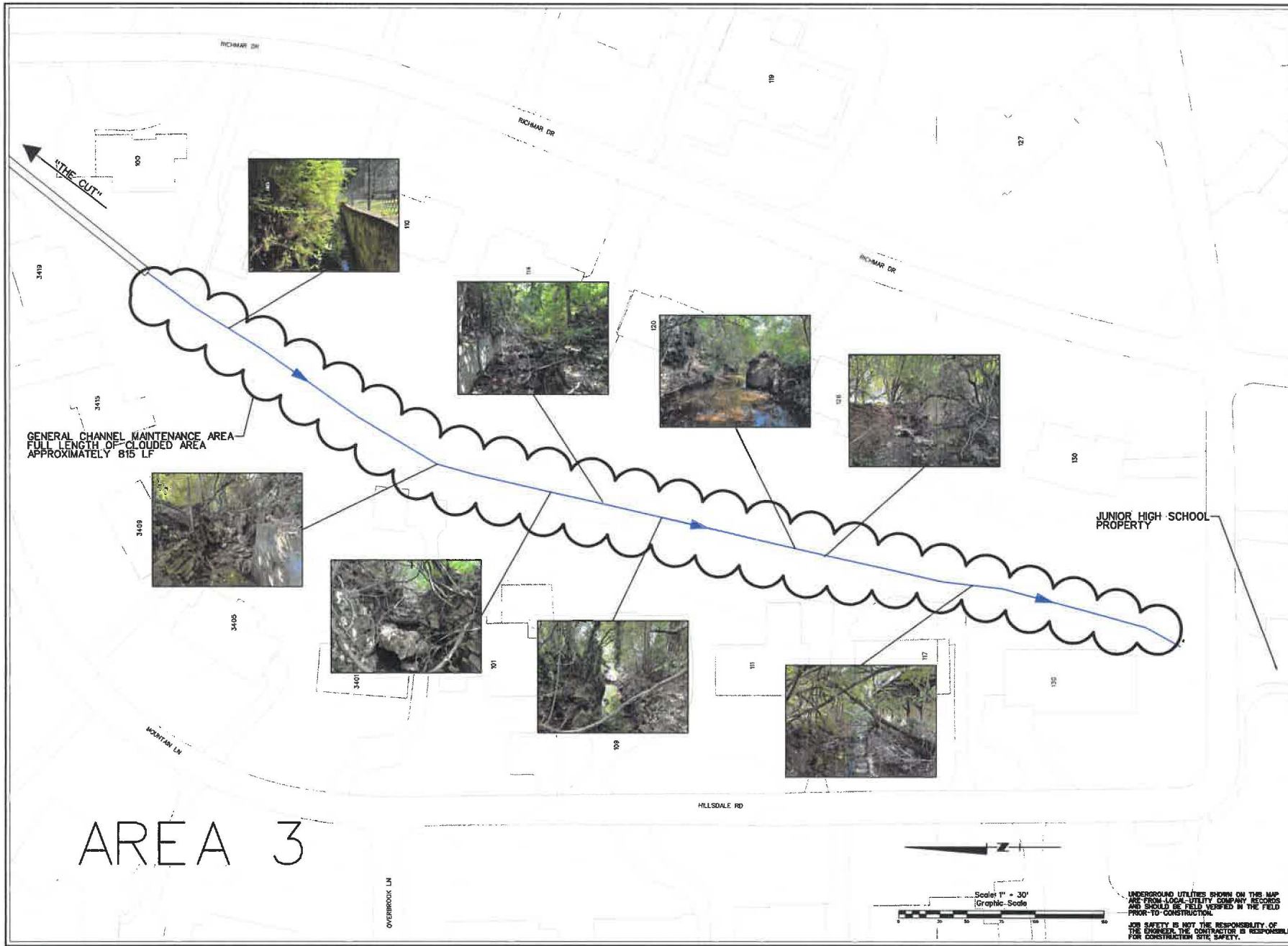
|                          |          |
|--------------------------|----------|
| SCHEMATIC PLAN- NOV 2022 |          |
| REVISION:                |          |
| #1                       | 02/28/23 |
| #2                       | 04/05/23 |

PRELIMINARY DRAINAGE IMPROVEMENTS

DRAWN BY: M.E.S.  
RLE NAME:

UNDERGROUND UTILITIES SHOWN ON THIS MAP  
 ARE FROM LOCAL UTILITY COMPANY RECORDS  
 AND SHOULD BE FIELD VERIFIED IN THE FIELD  
 PRIOR TO CONSTRUCTION.  
 JOB SAFETY IS NOT THE RESPONSIBILITY OF  
 THE ENGINEER. THE CONTRACTOR IS RESPONSIBLE  
 FOR CONSTRUCTION SITE SAFETY.





GENERAL CHANNEL MAINTENANCE AREA  
FULL LENGTH OF CLOUDED AREA  
APPROXIMATELY 815 LF

# AREA 3



## RICHMAR DR AND MOUNTAIN LN "THE CUT" DRAINAGE IMPROVEMENTS MOUNTAIN BROOK, ALABAMA

DRAWING SET:  
SCHEMATIC PLAN; NOV 2022

REVISIONS:

PRELIMINARY DRAINAGE IMPROVEMENTS

DRAWN BY: M.E.S.  
RLE NAME:

02/21/2022/08/08/2022

## **Recommended Changes to the City of Mountain Brook Detention Ordinance Executive Summary**

### Background

The City of Mountain Brook has several watersheds or drainage basins with aging infrastructure that struggle to safely convey stormwater runoff during large rainfall events. Continued development pressure and additions to existing structures further tax these already strained stormwater drainage systems and exacerbate the drainage problems. As trees and grassed areas are covered by impermeable surfaces, such as rooftops, driveways, and parking lots, more of the rain becomes runoff and leaves the site at a faster rate. To mitigate the adverse effects of development to the existing storm drainage systems and downstream properties, a comprehensive review was conducted to identify and recommend new stormwater regulations.

### Recommended Modifications to the Detention Ordinance

Watersheds determined to have existing stormwater infrastructure problems and/or subject to redevelopment pressure are deemed critical watersheds or *critical basins*. The proposed regulations will require a site-specific stormwater design for the proposed development that will manage increases in both stormwater runoff rate and volume to pre-development runoff rate and volume for specified design storm events. As a result, post-construction hydrology should mimic pre-development hydrology within the critical basin.

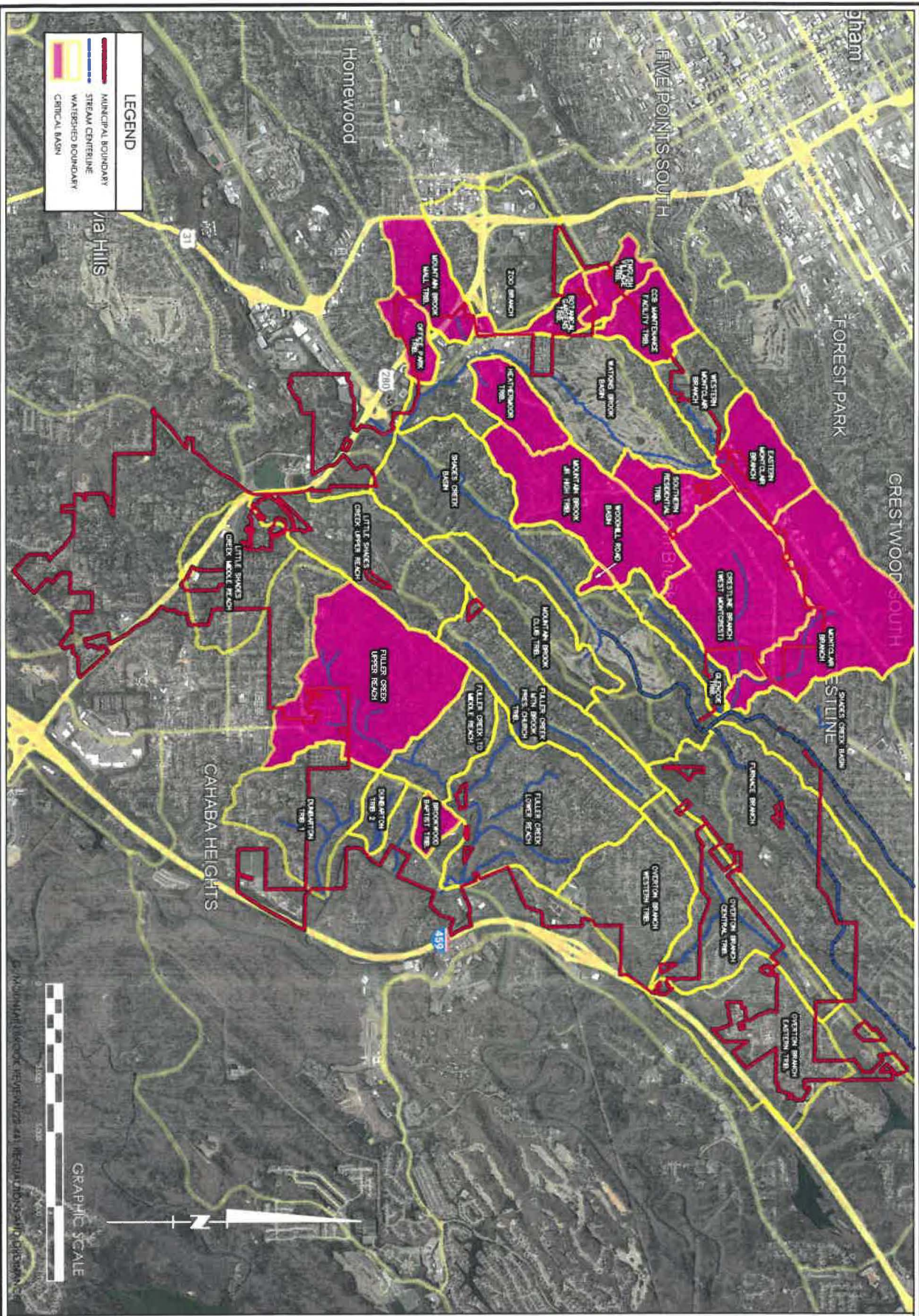
Specifically, development or redevelopment in critical basins are required to manage the runoff volume from the more frequent 1.1-inch rainfall event as well as ensure post-development peak runoff rates shall be less than or equal to pre-development values for the 2-year through the 100-year, 24-hour rainfall events. The runoff volume from the 1.1-inch rainfall event is termed the **Water Quality Volume (WQ<sub>v</sub>)** and on average 85% of the rainfall events that occur in a given year are 1.1 inches or less. The WQ<sub>v</sub> from the additional impervious area (or an equivalent area of existing impervious area) must be controlled onsite and infiltrated or managed with extended detention. For existing properties that exceed the maximum impervious area (maximum building area plus an additional (5) percent of the parcel area), any new development or improvement on the property will require a stormwater management design to mitigate the entire impervious area that is above the amount maximum allowable.

The stormwater management design shall be performed by a registered architect, landscape architect, or engineer. A written analysis or drainage report supported with design calculations shall be submitted along with plans and details to verify the adequacy of the stormwater management design for the property.

Table 1 – Critical Basin Summary

| Watershed                                       | Subbasin                          | Development Pressure | Infrastructure Problems | Severity | Critical Basin (Y/N) |
|---|-----------------------------------|----------------------|-------------------------|----------|----------------------|
| <b>Shades Creek</b>                             | Furnace Branch                    | Average              | Average                 | Low      | N                    |
|   | Crestline Branch (West Montcrest) | High                 | High                    | High     | Y                    |
|   | Glencoe Trib                      | Low                  | Low                     | Low      | N                    |
|   | Montclair Branch                  | High                 | High                    | High     | Y                    |
|   | Mountain Brook Club Trib          | Average              | Average                 | Low      | N                    |
|   | Mountain Brook Jr High Trib       | High                 | High                    | High     | Y                    |
|   | Woodhill Road                     | Low                  | High                    | High     | Y                    |
| <b>Watkins Brook (Shades Creek)</b>             | Western Montclair Branch          | Average              | Average                 | Low      | N                    |
|   | Eastern Montclair Branch          | Low                  | Average                 | High     | Y                    |
|   | Southern Residential Trib         | High                 | High                    | High     | Y                    |
|   | CCB Maintenance Facility Trib     | Average              | High                    | High     | Y                    |
|   | English Village Trib              | Average              | High                    | High     | Y                    |
|   | Botanical Gardens Trib            | Average              | High                    | High     | Y                    |
|   | Heathermoor Trib                  | High                 | High                    | High     | Y                    |
|   | Mountain Brook Mall Trib          | High                 | High                    | High     | Y                    |
|   | Office Park Trib                  | High                 | High                    | High     | Y                    |
| <b>Cahaba River</b>                             | Fuller Creek Upper Reach          | Average              | High                    | High     | Y                    |
|   | Fuller Creek Middle Reach         | Average              | Low                     | Low      | N                    |
|   | Mt. Brook Presb Trib              | Average              | Low                     | Low      | N                    |
|   | Fuller Creek Lower Reach          | Average              | Low                     | Low      | N                    |
|   | Overton Branch Eastern Trib       | Low                  | Low                     | Low      | N                    |
|   | Overton Branch Central Trib       | Low                  | Low                     | Low      | N                    |
|   | Overton Branch Western Trib       | Low                  | Low                     | Low      | N                    |
|   | Dunbarton Trib 1                  | Low                  | Low                     | Low      | N                    |
|   | Dunbarton Trib 2                  | Low                  | Low                     | Low      | N                    |
|   | Brookwood Baptist Trib            | Low                  | High                    | High     | Y                    |
| <b>Little Shades Creek Basin (Cahaba River)</b> | Little Shades Creek Upper Reach   | Average              | Low                     | Low      | N                    |
|   | Little Shades Creek Middle Reach  | Average              | Low                     | Low      | N                    |





# CRITICAL BASINS EXHIBIT MOUNTAIN BROOK, ALABAMA

DATE: 04/05/2023  
SCALE: 1" = 3000'

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Civil Engineering | Land Surveying | Landscape Architecture  
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1001 22nd Street South | 7600 Memorial Pkwy SW Ste 209  
Birmingham, Alabama 35205 | Hooverville, Alabama 35802  
205.225.6156 | 256.539.1821

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