



Board of Commissioners
Work Session Agenda
Thursday, July 1, 2021, 5:30 PM
City Hall, Lakeland, Tennessee 38002

- I. CALL TO ORDER BY MAYOR:
- II. INVOCATION:
- III. PLEDGE:
- IV. ROLL CALL BY RECORDER:
- V. PUBLIC HEARING:
- VI. TREASURER'S REPORT:
- VII. REPORTS FROM COMMITTEES, MEMBERS OF THE BOARD OF COMMISSIONERS & OTHER OFFICERS:
 - Sheriff's Report
 - City Manager's Report
 - a. Nelson Hardaway - 20-Year Service Award Recognition
 - Commissioners' Report
 - 1. Judge Kim Koratsky - Lakeland Municipal Court Update
- VIII. PUBLIC COMMENTS:
- IX. SEWERAGE COMMISSION BUSINESS:
- X. CONSENT AGENDA:
 - 1. Approval of Meeting Minutes from Previous Meetings:
 - a. Regular Meeting Minutes - June 10, 2021
- XI. REGULAR AGENDA:
 - 1. **Ordinance - First Reading** - to amend the Land Development Regulations of Lakeland, Tennessee, to make an interim amendment to the Land Development Regulations concerning allowed uses for multifamily. *Sponsored by Richard Donovan*

2. **Resolution** - approving the Preliminary Development Plan for the Heathfield on Scott's Creek Planned Development. *Sponsored by Richard Donovan*
3. **Resolution** - approving an amendment to the Preliminary Development Plan for The Lake District Planned Development. *Sponsored by Richard Donovan*
4. **Resolution** - approving the purchase of a 2021 Ford Ranger 4x4 SuperCrew cab from Ford of Murfreesboro through State of Tennessee Statewide Contract #64470. *Sponsored by Pat O'Mara*
5. **Resolution** - approving the 2021 Shelby County Hazard Mitigation Plan. *Sponsored by Shane Horn*
6. **Resolution** - approving the funding agreement between the City of Lakeland and the Lakeland Area Chamber of Commerce for fiscal year 2021-2022. *Sponsored by Shane Horn*
7. **Resolution** – authorizing the City Manager to execute a licensing agreement with Central Technologies, Inc. for Microsoft 365 licensing. *Sponsored by Josh Thompson*
8. **Resolution** - approving a contract with Holbrook Asphalt for the FY22 Pavement Preservation Project. *Sponsored by Alejandra Arriaga*

XII. ANNOUNCEMENTS:

XIII. ADJOURNMENT:

Shelby County Sheriff's Office



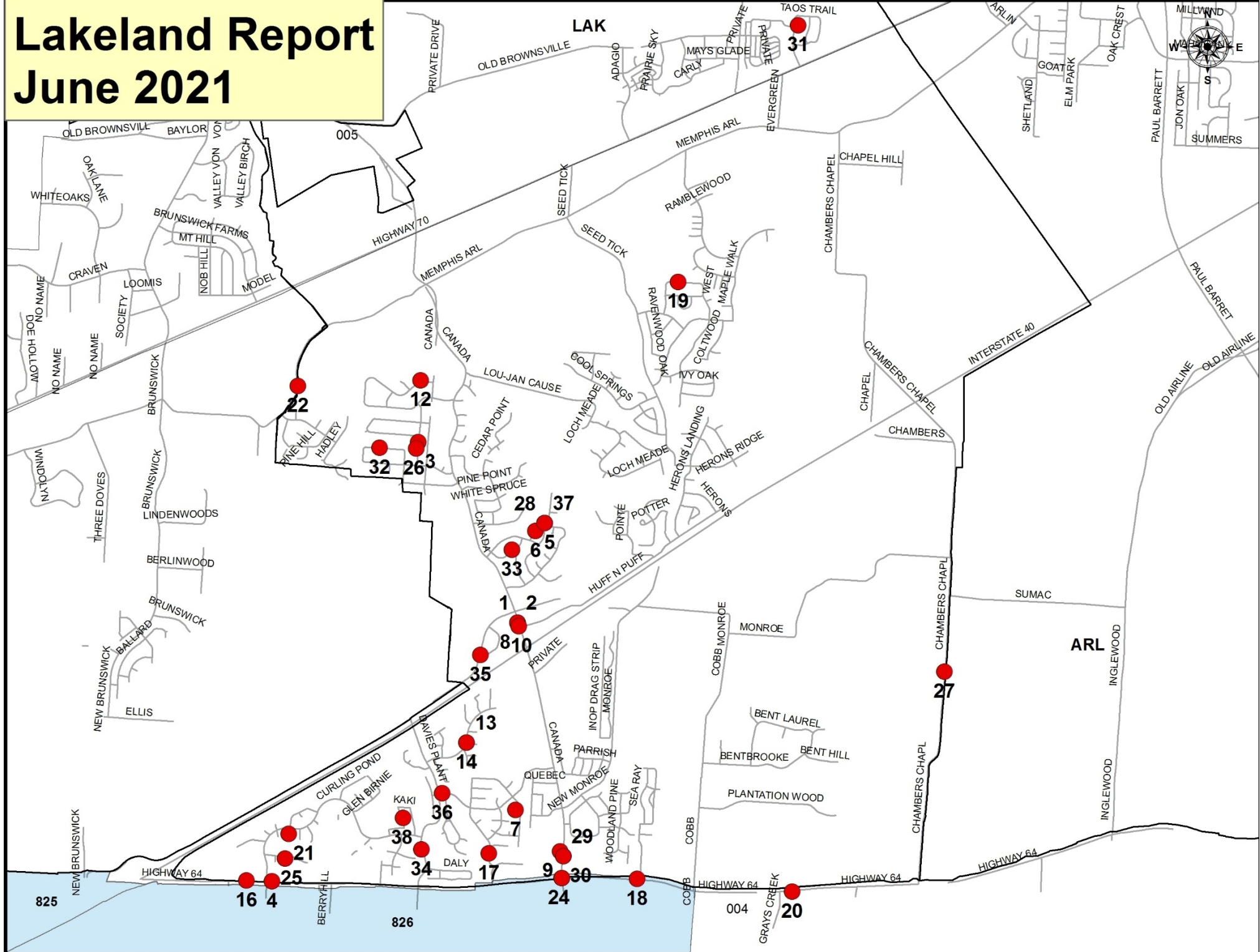
Crime Report

Lakeland, TN 38002

June 2021

Lakeland Report

June 2021



Incident Table

ID #	CASE_NUMBER	DEPT. CODE	DATE OF REPORT
1	2106000255SH	Drug Equipment Violation	06/04/2021 11:45:00 AM
2	2106000255SH	Drugs/Narcotics Violation/Felony	06/04/2021 11:45:00 AM
3	2106000145SH	Impersonation	06/02/2021 10:38:00 AM
4	2106000189SH	MVT/Passenger Vehicle	06/03/2021 9:09:00 AM
5	2106000323SH	Other Theft/Non-Specific	06/05/2021 7:43:00 PM
6	2106000220SH	Other Theft/Non-Specific	06/03/2021 7:55:00 PM
7	2106000179SH	Simple Assault	06/02/2021 9:36:00 PM
8	2106000245SH	Simple Assault/DV	06/04/2021 9:58:00 AM
9	2106000200SH	Stalking/DV	06/03/2021 1:27:00 PM
10	2105001437SH	Theft of Vehicle Parts/Accessories	06/01/2021 3:26:00 AM
11	2106000295SH	Weapon Law Violations/Misdemeanor	06/05/2021 1:52:00 AM
12	2106000574SH	Other Theft/Non-Specific	06/11/2021 12:26:00 PM
13	2106000486SH	Simple Assault/DV	06/09/2021 4:27:00 PM
14	2106000534SH	Simple Assault/DV	06/10/2021 10:48:00 AM
15	2106000808SH	Shoplifting/Misdemeanor	06/16/2021 8:37:00 PM
16	2106000809SH	Shoplifting/Misdemeanor	06/16/2021 9:38:00 PM
17	2106000830SH	Simple Assault	06/17/2021 12:43:00 PM
18	2106000938SH	Simple Assault	06/20/2021 9:48:00 AM
19	2106000702SH	Simple Assault/DV	06/14/2021 9:14:00 PM
20	2106000784SH	Theft of Other Trailer	06/16/2021 3:51:00 PM
21	2106000664SH	Vandalism/Misdemeanor	06/14/2021 9:23:00 AM
22	2106001059SH	Aggravated Assault/DV	06/22/2021 6:58:00 PM
23	2106001022SH	Drug Equipment Violation	06/22/2021 5:46:00 AM
24	2106001022SH	Drugs/Narcotics Violation/Misdemeanor	06/22/2021 5:46:00 AM
25	2106001151SH	Other Theft/Non-Specific	06/24/2021 1:29:00 PM
26	2106001195SH	Other Theft/Non-Specific	06/25/2021 9:20:00 AM
27	2106001256SH	Other Theft/Non-Specific	06/26/2021 3:20:00 PM
28	2106001173SH	Recovery/Foreign with Arrest	06/24/2021 6:49:00 PM
29	2106001006SH	Shoplifting/Misdemeanor	06/21/2021 8:32:00 PM
30	2106001264SH	Shoplifting/Misdemeanor	06/26/2021 8:50:00 PM
31	2106001099SH	Simple Assault/DV	06/23/2021 3:02:00 PM
32	2106001185SH	Theft from Motor Vehicle	06/25/2021 2:18:00 AM
33	2106001186SH	Theft from Motor Vehicle	06/25/2021 2:50:00 AM
34	2106001084SH	Theft of Vehicle Parts/Accessories	06/23/2021 10:49:00 AM
35	2106001253SH	Theft of Vehicle Parts/Accessories	06/26/2021 2:15:00 PM
36	2106001165SH	Vandalism/Felony	06/24/2021 3:52:00 PM
37	2106001102SH	Vandalism/Misdemeanor/DV	06/23/2021 3:42:00 PM
38	2106001237SH	Vandalism/Misdemeanor/DV	06/26/2021 12:31:00 AM

Incident Count

Incident	Count
Aggravated Assault/DV	1
Drug Equipment Violation	2
Drugs/Narcotics Violation/Felony	1
Drugs/Narcotics Violation/Misdemeanor	1
Impersonation	1
MVT/Passenger Vehicle	1
Other Theft/Non-Specific	6
Recovery/Foreign with Arrest	1
Shoplifting/Misdemeanor	4
Simple Assault	3
Simple Assault/DV	5
Stalking/DV	1
Theft from Motor Vehicle	2
Theft of Other Trailer	1
Theft of Vehicle Parts/Accessories	3
Vandalism/Felony	1
Vandalism/Misdemeanor	1
Vandalism/Misdemeanor/DV	2
Weapon Law Violations/Misdemeanor	1
Grand Total	38

END OF PRESENTATION



**BOARD OF COMMISSIONERS
REGULAR MEETING MINUTES
THURSDAY, JUNE 10, 2021, 5:30 P.M.
CITY HALL, LAKELAND, TENNESSEE 38002**

- I. **CALL TO ORDER BY MAYOR:** The meeting was called to order by Mayor Mike Cunningham 5:30 p.m. on Thursday, June 10, 2021.
- II. **INVOCATION:** The invocation was offered by Mayor Cunningham.
- III. **PLEDGE:** Mayor Cunningham led in the Pledge to the Flag.
- IV. **ROLL CALL BY RECORDER:** Mayor Mike Cunningham, Vice Mayor Michele Dial, Commissioner Jim Atkinson, Commissioner Richard Gonzales, and Commissioner Wesley Wright were present.

Staff personnel in attendance were City Manager Shane Horn, City Engineer Emily Harrell, Finance Director Michael Walker, Planning Director Richard Donovan, Park & Recreation Director Patrick O'Mara, GIS Director Josh Thompson, City Recorder Debra Murrell and City Attorney Will Patterson.

V. **PUBLIC HEARING:**

1. **ORDINANCE – FINAL READING** – *adopting the annual budget and tax rate for the fiscal year beginning July 1, 2021 and ending June 30, 2022.*
2. **ORDINANCE – FINAL READING** – *amending the Fiscal Year 2020-2021 Budget, passed by Ordinance 20-285, as amended by Ordinance 20-286 and 21-288.*
3. **ORDINANCE – FINAL READING** – *to amend the Land Development Regulations of Lakeland, Tennessee, to make interim amendments to the Land Development Regulations concerning planned developments, stormwater, and building transparency.*
4. **ORDINANCE – FINAL READING** – *to amend the Official Zoning Map by Rezoning 9905 Memphis Arlington Road, part of Parcel ID L0150 00482, from AG – Agriculture to RE – Exurban.*

For the record: No comments were heard.

With no objection, the order of business was changed to move regular agenda item # 6 up.

REGULAR AGENDA:

6. **RESOLUTION** - *authorizing the Mayor to execute a Proclamation honoring the heroic action taken by Masno Moussa and Ramadan Moussa during a house fire at 3896 Leeward Slopes Cove. Sponsored by Mayor Cunningham*



**BOARD OF COMMISSIONERS
REGULAR MEETING MINUTES
THURSDAY, JUNE 10, 2021, 5:30 P.M.
CITY HALL, LAKELAND, TENNESSEE 38002**

Vice Mayor Dial moved to bring this item to the floor, seconded by Commissioner Wright.

Discussion included the board expressing their gratitude for the heroic action taken by Masno and Ramadan Moussa; the sister and brother addressed the board and expressed appreciation for the recognition. The Proclamation was presented, and pictures taken with the board.

When the question was called the resolution passed as presented, voice vote, 5 in favor 0 against (5-0).

VI. TREASURER'S REPORT:

Finance Director Michael Walker offered the Treasurer's report for the month of May.

VII. REPORTS FROM COMMITTEES, MEMBERS OF THE BOARD OF COMMISSIONERS & OTHER OFFICERS:

- Sheriff's Report: Summary report for the month of May (*On file - Available to view*)
- City Manager's Report: City Manager Shane Horn offered a report.
 - City Engineer Report: City Engineer Emily Harrell offered a report.
 - Vice Mayor Dial commented on issues with MLGW.
 - EDC/IDB Report: Chairman Steve Laster & Vice Chairman Jeremy Bennett – addressed the board.
- Commissioners' Report:
 - Vice Mayor Dial offered a report on PRB activities.

VIII. PUBLIC COMMENTS: *No comments were heard.*

IX. SEWERAGE COMMISSION BUSINESS:

X. CONSENT AGENDA:

1. **Approval of Meeting Minutes from Previous Meetings:**
 - a. Regular Meeting Minutes, May 13, 2021.

Commissioner Gonzales moved to approve the consent agenda as presented, seconded by Commissioner Wright.

When the question was called the motion carried, roll call vote, 5 in favor 0 against (5-0).

Vice Mayor Dial	Yea
Commissioner Atkinson	Yea
Commissioner Gonzales	Yea
Commissioner Wright	Yea
Mayor Cunningham	Yea



**BOARD OF COMMISSIONERS
REGULAR MEETING MINUTES
THURSDAY, JUNE 10, 2021, 5:30 P.M.
CITY HALL, LAKE LAND, TENNESSEE 38002**

XI. REGULAR AGENDA:

1. **ORDINANCE – FINAL READING – adopting the annual budget and tax rate for the fiscal year beginning July 1, 2021 and ending June 30, 2022**
Sponsored by Michael Walker

Commissioner Gonzales moved to bring this item to the floor, seconded by Commissioner Wright.

When the question was called the Final Reading of the ordinance passed, roll call vote, 5 in favor 0 against (5-0).

Vice Mayor Dial	Yea
Commissioner Atkinson	Yea
Commissioner Gonzales	Yea
Commissioner Wright	Yea
Mayor Cunningham	Yea

2. **ORDINANCE – FINAL READING – amending the Fiscal Year 2020-2021 Budget, passed by Ordinance 20-285, as amended by Ordinance 20-286 and 21-288.** *Sponsored by Michael Walker*

Vice Mayor Dial moved to bring this item to the floor, seconded by Commissioner Wright.

When the question was called the Final Reading of the ordinance passed as presented, roll call vote, 5 in favor 0 against (5-0).

Vice Mayor Dial	Yea
Commissioner Atkinson	Yea
Commissioner Gonzales	Yea
Commissioner Wright	Yea
Mayor Cunningham	Yea

3. **ORDINANCE – FINAL READING – to amend the Official Zoning Map by Rezoning 9905 Memphis Arlington Road, part of Parcel ID L0150 00482, from AG – Agriculture to RE – Exurban.** *Sponsored by Richard Donovan*

Commissioner Gonzales moved to bring this item to the floor, seconded by Commissioner Wright.

When the question was called the Final Reading of the ordinance passed as presented, roll call vote, 5 in favor 0 against (5-0).

Vice Mayor Dial	Yea
Commissioner Atkinson	Yea
Commissioner Gonzales	Yea
Commissioner Wright	Yea
Mayor Cunningham	Yea



**BOARD OF COMMISSIONERS
REGULAR MEETING MINUTES
THURSDAY, JUNE 10, 2021, 5:30 P.M.
CITY HALL, LAKELAND, TENNESSEE 38002**

4. **ORDINANCE – FINAL READING** – *to amend the Land Development Regulations of Lakeland, Tennessee, to make interim amendments to the Land Development Regulations concerning planned developments, stormwater, and building transparency.* Sponsored by Richard Donovan

Vice Mayor Dial moved to bring this item to the floor, seconded by Commissioner Wright.

When the question was called the Final Reading of the ordinance passed as presented, roll call vote, 5 in favor 0 against (5-0).

Vice Mayor Dial	Yea
Commissioner Atkinson	Yea
Commissioner Gonzales	Yea
Commissioner Wright	Yea
Mayor Cunningham	Yea

5. **ORDINANCE – FIRST READING** – *to amend the Land Development Regulations of Lakeland, Tennessee, to make interim amendments to the Land Development Regulations concerning allowed uses for vehicular services; impervious surface, semi-pervious surface, and building coverages; and Commercial Building Type B.* Sponsored by Richard Donovan

Commissioner Gonzales moved to bring this item to the floor, seconded by Commissioner Wright.

When the question was called the First Reading of the ordinance passed as presented, roll call vote, 5 in favor 0 against (5-0).

Vice Mayor Dial	Yea
Commissioner Atkinson	Yea
Commissioner Gonzales	Yea
Commissioner Wright	Yea
Mayor Cunningham	Yea

6. **RESOLUTION** - *authorizing the Mayor to execute a Proclamation honoring the heroic action taken by Masno Moussa and Ramadan Moussa during a house fire at 3896 Leeward Slopes Cove.* Sponsored by Mayor Cunningham (Moved up on the agenda)

7. **RESOLUTION** - *proclaiming July 2021 as Parks and Recreation Month in the City of Lakeland, Tennessee.* Sponsored by Pat O'Mara
Commissioner Atkinson moved to bring this item to the floor, seconded by Commissioner Gonzales.



**BOARD OF COMMISSIONERS
REGULAR MEETING MINUTES
THURSDAY, JUNE 10, 2021, 5:30 P.M.
CITY HALL, LAKELAND, TENNESSEE 38002**

When the question was called the resolution passed as presented, roll call vote, 5 in favor 0 against (5-0).

Vice Mayor Dial	Yea
Commissioner Atkinson	Yea
Commissioner Gonzales	Yea
Commissioner Wright	Yea
Mayor Cunningham	Yea

8. **RESOLUTION** - **adopting a revised Internal Control Manual of the Board of Education of the Lakeland School System.** *Sponsored by Michael Walker*

Vice Mayor Dial moved to bring this item to the floor, seconded by Commissioner Wright.

When the question was called the resolution passed as presented, roll call vote, 5 in favor 0 against (5-0).

Vice Mayor Dial	Yea
Commissioner Atkinson	Yea
Commissioner Gonzales	Yea
Commissioner Wright	Yea
Mayor Cunningham	Yea

9. **RESOLUTION** - **adopting a revised Internal Control Manual of the City of Lakeland.** *Sponsored by Michael Walker*

Commissioner Atkinson moved to bring this item to the floor, seconded by Commissioner Gonzales.

When the question was called the resolution passed as presented, roll call vote, 5 in favor 0 against (5-0).

Vice Mayor Dial	Yea
Commissioner Atkinson	Yea
Commissioner Gonzales	Yea
Commissioner Wright	Yea
Mayor Cunningham	Yea

10. **RESOLUTION** - **approving the purchase of two Spartan Commercial mowers for Parks Maintenance from Ladd's.** *Sponsored by Pat O'Mara*

Vice Mayor Dial moved to bring the items to the floor, seconded by Commissioner Wright.



**BOARD OF COMMISSIONERS
REGULAR MEETING MINUTES
THURSDAY, JUNE 10, 2021, 5:30 P.M.
CITY HALL, LAKELAND, TENNESSEE 38002**

When the question was called the resolution passed as presented, roll call vote, 5 in favor 0 against (5-0).

Vice Mayor Dial	Yea
Commissioner Atkinson	Yea
Commissioner Gonzales	Yea
Commissioner Wright	Yea
Mayor Cunningham	Yea

- 11. RESOLUTION - authorizing the Finance and Human Resources Director to issue a request for proposals (RFP) for financial and compliance audit services for the fiscal year ending June 30, 2022.**

Sponsored by Michael Walker

Commissioner Atkinson moved to bring this item to the floor, seconded by Commissioner Wright.

When the question was called the resolution failed, roll call vote, 2 in favor 3 against (2-3).

Vice Mayor Dial	Nay
Commissioner Atkinson	Nay
Commissioner Gonzales	Yea
Commissioner Wright	Nay
Mayor Cunningham	Yea

- 12. RESOLUTION - to approve Amended Cooperative Agreement on the Use of the Accela Software System with Memphis and Shelby County Government. *Sponsored by Emily Harrell***

Vice Mayor Dial moved to bring this item to the floor, seconded by Commissioner Wright.

When the question was called the resolution passed as presented, roll call vote, 5 in favor 0 against (5-0).

Vice Mayor Dial	Yea
Commissioner Atkinson	Yea
Commissioner Gonzales	Yea
Commissioner Wright	Yea
Mayor Cunningham	Yea

- 13. Discussion and possible action regarding commercial vehicle parking on residential streets. *Sponsored by Commissioner Gonzales***

Commissioner Gonzales moved to bring this item to the floor, seconded by Commissioner Atkinson.



**BOARD OF COMMISSIONERS
REGULAR MEETING MINUTES
THURSDAY, JUNE 10, 2021, 5:30 P.M.
CITY HALL, LAKE LAND, TENNESSEE 38002**

Discussion only, no action was taken.

XII. ANNOUNCEMENTS:

- XIII. ADJOURNMENT:** There being no other business on which to take action, Commissioner Gonzales moved to adjourn the meeting, seconded by Vice Mayor Dial. ***Motion carried, voice vote, all in favor (5-0).***

The meeting was adjourned at 8:17 p.m. on Thursday, June 10, 2021.

These minutes were approved on July 08, 2021.

Mike Cunningham, *Mayor*

ATTEST:

Debra Murrell
City Recorder

MEETING CYCLE: Thursday, July 1, 2021

SUBJECT: Ordinance – First Reading - to amend the Land Development Regulations of Lakeland, Tennessee, to make interim amendments to the Land Developments Regulations concerning allowed uses for multifamily.

STAFF CONTACT: Richard Donovan, Planning Consultant

STAFF RECOMMENDATION

The MPC and Staff recommend **approval** of the interim amendment to the Land Development Regulations.

BUDGET IMPACT

DISCUSSION

BACKGROUND:

This is the last of the six original amendments to the Zoning Regulations to address issues that have manifested in the last several months. This amendment was held over last month for further study by Staff and the MPC. This amendment has two parts the first part will remove multifamily uses from the commercial zoning district and limit it to one zoning district (R7) within the city. The second portion will limit the number of units allowed where permitted. The currently Lures allow 43 units per acre and the proposed amendment will limit that to approximately 12 units per acre.

ORDINANCE O-10-2021

AN ORDINANCE TO AMEND THE LAND DEVELOPMENT REGULATIONS OF LAKELAND, TENNESSEE, TO MAKE AN INTERIM AMENDMENT TO THE LAND DEVELOPMENT REGULATIONS CONCERNING ALLOWED USES FOR MULTI-FAMILY

WHEREAS, the City of Lakeland seeks to make interim amendment to the Land Development Regulation until a new set of Land Development Regulations can be adopted; and

WHEREAS, the City seeks to resolve reoccurring issues within the Land Development Regulations for sections concerning multifamily zoning and buildings; and

WHEREAS, the City of Lakeland believes that such amendment will promote, protect, and facilitate the public health, safety, and welfare of the community through coordinated and practical land use and land development for the betterment of Lakeland's population; and

WHEREAS, the Municipal Planning Commission on June 17, 2021 voted 6 to 1 to recommend approval of the adoption of said Ordinance to the Board of Commissioners; and

NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF COMMISSIONERS OF THE CITY OF LAKELAND, TENNESSEE, as follows:

Section 1. To amend Table 3.B-1. Commercial, Industrial, and Civil Building Types Table by removing the items highlighted and stricken through and adding the highlighted as follows:

Uses	Districts																		
	Neighborhood Commercial	Community Commercial	Regional Commercial	Neighborhood Office	Office	Institutional	Exurban	Suburban Estate	Suburban Manor	Suburban Cottage	Urban Estate	Urban Manor	Attached	Multi-Family	Neighborhood Civic Space	Neighborhood Open Space	General Open Space	Outdoor Recreation	Conservation
	N C	C 1	C 2	N O	O	P	R E	R 1	R 2	R 3	R 4	R 5	R 6	R 7	O S 1	O S 2	O S 3	O S 4	O S 5
Multi family	●	●	●	●										●					

Section 2. To amend Table 3.B-2. Residential Building Types Table by removing the items highliged and stricken through and adding the highlighted as follows:

	Buildable Area
	Minimum Lot Size (Sq. Ft.)
Multifamily	3,500 4,000 per unit

Section 3. To amend Article III, Section 3.V – Building Type Standards: Multifamily building, by removing the items highliged and stricken through and adding the highlighted as follows:

Buildable Area.

1.h Minimum Lot size is 3,500 ~~4,000~~ square feet per unit.

Section 4. That all Ordinances in conflict herewith are repealed to the extent of said conflict, and that this Ordinance shall take effect from and after its passage on final reading, the public welfare requiring it.

First Reading: July 8, 2021

Public Hearing:

Final Reading:

Mike Cunningham, *Mayor*

ATTEST:

Debra Murrell, *City Recorder*

Meeting Cycle: Thursday, July 1, 2021

Subject: Resolution – approving the Preliminary Development Plan for the Heathfield at Scott's Creek Planned Development

Staff Contact: Richard Donovan, Planning Consultant

STAFF RECOMMENDATION

The MPC and Staff recommend **approval** for the Preliminary Development Plan for Heathfield at Scott's Creek with the following conditions:

1. The PDP design standards be consistent with those stated in the CCRs. The CCRs shall be transferred to the the PDP.
2. Any cluster mailbox shall be of a decorative style and be landscaped. The DRC and USPS shall approve any cluster mailboxes and landscaping prior to installation. This shall be completed prior to the construction plans.
3. A full traffic study shall be completed during a time when school is in session and prior to the execution of the Development Contract for Phase 2 of the development.
4. An updated PDP shall be submitted to City Staff reflecting any changes required by these conditions or conditions of the BOC.

DISCUSSION

SITE INFORMATION:

LOCATION: Highway 70 and Old Brownsville Road

PARCEL ID: Part of L0150 00541

ZONING: AG (Agricultural) with PD Overlay

LOT SIZE: 65.98 acres

OWNER: Seed Tick, LLC.

APPLICANT: Arbor View Development, LLC

REPRESENTATIVE: Brandon Young, McCarty Granberry Engineering

BACKGROUND:

Heathfield at Scotts Creek is a planned residential development having a combined area of 79.61-acres. The subject property is located north of US Highway 70 and is bound to the east by the Lakeland Meadows PD, the west by Board of Education and Gilliland Group Properties, and the north by Old Brownsville Road. Arbor View Development, LLC intends to develop the combined 79.61-acre property as a planned residential development offering 118 single-family residential lots with 24.91-acres or 37.15% of the site reserved for common open space. The outline plan was approved by the Board of Commissioners in March of 2021.

DISCUSSION ITEMS:

The outline plan was approved with conditions. Below you will find an update on those conditions.

- 1) Cluster mailbox locations shall be approved by MPC/DRC prior to installation.
 - a. Staff will continue this condition for the PDP approval to ensure the MPC/DRC sees these items prior to installation.
- 2) Traffic Impact Study must be submitted prior to any PDP being approved by the MPC.
 - a. Staff has reviewed the traffic study. Additional study will need to be completed while school is in session but prior to construction of Phase 2.
- 3) The Seed Tick Street Type Standard shall be the same as those approved in the Lakeland Meadows PD.
 - a. PDP was updated to reflect this concern.
- 4) The walking trail will be a 10' wide paved trail that is maintained by the HOA.
 - a. PDP was updated to reflect this concern.
- 5) Approval of landscaping plate for evergreen screening prior to approval of any PDP.
 - a. Added to exhibit O(5) & O(6) for MPC review.
- 6) The minimum lot size for Suburban Estate lots is 17,500 square feet.
 - a. PDP was updated to reflect this concern.
- 7) That the Seed Tick Extension be completed as warranted by the traffic study or the development of The Meadows.
 - a. Additional study will need to be completed while school is in session but prior to construction of Phase 2.

Requested Notes:

Staff requested the following notes be added to the PDP and the developer/representative added them to the PDP:

- 1) Exhibits, attached herein, shall be considered regulatory and requirements of the development unless expressly overridden by text provided in the PDP.
- 2) If amendments are made at any time to this PDP, a complete PDP shall be submitted to the City at the initial MPC submittal deadline, or the amendment will not be placed on the MPC agenda. Upon final approval by the MPC and BOC, a final copy of the PDP shall be provided to the Planning Department, reflecting any amendments made at the MPC and BOC meetings.
- 3) Any cluster mailbox shall be of a decorative style and be landscaped. The DRC and USPS shall approve any cluster mailboxes and landscaping prior to installation.

Analysis:

Does the Preliminary Development Plan substantially conform with the Heathfield at Scott's Creek Planned Development?

Yes, the overall configuration of roads, lots, and utility infrastructure substantially conform with the planned development proposed and approved in March of 2021.

RESOLUTION R-50-2021

A RESOLUTION APPROVING THE PRELIMINARY DEVELOPMENT PLAN FOR THE HEATHFIELD AT SCOTT'S CREEK PLANNED DEVELOPMENT

WHEREAS, The Preliminary Development Plan for Heathfield at Scott's Creek, substantially conforms to the Heathfield at Scott's Creek Outline Plan; and

WHEREAS, On June 17, 2021, the City of Lakeland Municipal Planning Commission recommended approval for Heathfield at Scott's Creek Preliminary Development Plan with conditions; and

WHEREAS, On March 11, 2021, the City of Lakeland Board of Commissioners approved the Heathfield at Scott's Creek Outline Plan with conditions; and

NOW, THEREFORE, BE IT RESOLVED by the Board of Commissioners of the City of Lakeland: That the Preliminary Development Plan for Heathfield at Scott's Creek be approved, subject to the following conditions:

- 1) The PDP design standards be consistent with those stated in the CCRs. The CCRs shall be transferred to the PDP.
- 2) Any cluster mailbox shall be of a decorative style and be landscaped. The DRC and USPS shall approve any cluster mailboxes and landscaping prior to installation. This shall be completed prior to the construction plans.
- 3) A full traffic study shall be completed during a time when school is in session and prior to the execution of the Development Contract for Phase 2 of the development.
- 4) An updated PDP shall be submitted to City Staff reflecting any changes required by these conditions or conditions of the BOC.

Passed and Adopted by the Board of Commissioners of Lakeland, Tennessee on this 8th day of July 2021, the public welfare requiring it.

Mike Cunningham, *Mayor*

ATTEST:

Debra Murrell, *City Recorder*

HEATHFIELD ON SCOTT'S CREEK

LAKELAND, TN

DECLARATION OF COVENANTS, CONDITIONS AND RESTRICTIONS FOR HEATHFIELD ON SCOTT'S CREEK EXHIBIT X

OWNER/DEVELOPER



ENGINEER



LANDSCAPE ARCHITECT



TABLE OF CONTENTS

DECLARATION OF COVENANTS CONDITIONS AND RESTRICTIONS FOR HEATHFIELD ON SCOTT'S CREEK

	PAGE NO.
ARTICLE I – MEMBERSHIP	
ARTICLE II – DEFINITIONS	
ARTICLE III – PROPERTY	
Section 1. Property Subject to Declaration.....	3
Section 2. Storm Water Detention Areas.....	3
Section 3. Drainage.....	3
Section 4. Soils.....	3
ARTICLE IV – VOTING RIGHTS	
Section 1. Voting.....	3
Section 2. Proxies.....	4
Section 3. Quorum.....	4
ARTICLE V – PROPERTY RIGHTS AND EASEMENTS	
Section 1. Owner's Easement of Enjoyment of Common Area.....	4
Section 2. Delegation of Use.....	5
Section 3. Title to the Common Area.....	5
Section 4. Easements.....	5
ARTICLE VI – CONTROL OF IMPROVEMENTS	
Section 1. Control of Improvements.....	5
Section 2. Landscape Treatment of Common Areas.....	6
Section 3. Certificate of Compliance.....	6
Section 4. Compliance with Building Codes.....	7
Section 5. Non-Liability.....	7
ARTICLE VII – PROPERTY MAINTENANCE	
Section 1. General Maintenance.....	7
Section 2. Damaged or Destroyed Improvement.....	8
ARTICLE VIII – USE RESTRICTIONS	
ARTICLE IX – TERM OF DECLARATION	
ARTICLE X – COVENANTS FOR ASSESSMENTS	
Section 1. Creation of the Lien and Personal Obligation for Assessments.....	13
Section 2. Purpose of Regular and Special Assessments.....	13
Section 3. Regular Assessments.....	14

Section 4.	Special Assessments.....	14
Section 5.	Emergency Assessments.....	15
Section 6.	Pro Rata Assessment.....	15
Section 7.	Quorum for Any Action Authorized Under Sections 3 and 4.....	15
Section 8.	Date of Commencement of Annual Assessments – Due Dates.....	15
Section 9.	Effect of Non-Payment of Assessments.....	15
Section 10.	Fine.....	17
Section 11.	Acceleration of Installments.....	17
Section 12.	Subordination of the Lien to Mortgage.....	17
Section 13.	Additional Default.....	17
Section 14.	Exempt Property.....	17

ARTICLE XI – LEASING PROHIBITION

ARTICLE XII – ENFORCEMENT OF DECLARATION

ARTICLE XIII – MISCELLANEOUS PROVISIONS

Section 1.	Liability of Association.....	16
Section 2.	Severability of Covenants, Conditions and Restrictions.....	16
Section 3.	Gender and Grammar.....	16
Section 4.	Amendment.....	16
Section 5.	Condemnation, Destruction or Termination of the Common Area.....	19
Section 6.	Contract for Property Management.....	20
Section 7.	Rights of Mortgage Holders, Insurers or Guarantors.....	20
Section 8.	Easements for Utilities and Related Purposes.....	20
Section 9.	Grant of Easement.....	20
Section 10.	Insurance.....	21
Section 11.	Notices.....	21
Section 12.	Expansion by Developer.....	21
Section 13.	Additional Restrictions.....	21
Section 14.	Homeowner’s Right of Action against Developer.....	22
Section 15.	Term of Developer’s Control of the Association.....	22

EXHIBIT A – HEATHFIELD ON SCOTT’S CREEK SECTION A FINAL PLAT

EXHIBIT B – HEATHFIELD ON SCOTT’S CREEK SECTIONS B-__ PRELIMINARY PLATS

EXHIBIT C – HEATHFIELD ON SCOTT’S CREEK MASTER PLAN FOR SECTIONS A-__

EXHIBIT D – THE BYLAWS OF HEATHFIELD ON SCOTT’S CREEK HOMEOWNERS’ ASSOCIATION INC.

EXHIBIT E – THE ARTICLES OF INCORPORATION FOR THE ASSOCIATION

**DECLARATION OF
COVENANTS, CONDITIONS AND RESTRICTIONS FOR
HEATHFIELD ON SCOTT'S CREEK**

THIS DECLARATION OF COVENANTS, CONDITIONS, AND RESTRICTIONS FOR HEATHFIELD ON SCOTT'S CREEK, ("Declaration") is hereby made and is effective as of the ____ day of _____ 2020 by Heathfield Development, LLC, a Tennessee limited liability company ("Declarant").

WITNESSETH:

WHEREAS, Developer, is the owner of the Property described on Exhibit "A" attached hereto located in Shelby County, Tennessee known as Heathfield on Scott's Creek Section A, ("Subdivision") as shown on the final plat of record in Book ____ Page ____ in the office of the Register of Deeds of Shelby County, Tennessee ("Final Plat"); and

WHEREAS, the Developer hereby adopts these covenants for the purposes set forth herein below.

NOW, THEREFORE, Developer hereby declares that the Property defined herein below shall be held, sold and conveyed subject to these covenants, which shall run with the Property and be binding on all parties hereto or acquiring any right, title or interest in the Property or any part thereof, and shall inure to the benefit of each owner of a Lot in the Subdivision.

The recitals are not merely introductory statements but are covenants and agreements of this Declaration.

ARTICLE I: MEMBERSHIP

Every Owner of a Lot, which is subject to assessment by the Association, shall be a Member of the Association. The foregoing is not intended to include persons or entities that hold an ownership interest merely as security for the performance of an obligation. Membership shall be appurtenant to and may not be separated from ownership of any Lot, which is subject to assessment, by the Association.

ARTICLE II: DEFINITIONS

"Assessments" shall mean those levies and assessments, which each Owner of a Lot agrees to pay to the Association pursuant to Articles VII and X hereof.

"Association" shall mean and refer to the Heathfield On Scott's Creek Homeowners' Association Inc., its successors and assigns.

“Board of Directors” shall mean and refer to the Heathfield On Scott’s Creek Homeowners’ Association Inc., its successors and assigns.

“Common Area” shall mean all real property (including the Improvements thereto) owned by the Association, its successors and assigns for the common use and enjoyment of the Members of the Association, its respective guests and invitees. The Common Area to be owned by the Association originally shall be all of the Property (including any additions thereto) not included in the legal description of the Lots and dedicated roads. To the contrary herein notwithstanding, the Areas shown as Community Open Space, Neighborhood Open Space and the green belt areas along the one hundred foot right of ways on the Heathfield on Scott’s Creek Master Plan, as shown in the attached Exhibit "B", shall also be Common Area. Likewise, any entry features, structures, irrigation, and landscaping thereon shall also be maintained by the Association as Common Area. Such easements, entry features and structures shall be referred to herein as Common Area even that area might be contained within the boundaries of Lots. “Common Area” shall be synonymous with “Common Open Space, C.O.S., and Community Open Space” for purposes of this Declaration.

“Declarant” shall mean Vandelay Development Company, LLC, its successors and assigns. “Declarant” shall be synonymous with “Developer” for purposes of this Declaration.

“Declaration” shall mean this Declaration of Covenants, Conditions and Restrictions, together with any supplement or amendment filed hereto, as this Declaration, may from time to time, be amended in accordance with its terms.

“Fine” shall mean the definition set forth in Article X, Section 10, below.

“Improvements” shall mean the structures, walls, pavements, plantings, and other additions built or placed on the Lots or Common Area. It is intended that the Improvements reasonably meant for the Owner of a particular Lot will lay entirely within said Lot. In the event that by reason of construction, settlement, reconstruction or shifting of the Improvements, any minor part of the Improvements intended for a particular Lot lies outside that Lot, then the Association may establish an easement of use which shall apply thereto in favor of the Lot on which the Improvements were intended.

"Lot" shall mean and refer to one of the Lot(s) as shown on the Preliminary Plat attached hereto as Exhibit "A", reference being made to the Warranty Deeds conveying individual Lot(s) for an exact description of said Lot(s). For purposes hereof, Lot(s) shall not include Lot(s) shown as Open Space on the Preliminary Plat or the Master Plan.

“Member” shall mean and refer to every person or entity that holds membership in the Association.

"Owner" shall mean and refer to the record Owner, whether one or more persons or entities, of fee simple title to any Lot, but excluding those having such interest merely as security for the performance of an obligation ("the Mortgagee"), provided that if the Mortgagee shall succeed to title to a Lot, then the Mortgagee shall be an Owner for purposes hereof.

"Person" means an individual, firm, corporation, partnership, association, trust or other legal entity or any combination thereof.

"Property" or "Properties" shall mean and refer to that real property known as Heathfield on Scott's Creek Section A described in Exhibit "A" attached hereto and additions thereto as may hereafter be brought within the jurisdiction of the Association. Heathfield On Scott's Creek Sections B-_____ as shown on the Master Plan as Exhibit "B" may be added by subsequent final plat and amendment to this Declaration.

ARTICLE III: PROPERTY

Section 1. Property Subject to Declaration. That certain real property which is, and shall be held, sold, conveyed and occupied subject to this Declaration located in Lakeland, Shelby County, Tennessee, and which is more particularly described as Heathfield on Scott's Creek Section A in Exhibit "A" attached hereto and made a part hereof.

Section 2. Storm Water Detention Areas. The Storm Water Detention Areas on the Common Open Spaces ("C.O.S.") are and shall be private improvements, and have not been dedicated to the City of Lakeland, or any other governmental body. By remaining private, the responsibility for payment of landscape maintenance and repair expenses for said Storm Water Detention Areas shall be the primary responsibility of the Homeowner's Association.

Section 3. Drainage. The Developer makes no warranty concerning the degree of rainwater inundation that may result on the aforementioned Lots since said inundation can be expected with rainfall that exceeds the normal standards.

Section 4. Soils. While Developer has made every attempt to ensure proper compaction and soil conditions, there may exist unsuitable soil conditions that were not discovered during the construction process. It is the sole responsibility of each lot owner or builder to examine their lot for the stability of soils to carry the anticipated loads.

ARTICLE IV: VOTING RIGHTS

Section 1. Voting. The voting rights of the Membership shall be appurtenant to the ownership of a Lot, each Owner of a Lot being entitled to one (1) vote for each Lot owned, except for the Developer, which shall be entitled to ten (10) votes for each Lot owned by it until ninety percent (90%) of the Lots in the Subdivision, including any additions added thereto, have been sold, at which time Developer shall be entitled to only one (1) vote for each Lot owned by

it. When more than one (1) person holds any interest in any Lot, all such persons shall be Members and the vote for such Lot shall be exercised as the Owners of such Lot shall determine, but in no event shall there be more than one (1) vote with respect to each Lot except as provided herein.

At every meeting of the Association, the Members shall have the right to cast their votes as specified herein on each question. The votes representing a fifty-one percent (51%) majority of the total votes cast with respect to any question, in person or by proxy, shall decide any question brought before such meeting, unless the question is one upon which, by express provisions of any statute or ordinance or of the corporate Charter or this Declaration or the Bylaws, a different vote is required, in which case such express provision shall govern and control. No Member shall be eligible to vote, either in person or by proxy, or to be elected to the Board of Directors of the Association, whose Lot is shown on the books or management accounts of the Association to be more than thirty (30) days delinquent in any payment due the Association or more than fifteen (15) days in default under any of the terms, covenants, conditions, restrictions or any other provisions contained herein.

Section 2. Proxies. A Member may appoint any other Member or any other person permitted by law or by the Bylaws as his proxy. Any proxy must be in writing and must comply with all requirements imposed by law or by the Association's Bylaws.

Section 3. Quorum. The presence, either in person or by proxy, of at least fifty percent (50%) of the total votes of the Property entitled to be cast with respect to any question, shall be requisite for, and shall constitute a quorum for, the transaction of business at all meetings of the Association. If the number of votes eligible to be cast drops below the quorum and the question of a lack of quorum is raised, no business may thereafter be transacted. If, however, such quorum shall not be present or represented at any meeting, the Members entitled to vote thereat shall have the power to adjourn the meeting from time to time, without notice other than announcement at the meeting, until a quorum as aforesaid shall be present or be represented.

ARTICLE V: PROPERTY RIGHTS AND EASEMENTS

Section 1. Owner's Easement of Enjoyment of Common Area. Every Owner shall have a right and easement of enjoyment in and to the Common Area, each Owner's easement being appurtenant to and passing with the title to each Lot. Such easements shall be subject to such rules, regulations, rights, and the Association, including but not limited to, the following provisions, may establish restrictions of use as from time to time:

- A. The right of the Association to limit the number of guests of Members in the use of the Common Area.
- B. The right of the Association to borrow money for the purpose of improving the Common Area and facilities, and in aid thereof to have the Common Area mortgaged by the Association.

- C. The right of the Association to have all or any part of the Common Area dedicated or transferred by the Association to any public agency, authority, or utility for such purposes and subject to such conditions as may be determined by the Association.
- D. The right of the Association to suspend this right and easement of enjoyment and to fine a Member for any period during which any assessment against his Lot is delinquent, or during which a Member is in violation of published rules and regulations adopted by the Association.
- E. The right of the Association to adopt rules and regulations pertaining to the Common Area for the benefit of the Owners.

Section 2. Delegation of Use. Any Member may delegate in accordance with the Bylaws, his right of enjoyment to the Common Area facilities to the members of his family or contract purchasers, all of whom must reside on the Property.

Section 3. Title to the Common Area. Fee simple title to the Common Area shall be vested in the Association. Quit Claim Deed from the Developer to the Association shall convey title to the Common Area at such time as the Final Plat and this Declaration as to Phase I and any subsequent final plat and amendment to this Declaration for subsequent phases are recorded.

Section 4. Easements. The Association shall have the right from time to time to declare, grant and convey utility, telephone, and other easements for the benefit of the Association and Owners over, under, and across the Common Area.

ARTICLE VI: CONTROL OF IMPROVEMENTS

Section 1. Control of Improvements. No Improvement or change, including, but not limited to, the construction, alteration or erection of any structure or residence, garage, utility building, terrain change, fence, driveway, walkway, landscape screening, mailbox, outdoor lighting fixtures, any sanitary and/or storm sewer system, underground wiring, swimming pool, or pool deck, shall be commenced, erected, placed or permitted on any Lot until the plans, specifications and specific location (including elevation) of said Improvement or change has been approved in writing, or the requirement for such approval has been waived in writing, by the Architectural Committee, which is hereby established, that is appointed by the Developer or Board of Directors of the Association. The initial committee shall consist of Raymond Sowell, Joseph Madden, and Jeffrey Barnes. Without the prior written approval of the Architectural Committee, no exterior television or radio antenna, disc (except of a size of 24 inches in diameter or less) or other similar device may be erected, placed, allowed or maintained on any Lot or upon any Improvement situated on any Lot. No fencing containing or consisting of chain link or barbed wire shall be permitted. The Architectural Committee is hereby empowered to decide upon and dictate the particular placement and structure of such device as a condition to approval, subject to the provisions of applicable laws, codes, ordinances and regulations. In the event that approval for such devices is granted, all such devices shall be completely screened

from the view of other Lots, as well as public streets. Architectural Committee members shall serve at the pleasure of the Association or its assigns. To the contrary, notwithstanding, in the event that the Architectural Committee fails to approve or disapprove such design or location within ten (10) days after said plans and specifications have been submitted to it, the approval will not be required, and this section will be deemed to have been fully complied with. The Architectural Committee reserves the right to require the submission of designs, material selections and layouts of proposed Improvements or changes at different stages of the design process, and further reserves the right to specify the information required therein as well as the format thereof. Such plans and specifications shall be in such form and shall contain such information as may be required by the Architectural Committee, but, in any event shall include (i) a site plan of the Lot showing the nature, color scheme, kind, shape, height, materials and location (including proposed front, rear and side setbacks) of all structures, fences, or barriers, and location of all parking spaces and driveways on the Lot, and (ii) grading, drainage, irrigation and landscaping plans for the particular Lot. The Architectural Committee shall promulgate rules and regulations governing the form and content of plans to be submitted for approval by the Architectural Committee.

If any Improvement or change requiring approval shall be undertaken on a Lot and said approval has not been obtained from the Architectural Committee or waived, or if any Improvement or change which is not in conformance with approved plans and specifications shall be undertaken on a Lot, said Improvement or change shall be deemed to have been undertaken in violation of these covenants; and, upon written notice of the Architectural Committee, any such Improvement or change deemed to be in violation shall be removed or altered so as to extinguish such violation. If, thirty (30) days after the notice of such violation, the Owner of such Lot in question shall not have taken reasonable steps toward the removal or alteration of the same, the Association, its representative, or the Architectural Committee shall have the right, through its agent, to enter said Lot and to take such steps as may be necessary to extinguish such violation and fine the Owner, and all costs, the Fine, expenses and attorney fees pertaining thereto shall be a binding obligation of the Owner as well as a lien on the Lot in question, upon the recording of such with the Register of Deeds' Office of Shelby County, Tennessee. Any lien so recorded shall be subordinate to the lien of any existing deed of trust.

For the purpose of ensuring the development of the Lots according to high standards, and to ensure reasonable compatibility of architectural designs, the Association and the Architectural Committee shall have the power to control all Improvements as set forth in this Article, as well as to make such exceptions to this Declaration, and to waive particular violations as either shall deem necessary, appropriate, or proper.

Section 2. Landscape Treatment of Common Areas. The Association shall provide any landscape treatment after approval of the plans by the Architectural Committee.

Section 3. Certificate of Compliance. Upon completion or alteration of any Improvement on any Lot undertaken and completed in accordance with plans and specifications approved by the Architectural Committee, and on written request of the Owner of such Lot, a Certificate of Compliance shall be issued in a form suitable for recordation. Preparation and recording of such Certificate shall be at the expense of such Owner. Any Certificate of Compliance issued in accordance with the provisions of this Section shall be prima facie evidence of the facts therein stated, and as to any purchaser or encumbrancer in good

faith and for value, or as to any title insurer, such Certificate shall be conclusive evidence that all Improvements and/or alterations described therein comply with all requirements of this Declaration.

Section 4. Compliance with Building Codes. The applicable building codes in effect at the time of any construction shall apply to all construction.

Section 5. Non-Liability. Neither the Developer, the Association nor the Architectural Committee nor any architect or agent thereof shall be responsible in any way for any defects in any plans or specifications submitted, revised or approved in accordance with the foregoing provisions, nor for any structural or other defects in any work done according to such plans and specifications. Any agent of the Association or the Architectural Committee may, at reasonable times, enter upon and inspect any Lot and any Improvement thereon for the purpose of ascertaining whether the maintenance of such Lot and the maintenance, construction and alteration of the Improvement thereon are in compliance with the provisions of this Declaration, and no such person shall be deemed to have committed a trespass or other wrongful act by reason of such entry or inspection.

ARTICLE VII: PROPERTY MAINTENANCE

Section 1. General Maintenance. The Association shall generally provide for the maintenance of all Improvements located on the C.O.S. including, but not limited to, the Storm Water Detention Areas. The Association shall establish a budget and Assessments for such expenditures and the disbursement and application of such Assessments.

The Association shall make necessary arrangements to maintain the Common Area and maintain and replace the Improvements on the Common Area, and to pay taxes and all other necessary expenses, including all types of liability insurance in connection with ownership of said Common Areas, which shall be paid by the Association through the Assessments.

Each Owner shall be responsible for the interior and exterior maintenance of his Lot and Improvements, including, but not limited to, all exterior walls of dwellings, doors, windows, roofs, patios, garages, light fixtures, irrigation systems, parking surfaces, landscaping, driveways, painting, streetlights, plumbing and electrical repairs. In the event an Owner of any Lot shall fail to maintain his or her Lot and the Improvements thereon in a manner reasonably satisfactory to the Association, and/or in keeping with other Lots, the Association shall have the right, through its agents and employees, to enter upon said Lot and to repair, maintain, and restore the Lot and the Improvements erected thereon. The cost of such repair, maintenance and restoration shall be added to and become part of the Assessment of that Lot. The cost of said maintenance, expenses and attorney's fees shall be a binding obligation of the Owner as well as a lien on the Lot in question, upon recording of such notice with the Office of Register of Deeds of Shelby County, Tennessee. Any lien so recorded shall at all times be subordinate to any prior recorded deed of trust. In addition to the costs as set forth herein, the Owner shall be responsible for all court costs, reasonable attorney's fees, and interest from the date of any expenditure at the then maximum legal rate of interest.

All lots have designed drainage. All maintenance expenses associated with the drainage on each Lot are solely the responsibility of the Lot Owner. Any modification to the designed

drainage flow shall be designed by an engineer according to the Final Plat and approved by Developer or the Association.

Section 2. Damaged or Destroyed Improvement. The right is given to the Association to require the Owner of a damaged or destroyed Improvement on any Lot to make repairs or replacements in order to restore the Improvement to its condition prior to the damage or destruction, including the right to require that insurance proceeds paid to the Owner, because of said damage or destruction, be applied to the repair or replacement.

The Owner of each Lot shall carry and keep in full force and effect, at all times at the expense of the Owner, casualty insurance with limits equal to the replacement value of the Improvements located thereon.

ARTICLE VIII: USE RESTRICTIONS

The use restrictions set forth herein below shall apply to each Lot to ensure the best use and most appropriate development and improvement of each Lot; to protect each Owner of each Lot against improper use of surrounding Lots as well as depreciation of the value of each Lot; to preserve, as far as practicable, attractive Improvements on such Lots, appropriately located on such Lots; to prevent haphazard and inharmonious Improvements on such Lots; to secure and maintain proper setbacks from streets, and adequate spaces between structures; and, in general, to provide adequately for a high type and quality of Improvements on such Lots, and thereby enhance the value of investments made by Owners of such Lots.

- A. The Board of Directors shall develop and maintain from time to time a set of rules and regulations governing the day-to-day use of the Lots and Common Area by the Owners thereof. Such rules and regulations may be amended by a majority vote of the Board of Directors.
- B. All Lots shall be known and described as residential lots and no structure shall be erected on any lot other than one single-family residence and garage and not more than one detached building.
- C. Building setback lines shall be as shown on the final plan and/or as required by the City of Lakeland and the recorded plat.
- D. All property owners shall be required to be members of the Heathfield On Scott's Creek Homeowners' Association, Inc. and shall be subject to any declarations, covenants, and restrictions enacted by the Association and any other declarations, covenants and restrictions hereinafter executed in writing and filed with the Shelby County Chancery Court Clerk including the recorded Plat.
- E. All Improvements upon any Lot shall be of new construction and no building or structure shall be moved onto any Lot. No house, trailer, tent, shack, barn, temporary building, temporary toilet facility, outbuilding, or guesthouse shall be erected on any of said Lots without approval in writing of the Association. No trailer, basement of any incomplete Improvement, shack, garage or other temporary building or structure of any kind shall be used at any time as a residence, either temporary or permanent, without the prior written approval

of the Architectural Committee. All swimming pools and accessory buildings shall be installed in accordance with the City of Lakeland and the Architectural Committee. No above ground pools are permitted on any Lot. All satellite dishes must be on the roof, not visible from the street and not on the front of a house, and approved by the Architectural Committee.

- F. All residences shall contain a minimum of 2,400 square feet of heated living area. The required square footage does not include heated porches, garages or other areas not normally considered part of the heated area. All 2 -story and 1 ½ -story residences shall have a minimum of 2,100 square feet of heated living area on the ground floor.
- G. All residences shall be constructed with an exterior comprised of brick, natural stone, manmade stone, and/or Hardie concrete siding or equivalent. No plywood sheeting or stucco board shall be permitted on any finished exterior surface. All roofs shall have a minimum pitch of 6" to 12" for the principal roof and 4" to 12" on porches and overhangs.
- H. All roofs of all buildings erected on a lot shall be comprised of a dimensional shingle material, unless otherwise approved in writing by the Architectural Committee. Accent roofs may be copper. Re-roofings must be in accordance with these covenants. No awnings on the front or sides of the house of any kind will be permitted without the approval of the Developer or the Association.
- I. All residences are encouraged to incorporate covered porches, decorative shutters, and/or concrete walkways from the front door to the sidewalk or curb.
- J. All residences must have an enclosed garage for vehicle parking. However, no garage shall be larger than for four (4) cars. Any garage built in a location on the Lot where it can be seen from any public street abutting the Lot must be enclosed and must have a door which, when closed, will screen the interior of the garage from public view from all such public streets abutting the Lot. Garage doors must be kept shut, except during ingress and egress.

Side load, Carriage load, and Front load Garages shall be permitted. If a Front load garage, then said garage shall be no closer than ten feet from the front building line of the Primary structure.
- K. Rear facades of homes on reverse frontage lots shall use the same materials and have similar architectural elements as the front and side facades of the home.
- L. All driveways are to be of washed aggregate. No front yard parking pads. Each lot owner is to provide portable toilets for its house(s) during construction.
- M. All fences are to be constructed in accordance with the City of Lakeland and the Architectural Committee.
- N. Exposed metal fireplace chimneys are prohibited.
- O. No building shall be erected on any Lot wherein there shall be installed any aluminum windows unless approved by the Architectural Committee.

- P. No noxious or offensive trade or activity shall be carried on upon any Lot nor shall anything be done thereon which may be or become an annoyance or a nuisance to the neighborhood.
- Q. No animals, livestock, or poultry of any kind shall be raised, bred or kept on any Lot, except that dogs, cats, or other household pets may be kept, provided that they are not kept, bred or maintained for commercial purposes. In all instances, pets shall be restrained within fenced areas, by "invisible fencing" or kept under leash or housed in appropriate structures built for such animals, provided the structure conforms to the restrictions in this Declaration and the plans therefor are approved in advance by the Architectural Committee.
- R. No recreational vehicles, commercial vehicles, or trailers of any kind, including, but not limited to trucks, vans, boats, boat trailers, R.V.'s, campers, race cars, house trailers, camping trailers, hobby vehicles, motorcycles, all terrain vehicles, pick-up trucks, or other similar vehicle shall be stored or parked on any Lot, unless in a closed garage or otherwise screened from the view of neighbors or the roads to the satisfaction of the Architectural Committee. No A-frame, motor mount or other similar device may be placed on any Lot. No disabled automobiles or other motorized vehicles may be stored on any Lot or on the street adjacent thereto unless located within an enclosed garage. None of the above may be parked on or adjacent to the street. No tractor or trailer may be parked on any Lot or on the streets within the development.
- S. All equipment, utility meters, garbage cans, service yards, woodpiles or storage piles shall be kept screened by adequate planting or fencing so as to reasonably conceal them view of the adjacent Lots. All rubbish, trash, or garbage shall be regularly removed from the premises and shall not be allowed to accumulate thereon. Debris and trash during the construction of Improvements shall be collected daily in containers approved by the Architectural Committee and periodically removed so that no unsightly condition occurs on the Lot or any other Lot.
- T. Each Lot shall be maintained in a neat and attractive manner. Any Installed lawn areas, driveways, or landscape elements, which are viewed from the street, shall be kept mowed and cleared of any debris at regular intervals by the Owner thereof so as to maintain the same in a neat and attractive manner.
- U. Trees, shrubs, vines, debris, and plants that die shall be promptly removed from Lots. Developer and/or the Association, at their option and their discretion, may mow the grass and have dead trees and debris removed from such Lot, and the Owner of said Lot shall be obligated to reimburse the Developer and/or the Association for the cost of such work. Such cost shall create a valid lien on said Lot, which shall be enforceable, as a special assessment against the Lot should the Owner refuse or neglect to comply with the terms of this paragraph.
- V. No excessive weeds, underbrush or other unsightly or unattractive growth shall be permitted to grow or remain upon any Lot, and no refuse pile, unused motor vehicles, or unsightly objects shall be allowed to be placed or to remain anywhere on any Lot. In the event that any Owner or occupant of any Lot shall fail or refuse to keep the Lot free from such unsightly growths or objects, then

an agent of the Architectural Committee, after written notice to the Owner, may enter upon the Lot and remove the same at the expense of the Owner and such entry shall not be deemed a trespass. In the event of such a removal, the Owner shall pay the expenses thereof. Such cost shall create a valid lien on said Lot, which shall be enforceable, as a special Assessment against the Lot should the Owner refuse or neglect to comply with the terms of this paragraph.

- W. No building material of any kind or character shall be placed or stored upon any of said Lots until the Owner of the Lot is ready to commence construction or renovation of Improvements. Building materials shall be kept in an organized and compact manner and appropriate measures taken daily to prevent unsightliness during construction. No construction shall be commenced until appropriate erosion controls are in place, and such shall be maintained during the time of construction
- X. All exterior lighting on each Lot shall be constructed and maintained so as to provide such illumination as is necessary for that Lot only without unreasonably interfering with the peaceful enjoyment of any adjacent Owner. Exterior security or spotlights shall be directed toward the ground and not toward adjacent Lots or roads.
- Y. Auxiliary structures, as approved by the Architectural Committee, shall be located within the buildable setback.
- Z. Owner's right of use of its Lot is subject to all laws, ordinances, rules and regulations of the applicable municipal and other governmental authorities. In the event of a difference between the use restrictions contained in said ordinances, rules and regulations, and law and the use restrictions set for in this Article, the more restrictive provision shall apply.
- AA. No underground or "berm" house will be permitted on any Lot.
- BB. All yards shall be of solid sod except as otherwise initially agreed upon with the Developer. Any dead plants shall be removed and replaced immediately. The builder of the primary residence shall install landscaping, including but not limited to the planting street trees in the six-foot area in the front yards of each lot reserved for the same, which at a minimum shall comply with the landscape plan approved by the City of Lakeland for the Heathfield Landscape Plan. Building locations, setbacks, landscaping and gardening shall be subject to the following conditions:
 - I. All buildings other than a residence, whether permanent or temporary, shall be located to the rear of the residence.
 - II. All gardens must be planted to the rear of the residence.
- BB. All mailboxes (numerals thereon) and the supports and encasements within the Subdivision are to be identical in design, i.e. Halle Design Verdigris Mailbox by Pickle Iron Specialties Company or like kind approved by Developer, the Association or the Architectural Committee.
- CC. No decorations except for holiday themes may be affixed or adhered.

- DD. Once a lot is sold by Developer, the owner shall be required to construct sidewalks thereon as required by the City of Lakeland. Should a lot owner not have installed the required sidewalk(s) for that lot within eighteen (18) months of the date of the recording of the deed. Should the lot owner refuse to do so, the Developer shall have the right to file a lien on the property or sue for the cost of the sidewalk.
- EE. Once Developer has closed a lot in the subdivision, the owner or his assignees of such lot shall be obligated to begin construction of a house on such lot within eighteen (18) months and thereafter complete such construction within twelve (12) months. If a lot owner fails to commence construction of the house within the said 18-month period, the Developer shall have the right, but not the obligation, to purchase the subject lot for the original sale price, exclusive of any closing costs associated with the original purchase.
- FF. No business activity of any kind whatever shall be conducted in any Improvement or on any portion of the Property without the prior written approval of the Board of Directors.
- GG. No Owner shall, within any location, place or permit any structures, fencing, plants or other material, which may damage or interfere with the installation and maintenance of utilities and/or interfere with the positive natural drainage of the Property. Further, no Owner shall install any Improvements or modify any existing grades in such a manner as would impair the positive, natural flow of water from or onto the Owner's Lot. The Owner of the Lot shall maintain any drainage facility on a Lot continuously. Slope areas within any Lots shall be maintained continuously by the Owner in a neat, orderly and safe condition and in such manner as to enhance the appearance and maintain established drainage courses, prevent erosion, and sliding problems and facilitate the orderly discharge of water through drainage systems.
- HH. Trash and garbage shall be kept in sanitary containers that must be located to the rear of the residence out of public view and in a location that will not be offensive to other Owners.
- II. No debris, trash, ashes or other refuse may be thrown or dumped on any of the Lots. Debris and trash during the construction of an Owner's Improvements shall be collected daily by each Owner (or his or her representative) in containers approved by the Architectural Committee and periodically removed so that no unsightly condition occurs on the Lot or adjoining Lots.
- JJ. An Owner's right of use of his Lot is subject to all laws, ordinances, rules and regulations of the applicable municipal and other governmental authorities. In the event of a difference between the use restrictions contained in said ordinances, rules and regulations and laws and the use restrictions set forth in this Declaration, the more restrictive provision shall apply.
- KK. No Owner shall permit any use of his Lot or any Improvement thereon for any purposes, which shall increase the fire hazard to adjoining Lots, or for any purpose or use in violation of local, state or federal statutes or ordinances.
- LL. All exterior speakers are subject to regulation by the Association with regard to decibel levels at Lot boundaries.

- MM. Violation of the covenants and restrictions herein contained shall not cause a forfeiture or reversion of title.
- NN. Each Lot owner shall be responsible for any and all erosion control measures that may be required by any governmental authority.

ARTICLE IX: TERM OF DECLARATION

These covenants, conditions and restrictions are to run with the land and shall be binding upon all parties and all persons claiming under them, until the expiration of thirty (30) years after recordation of this Declaration at which time said covenants, conditions and restrictions shall be automatically extended for successive periods of ten (10) years unless by a vote of eighty percent (80%) of the then Owners of all Lots, either prior to or at such time it is agreed to terminate said covenants, conditions and restrictions. The termination shall be effective upon recording of such instrument in the Register of Deeds's Office of Shelby County, Tennessee. If any of the terms, options, privileges, covenants, restrictions, conditions or rights created by this Declaration shall be unlawful, void or voidable for a violation of the rule against perpetuities, then such provision shall continue only until twenty-one (21) years after the death of any survivor of the now living descendants of the governor of the State of Tennessee, who holds that office as of the date this Declaration is recorded.

ARTICLE X: COVENANTS FOR ASSESSMENTS

Section 1. Creation of the Lien and Personal Obligation for Assessments. Each Owner of a Lot by acceptance of a deed therefor, whether or not it shall be so expressed in any such deed or other conveyance, is deemed to covenant and agree to pay to the Association (1) regular Assessments or charges, to be collected either monthly, quarterly, or annually as the Association shall determine, (2) special Assessments for capital Improvements or other purposes, such Assessments to be fixed, established and collected from time to time as hereinafter provided, and (3) emergency Assessments as may be declared by the Board of Directors. The regular, special, and emergency Assessments, and Fines assessed for the violation of these covenants, together with interest, costs and reasonable attorney's fees, if delinquent, shall be a charge and a continuing lien upon the Lot against which the charge is made until paid in full. Each such Assessment and Fine, together with interest, costs, and reasonable attorney's fees, if delinquent, shall also be the personal obligation of the person who was the Owner of such Lot at the time when the Assessment or Fine became due. Fines shall be established and assessed by the Board of Directors.

Section 2. Purpose of Regular and Special Assessments. The Assessments levied by the Association shall be used exclusively for the benefit, health, safety and welfare of the residents of the Property and for the construction, renovation, replacement and/or maintenance of any Improvements, Common Areas and easements of the Association located on the Property, including, but in no way limited to, the following:

- A. The cost of all operating expenses of the Association and services furnished; and
- B. The amount of all taxes and assessments levied against the Association or upon any Property which it may own or which it is otherwise required to pay, if any;

and

- C. The cost of liability insurance and the cost of such other insurance as the Association may determine; and
- D. The cost of funding all reserves established by the Association, including when appropriate, a general operating reserve and/or reserve for replacements; and
- E. Any professional fees (architectural, legal, property management, and engineering) and compensation to the members of the Architectural Committee; and
- F. Compensation for Directors not to exceed Three Hundred Dollars (\$300.00) per calendar year per Director as adjusted for inflation; and
- G. The estimated and/or actual cost of all operating expenses, repairs, replacements, maintenance and replanting of the entry features and other Common Area over which the Association has control; and
- H. The estimated and actual cost of enforcing and policing all the terms, covenants, conditions, restrictions and other duties and obligations contained in this Declaration.

During the period of development, Developer shall pay the previously described costs which are ultimately to be the responsibility of the Association; and, so long as Developer performs such obligation, each lot owner shall pay to Developer, or designated Property Manager, a reasonable annual fee to defray said expenses. At the time of lot closing, each Purchaser will pay to Developer, in advance, its pro-rata share of the annual assessment for the year in which closing occurs. Developer shall not be required to pay dues on unsold lots, until such time as Developer turns over control of the Association by Developers appointment of Members of the Association to the Board of Directors of the Association pursuant to Article XIII, Section 15 herein below, Developer shall thereafter pay to the Association such Assessments as are made by the Members with respect to any Lots still owned by Developer and Developer shall have no further liability for payment of the foregoing expenses.

Section 3. Regular Assessments. The regular Assessment shall be set at an amount sufficient to provide for the requirements hereof. The regular Assessment for each calendar year, and the basis for payment thereof, shall be determined by the Board of Directors. The regular Assessments for a particular calendar year shall become a lien upon the Lots on the first day of such calendar year.

Section 4. Special Assessments. In addition to the Assessments authorized above, the Association may levy special Assessments for such purposes as it may determine, provided that any such Assessment shall have the affirmative vote of at least fifty-one (51%) percent of the total number of votes cast in person or by proxy at a meeting duly called for that purpose. Written notice of such meeting must be sent to all Members not less than ten (10) days nor more than sixty (60) days in advance of the meeting setting forth the purpose of the meeting. A special Assessment hereunder shall become a lien upon the Lots upon approval of such special

Assessment in accordance with the foregoing.

Section 5. Emergency Assessments. In the event of any emergency situation, condition or occurrence affecting the life, health, safety or welfare of the Owners or property of Owners, or the Property, the Board of Directors, acting pursuant to this section, may declare an emergency Assessment in such amount and payable at such time as the Board of Directors, in its sole discretion, shall deem necessary. Such emergency Assessments, except for the amount and time of payment, shall be governed by all other provisions of this Declaration, which pertain in general to all types of Assessments authorized herein. Such Assessments shall be borne uniformly by all Owners. The Board of Directors shall be duly protected and not liable for any mistake in judgment hereunder if the emergency Assessment was made in good faith.

Section 6. Pro Rata Assessment. Regular, special and emergency Assessments shall be pro rata for each Lot constituting a part of the Property based upon the total number of Lots excluding any Lots which are Common Area and may be collected on a yearly, quarterly or monthly basis.

Section 7. Quorum for Any Action Authorized Under Sections 3 and 4. At any annual or specially called meeting for the purposes set out in Sections 3 and 4 hereof, the presence at the meeting of Members or of proxies entitled to cast fifty (50%) percent of all of the eligible votes of Membership shall constitute a quorum. If, however, such quorum shall not be present or represented at the meeting, the Members entitled to vote thereat shall have the power to adjourn the meeting from time to time, without notice other than announcement at the meeting, until a quorum as aforesaid shall be present or be represented.

Section 8. Date of Commencement of Annual Assessments-Due Dates. The regular Assessments provided for herein shall commence as to each Lot on the first day of the month following the transfer of a Lot to an Owner. The Association shall, upon request, furnish a certificate in writing signed by a representative of the Association setting forth whether the Assessments on a Lot have been paid. A reasonable charge may be made for the issuance of such certificates. Such certificates shall be conclusive evidence of payment of any Assessment therein stated to have been paid.

Section 9. Effect of Non-Payment of Assessments.

A. Remedies of the Association Generally. Any Assessments, which are not paid when due, shall be delinquent. If the Assessment is not paid within fifteen (15) days after the due date, the Assessment shall bear interest from the due date at the rate set by the Association, or if no rate is set, at the highest rate allowed by law, plus a late charge equal to ten percent (10%) of the amount not paid when due. The Association may bring an action at law against the Owner to collect the Assessment or in equity to enforce the lien provided for herein or exercise its right of public sale as set forth herein below if payment is not made within thirty (30) days from the due date. No Owner may waive or otherwise escape liability for the Assessments provided for herein by non-use of the Common Area or abandonment of his Lot. The Owner of a Lot on which there are delinquent Assessments shall not be eligible to participate or vote in any meeting of the Association, nor shall the Owner be counted in determining a quorum, and may, along with his guests and the occupants of his Lot, be prohibited by properly adopted resolution of the Board of Directors from using the Common Area or other privileges of

membership in the Association.

B. Enforcement of Lien. For and in consideration of the privileges, protections, mutual enjoyment and use of the Common Area and the premises contained herein, and other good and valuable consideration, the receipt of which is hereby acknowledged, and any assumption of the obligations by transferees as required hereunder, and to secure the payment of regular, special and emergency Assessments as provided for herein, any Fine, principal, interest and attorney's fees, a lien is expressly retained by the Association on each and every Lot. Such lien may be enforced by an action in a Court of equity for attachment of the Lot and sale pursuant to Order of Court or, in the alternative; the Board of Directors of the Association shall have the authority and power to sell the Lot at public outcry to the highest and best bidder for cash. The Board of Directors is authorized to make such public sale if and only if such sale is made subordinate to any prior recorded lease, mortgage or deed of trust upon the Lot. In any such foreclosure, the Owner shall be required to pay the costs and expenses of such proceedings, the costs and expenses for filing the notice or claim of lien and all reasonable attorneys' fees. The Owner shall also be required to pay to the Association the Assessment for the Lot during the period of foreclosure. Any such sale shall be made after first advertising the sale of the Lot for twenty-one (21) days by three (3) weekly publications in some newspaper in the County of Shelby, State of Tennessee, giving notice of the time and place of such sale of the Lot and posting such notice in the Shelby County courthouse. Written notice to the Owner is hereby waived and shall not be required. Any sale of a Lot to enforce a lien for delinquent and unpaid Assessments shall be free from equity of redemption, statutory right of redemption, homestead and dower and all other exemptions, all of which are expressly waived by the Owner, and any such sale and the lien enforced thereby shall take precedence over and have priority over any and all other liens of every nature against the Lot except real estate and ad valorem taxes assessed against the Lot and prior recorded leases, mortgages or deeds of trust.

The Board of Directors shall have the power to bid on the Lot at foreclosure sale and to acquire and hold, lease, mortgage and convey it. The proceeds of any such sale shall be applied first to the payment of the expenses of protecting the Lot and the expenses of litigation, attorney's fees, and sales commissions; and second, to the payment of real estate and ad valorem taxes assessed against the Lot and any prior recorded mortgages or deeds of trust; and third, to the payment of all amounts due the Association under the terms of the Declaration and Bylaws; and fourth, to the payment of any other mortgages or deeds of trust; and the balance, if any, according to applicable law. Upon any default in the payment of any Assessment, the Board of Directors shall have the right to all rents, issues, and profits from the Lot in default and shall have the right to secure the payment through notice to those in possession in the same manner as a mortgagee entering into possession following default.

All rights, remedies and privileges granted to the Board of Directors or an Owner, pursuant to any terms, provisions and covenants or conditions of this Declaration and the Bylaws shall be deemed to be cumulative, and the exercise of any one or more remedies shall not be deemed to constitute an election of remedies nor shall it preclude the party thus exercising the same from exercising such other and additional rights, remedies or privileges as may be granted to such party by this Declaration and the Bylaws or at law or in equity.

The Association may require the Owner of the Lot which is delinquent on any Assessment levied pursuant to this Declaration or is in default in the performance of any other

obligation hereunder for a period in excess of sixty (60) days to notify the holder of any and all mortgages and deeds of trust on the Lot of such delinquency or default.

Section 10. Fine. The Architectural Committee and/or Board of Directors of the Association shall have the right to impose an initial Fine not to exceed Two Hundred Fifty Dollars (\$250.00) as adjusted annually by Consumer Price Index (or any substitute index) for any one violation of the covenants contained herein. Such a Fine shall be in addition to the remedies set forth previously, and shall not restrain the aforementioned entities from taking any or all of the remedies and actions outlined in this Declaration. A violation, which continues after the provision of written notice, shall be treated as a continuous violation and shall result in a Fine of Fifty Dollars (\$50.00), adjusted annually by Consumer Price Index, per day until the violation ceases. Fines shall be attributable to each Lot and shall be a personal obligation of the Owner and shall be secured by a lien on such Lot at the time they become payable, pursuant to notice given by the Board of Directors by billing or otherwise (whether or not such notice is received by the Owner), and such lien shall also cover interest and any necessary collection expenses, including attorneys fees, provided, however, that such lien shall be subordinate to real estate taxes and any deed of trust or mortgage to secure a bona fide indebtedness recorded prior to the giving of such notice, or within ten (10) days after receipt of a written acknowledgement from the Association that no charges are outstanding against such Lot.

Section 11. Acceleration of Installments. Upon default in the payment of any one or more installments of any Assessment levied pursuant to this Declaration, the entire balance of said Assessment may be accelerated at the option of the Board of Directors and be declared due and payable in full, fifteen (15) days after written notice of such default is given to the Member.

Section 12. Subordination of the Lien to Mortgage. The lien of the Assessments payable by the Owner of a Lot shall be subordinate to the lien of a prior recorded mortgage or deed of trust except for the amount of such Assessments which become due and payable from and after the date on which the mortgagee or beneficiary thereunder either takes possession of the Lot encumbered thereby, accepts a conveyance of any interest therein (other than as security) or forecloses its mortgage or deed of trust. This Section 12 shall not be amended, changed, modified or rescinded without the prior written consent of all mortgagees and beneficiaries of record.

Section 13. Additional Default. Any recorded mortgage or deed of trust secured by any Lot shall provide that any default by mortgagor in the payment of any Assessment levied pursuant to this Declaration, or any installment thereof, shall likewise be a default in such mortgage or deed of trust (or of the indebtedness secured thereby), but failure to include such a provision in any such mortgage or deed of trust shall not affect the validity or priority thereof, and the protection extended to the holder of such mortgage or deed of trust (or of the indebtedness secured thereby) by reason of this Article shall not be altered, modified or diminished by reason of such failure.

Section 14. Exempt Property. All Properties dedicated to and accepted by a local public authority and the Common Area shall be exempt from the Assessments created herein except as otherwise specifically provided.

ARTICLE XI: LEASING PROHIBITION

(a) Notwithstanding anything to the contrary herein stated, any person (including any individual or business entity permitted by Tennessee law to hold title to real estate) who becomes an Owner of a Lot in Heathfield On Scott's Creek is prohibited from leasing or entering into a lease-purchase or similar or similar contract for, that Lot or any portion thereof. It shall be a violation of this Article subject to written waiver by the Board of Directors or the Developer, in their sole and absolute discretion, if an Owner or, or if more than one Owner, at least one of the Owners (including the owner who may own less than 100% of the ownership interesting any Lot_ shall not occupy the Lot on a permanent basis. It shall also be a violation of this Article, subject to written waiver by the Developer or the Board of Directors in their sole and absolute discretion, if any person lives in any Lot without paying any rental or lease payment unless an Owner also occupies such Lot. For purposes of the preceding sentence, it shall not be a violation of this Article if, while an Owner is temporarily absent from the Lot, a person who is not an Owner of that Lot temporarily resides in such Lot. A person who temporarily resides: on the Lot without violating this Article is meant to include persons commonly known as house sitters or other persons who stay in the Lot while the Owner is absent for the purpose of providing security, or caring for pets, or the like which belong to the Owner, and remain in the Lot while the Owner is absent, Such "Temporary Residence" by a person not an Owner shall not exceed a total of eight weeks in any on colander year.

(b) Notwithstanding the foregoing, in the event that an Owner, due to medical or health reasons, or for any other good cause desires to lease a Lot or any part thereof, or if an Owner wishes to extend any period of Temporary Residence as described in the above in the preceding paragraph for a period of longer than eight weeks, then such owner shall make application to the Developer or the Board of Directors which may, by vote grant such Owner an exception to the prohibition against leasing set forth in this Article upon such conditions and under such circumstances as the Board of Directors of the Developer, in its sole and absolute discretion, may deem proper or necessary. The Board shall provide written approval or disapproval to any Owner who makes application for an exception to the prohibition against leasing under this Article.

(c) The foregoing notwithstanding, all Lot Owners are prohibited from leasing all or any portion of their Lot for any period of less than thirty (30) days (the "Temporary Leasing Prohibition"). It is the intent of this paragraph to prohibit transient or short-term rentals under such programs commonly known as "vacation rental by owner" (VRBO), Airbnb, and the like. Notwithstanding the provisions of this Article XI (c), any Lot Owner may apply for a waiver under Article XI (b) to the Temporary Leasing Prohibition of this Article XI (c).

In the event of any violation of this Article by an Owner, the Association shall be entitled to any remedy available at law or in equity from such Owner including, but not limited to, damages and injunctive relief together with any attorney's fees incurred by the Association and all costs and expenses of whatever type, kind or nature expended by the Association to enforce any of the provisions of this Article, whether such enforcement is by way of non-judicial action.

ARTICLE XII: ENFORCEMENT OF DECLARATION

If any Owner, his heirs, personal representatives, successors or assigns shall violate or attempt to violate any of the covenants, conditions and restrictions set forth herein, any Owner, or the Association may prosecute any proceedings at law or in equity against the person or persons violating or attempting to violate any such covenant, condition or restriction to prevent such violation or attempted violation, may seek specific performance or may recover damages for any such violation. Failure to enforce any of such covenants, conditions and restrictions shall in no event be deemed a waiver of the right to do so thereafter. In the event of such litigation, the party guilty of such violation or attempt to violate shall pay the other party's attorney's fees and costs incurred in enforcing this Declaration.

ARTICLE XIII: MISCELLANEOUS PROVISIONS

Section 1. Liability of Association. The Directors of the Association and all members of the Architectural Committee are hereby expressly relieved of any liability to any Owner, and to any other party to the extent permitted by law, for any act of omission or commission in connection with the performance of their functions as Directors of the Association or such member, except for willful misconduct or act of bad faith.

Section 2. Severability of Covenants, Conditions and Restrictions. Invalidation of any one or more of the covenants, conditions and restrictions or other provisions herein or hereafter set forth by any Judgment or Court Order shall in no way affect any of the other covenants, conditions and restrictions which shall remain in full force and effect.

Section 3. Gender and Grammar. The singular whenever used herein shall be construed to mean the plural when applicable, and the necessary grammatical changes required to make the provisions hereof apply either to corporations, partnerships, or individuals, men or women, shall in all cases be assumed as applicable.

Section 4. Amendment. Subject to the limitations and rights contained in Articles IV, IX and X hereof, these covenants, conditions and restrictions may be amended at any time during the initial term hereof or any extension thereof by an instrument signed by Members having not less than two-thirds (2/3's) of the eligible votes of the Association, with such amendment to be effective upon recording in the Register of Deeds's Office of Shelby County, Tennessee. To the contrary herein notwithstanding, no provision herein concerning the rights of the Developer may be amended without the written consent of the Developer until such time as the Developer no longer owns a Lot in the Subdivision or until ten (10) years from the recording of this Declaration, whichever should occur first.

Section 5. Condemnation, Destruction or Termination of the Common Area. In the event of loss or damage to the Common Area as a result of condemnation, in whole or in part, or partial or total destruction, the Board of Directors of the Association shall represent the Association in any proceedings, negotiations, settlements or agreements. In representing the Owners, the Board of Directors of the Association shall serve as the attorney-in-fact for the Owners. Any proceeds from any settlement shall be payable to the Association for the benefit of the Owners.

Section 6. Contract for Property Management. The Association may retain the services

of a professional management company to manage and maintain the Common Areas of the Property. Any such contract shall include a right of termination without cause, which may be exercised by the Association at any time. There shall be no penalty for the right of termination by the Association and advance notice of termination shall be required of no more than ninety (90) days.

Section 7. Rights of Mortgage Holders, Insurers or Guarantors. The holder, insurer or guarantor of a mortgage on any Lot in the Property shall have the right to timely written notice of the following:

- A. Any condemnation or casualty loss that affects either a material portion of the Property or the Lot securing its mortgage;
- B. Any sixty (60) day delinquency in the payment of Assessments or charges owed by the Owner of any Lot on which it holds the mortgage;
- C. A lapse, cancellation or material modification of any insurance policy or fidelity bond maintained by the Association; or
- D. Any proposed action that requires the consent of a specified percentage of eligible mortgage holders.

To be entitled to receive this information, the mortgage holder, insurer or guarantor must send a written request to the Association, stating both its name and address and the address of the Lot on which it has or insures or guarantees the mortgage.

Section 8. Easements for Utilities and Related Purposes. The Association is authorized and empowered to grant (and shall from time to time grant) such licenses, easements and/or rights-of-way over the Common Area for sewer lines, water lines, electrical cables, telephone cables, television and other communication cables, internal and external wiring and antennae, gas lines, storm drains, underground conduits and/or equipment for such purposes related to the provision of public utilities and other common services to the Property or any Lot(s) as may be considered necessary, appropriate or desirable by the Board of Directors or the Association for the preservation of the health, safety, convenience and/or welfare of the Owners and the Association.

Section 9. Grant of Easement. An easement is hereby granted to all police, fire protection, ambulance, security, garbage collection, and U.S. Postal Service, Federal Express, United Parcel Service or like delivery service, persons to enter upon the Common Areas and any Lots in performance of their duties. Further, an easement is hereby granted to the Association, its officers, agents, employees, and to any management company selected by the Association to enter in or to cross over the Common Areas and any Lot or Improvement on any Lot to perform the duties of maintenance and repair of the Lot, Improvement or Common Area provided for herein. Should any utility request a specific easement by separate, recordable document, the Association shall have the right to grant such easement on the Common Area without conflicting with the terms hereof. The easements provided for in this section shall in no way affect any other recorded easements on the Property.

Section 10. Insurance. The Association shall obtain and maintain at all times, to the extent obtainable, policies of insurance, written with financially responsible and able companies, licensed to do business in Tennessee, covering the risks of:

- A. Bodily injury and property damage liability insurance in such limits as the Board of Directors may from time to time determine; and
- B. Worker's compensation and employer's liability insurance and all other similar insurance with respect to employees, if any, and subcontractors of the Association in the amounts and in the forms now or hereafter required by law; and
- C. Fidelity coverage against dishonesty of employees or any other persons handling funds of the Association, destruction or disappearance of money or securities and forgery and endorsements thereto covering any persons who serve the Association without compensation; and
- D. Insurance against such other risks of a similar or dissimilar nature as the Board of Directors shall deem appropriate with respect to the Property, including insurance on any personal property of the Association located thereon, and Directors and Officers liability insurance with respect to the actions of the Board of Directors and officers of the Association. The types of coverage and limits of all insurance carried pursuant to these provisions or failure to carry adequate coverage shall not be subject to question or claim against the Association or its Board of Directors. Owners may carry other insurance for their benefit and at their expense, provided that the liability of the carriers issuing insurance obtained by the Board of Directors shall not be affected or diminished by reason of such additional insurance carried by any Owner.

Section 11. Notices. Any notice required to be sent to any Owner or Member under the provisions of this Declaration shall be deemed to have been properly sent when mailed, postage prepaid, to the last known address of the Person or entity who appears as an Owner or Member on the records of the Association at the time of such mailing.

Section 12. Expansion by Developer. Developer shall have the right but not the obligation to expand the Subdivision to include Sections ("Phases") B-_____ as shown on the preliminary plats and the master plan the same attached hereto as Exhibits "B" and "C" respectfully by recording a final plat for each Phase and amending this Declaration to incorporate the additional Phases into the Subdivision.

Section 13. Additional Restrictions. Developer reserves the right to impose additional specific restrictions upon any Lot in the Subdivision at the time of sale by the Developer of such Lot. Such additional restrictions may be made by appropriate provision in the deed of conveyance, without otherwise modifying this Declaration. Such additional restrictions shall apply to the Lot or Lots to which they are specifically imposed, provided that any such additional restrictions shall be more restrictive than the covenants contained herein.

Section 14. Homeowner's Right of Action against Developer. The Homeowner's Association cannot bring suit against Developer. Should a Lot Owner or Lot Owners have cause to file suit against Developer they must do so individually and cannot bring as a class within the Homeowners Association. Any controversy as to whether the Lot Owner is entitled to damages shall be determined by binding arbitration. Arbitration hearings shall be held in the County where the Property is located. The arbitrators shall hear and determine said controversy in accordance with applicable law, the intention of the parties as expressed in this agreement and any amendments thereto, and upon the evidence produced at an arbitration hearing. Pre-arbitration discovery shall be permitted in accordance with State Law applicable to arbitration proceedings. The award shall be executed by at least two of the three Arbitrators, be rendered within thirty days after the conclusion of the hearing and may include attorneys' fees and costs to the prevailing party.

Section 15. Term of Developer's Control of the Association. For a period of ten (10) years from the date of recording this Declaration or upon the sale of one hundred percent (100%) of the Lots in the Subdivision, as it may be expanded pursuant to the terms of this Declaration, whichever occurs first, Developer shall have the right to appoint the Board of Directors of the Association and shall be responsible for the payment of all expenses of the Association with the right to the credit against such expenses as set forth in Article X, Section 2. Thereafter, Directors shall be elected pursuant to the terms of the Bylaws of the Association.

{SIGNATURE PAGE FOLLOWS}

IN WITNESS WHEREOF, the Developer has hereby executed this Declaration on the day and year first above written.

HEATHFIELD DEVELOPMENT COMPANY, LLC
a Tennessee Limited Liability Company

BY: _____
TREY SOWELL, Member

STATE OF TENNESSEE
COUNTY OF SHELBY

Personally appeared before me, the undersigned authority in and for said County and State, on this 7th day of June 2018, within my jurisdiction, the within named, Trey Sowell, who acknowledged that a member of Vandelay Development Company, LLC, a Tennessee member-managed limited liability company, and that as a member of said limited liability company, he executed the above and foregoing instrument after first having been duly authorized by said limited liability company so to do.

NOTARY PUBLIC

My Commission Expires: _____

HEATHFIELD ON SCOTT'S CREEK

LAKELAND, TN

OWNER/DEVELOPER:



ENGINEER:



LANDSCAPE ARCHITECT:



PRELIMINARY DEVELOPMENT PLAN



INDEX FOR CONDITIONS OF APPROVAL ARTICLES

- I. General Statement
- II. General Guidelines
- III. Bulk Requirements
- IV. Design Standards
- V. Access and Circulation
- VI. Landscaping/Screening/Open Space
- VII. Drainage
- VIII. Utilities
- IX. Stream Buffer Requirements
- X. Legal Description

INDEX OF EXHIBITS:

- Exhibit A – Regional Location Map
- Exhibit B – Immediate Area Location Map
- Exhibit C – Boundary Plot Plan / Legal Description
- Exhibit D – Aerial Photograph
- Exhibit E – Slope Analysis
- Exhibit F – Natural Features Map
- Exhibit G – Soils Map
- Exhibit H – Preliminary Site Plan
- Exhibit I – Master Plan Illustration
- Exhibit J – Phasing Plan
- Exhibit K – Circulation Plan
- Exhibit L – Common Open Space Plan
- Exhibit M – Existing Trees Map
- Exhibit N – Tree Protection & Removal Map
- Exhibit O – Landscape Plates & Buffers
- Exhibit P – Street Tree Plan
- Exhibit Q – Schematic Sewer Plan
- Exhibit R – Schematic Water Plan
- Exhibit S – Preliminary Grading & Drainage Plan
- Exhibit T – Detention Areas Plan
- Exhibit U – Typical Road Cross Sections
- Exhibit V – Neighborhood Identification Monument Signage
- Exhibit W – Architectural Character
- Exhibit X – Declaration of Covenants, Conditions and Restrictions
for Heathfield on Scott’s Creek



I. General Statement

Heathfield on Scott's Creek Community is a proposed Master Planned Development consisting of 118 single family lots on +/- 65.98 acres at a gross density of 1.79 dwelling units per acre. The existing Harding property has primarily been used as pastureland and the predominant landscape is one of gently rolling grass fields with occasional stands of hardwood trees typically associated with low areas or drainage swales. The property has frontage on Old Brownsville Road to the North; future Seed Tick Road extension to the East; and Scott's Creek to the West. An existing 200' wide Texas Gas Easement bisects the site in a generally North-South alignment. The Western project boundary and the centerline of the Texas Gas Easement converge to form a point at the Southern extents of the site. Additionally, a 20' wide sanitary sewer easement parallels Scott's Creek and lies within the project boundary. Heathfield on Scott's Creek Community will be located adjacent to the Lakeland Meadows Master Planned Residential Development to the North and East and to the Lakeland Middle Preparatory School to the West where it shares a common border in the form of the centerline of Scott's Creek. Although the currently zoned Suburban Neighborhood property is not designated with a Conservation Overlay, the master plan was created in keeping with the intent of conservation design by maintaining strict attention and sensitivity to the natural features found on the site. These features, such as Scott's Creek and existing wooded areas are major design elements within the plan of the neighborhood, contribute to the creation of a linear park/greenway and have been preserved wherever possible and appropriate. The master plan for this Heathfield on Scott's Creek Community neighborhood has been designed to complement the Lakeland Meadows PD in single family lot variety, size, and product design in addition to vehicular connectivity across Old Brownsville Road and Seed Tick Road extension. The layout of the site seeks to create a meandering, tree lined street network that creates a visually interesting and subtly shifting streetscape corridor by intentionally avoiding overly lengthy linear street alignment. The design emphasizes our frontage on Scott's Creek which results in the creation of a linear park/pedestrian greenway along the entirety of its frontage. This greenway will include a pedestrian trail with site furnishings (benches, etc.) that will tie into the street sidewalk network and loop trail system proposed to meander throughout the gas easement. A future pedestrian bridge across Scott's Creek is proposed to connect the Lakeland Middle Preparatory School campus with Heathfield on Scott's Creek Community and by extension to other residential communities in the area. Numerous intimate scaled landscape parks are incorporated throughout the site and replace the typical paved asphalt cul-de-sac. These "Closes" create readily identifiable neighborhood centers for the immediately surrounding, adjacent homes and by extension a form of implied "ownership" by the neighbors when it comes "eyes on the park" and to some extent maintenance of the proposed landscape which will include perennial and annual flowers in addition flowering trees and evergreen/deciduous shrubs and groundcover. These features contribute to a total of +/- 25.32 acres of land contained within the community (+/- 38.37% of the total site) that will be placed in Common Open Space and/or Conservation Easements where no future development can occur, therefore preserving the natural resources of the land. Continuous green space connects the development throughout its boundaries and ties to adjacent open spaces of future development. Heathfield on Scott's Creek Community is a suburban neighborhood Planned Development designed with the following principals in mind:

- 1. To provide for a high quality, pedestrian friendly, walkable single-family community. Tree lined streets with pedestrian walks on both sides are planned to facilitate connectivity as well as paved walking trails meandering within the linear greenway park and gas easement open space that connects all portions of the development together providing a safe environment for pedestrians and bicyclist.
- 2. To encourage safe vehicular connectivity throughout the neighborhood, multiple community entrances have been provided, connecting to each of the bordering thoroughfares.

- 3. To provide for cohesive, high quality homes and community architectural elements. Architectural Guidelines will govern the design of each home that is to be constructed. Residential landscape guidelines set forth in the "Declaration of Covenants, Conditions, and Restrictions for Heathfield on Scott's Creek" govern the minimally required quality and quantity of plant material on each individual lot.

The intent of Heathfield Development, LLC, the developer, is to work closely with the city staff to provide this high quality, pedestrian friendly residential community.

II. General Guidelines

- A. The Heathfield on Scott's Creek Preliminary Development Plan shall serve as the land use and transportation plan and define the planning objective to be achieved for the development of the Heathfield on Scott's Creek Subdivision.
- B. The Common Open Spaces will be developed with details that encourage the use of the spaces.
- C. A Declaration of Covenants and Restrictions shall be applicable to all lots in the development. A Homeowner's Association shall be established to assure that improvements and common open spaces are maintained in a quality manner.
- D. A comprehensive signage system will be implemented to insure continuity in the development.
- E. The Heathfield on Scott's Creek development shall adhere to the landscaping guidelines in the landscape plan.
- F. Exhibits, attached herein, shall be considered regulatory and requirements of the development unless expressly overridden by text provided in the PDP booklet.
- G. If amendments are made at any time to this PDP, a complete PDP shall be submitted to the City at the initial MPC submittal deadline, or the amendment will not be placed on the MPC agenda. Upon final approval by the MPC and BOC, a final copy of the PDP shall be provided to the Planning Department reflecting any amendments made at the MPC and BOC meetings.

III. Bulk Requirements

- AREA 1(WEST) SUBURBAN MANOR & SUBURBAN ESTATE
- A. The Maximum Gross Density for this area of the development shall be 1.90 Dwelling Units Per Acre.
 - B. Minimum setbacks are as follows:
Front: 30 Feet
Rear: 20 Feet
Side: 5 Feet
 - C. The minimum lot size for Suburban Manor lots in this area shall be 10,000 square feet.
 - D. The minimum lot size for Suburban Estate lots in this area shall be 17,500 square feet.

- AREA 2 (EAST) SUBURBAN COTTAGE
- A. The Maximum Gross Density for this area of the development shall be 1.22 Dwelling Units Per Acre.
 - B. Minimum setbacks are as follows:
Front: 20 Feet
Rear: 15 Feet
Side: 5 Feet
 - C. The minimum lot size for this area shall be 5,500 square feet.

BUILDABLE AREA RESTRICTIONS		
Lot Type	Maximum Building Coverage	Maximum Impervious + Semi-Pervious Coverage
Suburban Estate	20%	30% Impervious + 10% Semi-Pervious
Suburban Manor	35%	45% Impervious + 10% Semi-Pervious
Suburban Cottage	45%	50% Impervious + 10% Semi-Pervious

IV. Design Standards:

- A. Homes shall be Traditional, French Country or English in style.
- B. Garage Standards: Garages shall incorporate exterior materials, design features, and roof forms compatible with the dwellings they serve, and shall comply with the following standards:
 - 1. The inside dimensions of garages shall be at least ten feet wide by twenty feet deep per vehicle.
 - 2. If built more than 5’ beyond the main front facade of the home, a garage shall be at 90° from the front property line.
 - 3. Front facing garages shall be either:
 - a.) Designed with architectural features to break up the garage expanse (e.g., individual garage doors, pergola, etc.).
 - b.) Located at least 10’ behind the building facade.
- C. The primary roofing material shall be architectural shingles.
- D. Windows must include shutters if home allows.
- E. There shall be dormers, roof line changes and decorative gable vent covers, where appropriate.
- F. No King size brick allowed. All brick must be Queen size, a modular size or similar.
- G. All homes are required to have gutters on the front and any side facing a street.
- H. All windows to be vinyl, vinyl clad or aluminum clad. No wood windows.
- I. Font porches shall be allowed to encroach past the front setback a maximum distance of 8’.
- J. Any cluster mailbox shall be of a decorative style and be landscaped. The DRC and USPS shall approve any cluster mailboxes and landscaping prior to installation.

V. Access and Circulation:

- A. Dedicate and improve internal street to a 31 feet wide Right-of-Way with 26 feet of pavement section.
- B. The proposed street sections are provided on this sheet.
- D. The construction of Seed Tick Road is not required to begin until Phase 2 of the development occurs, and shall only be required along the frontage of Phase 2 at that time. The section of Seed Tick Road that is the frontage for Phase 4 of the development is not required to be constructed until Phase occurs.

VI. Landscaping/Screening/Open Space:

- A. All Common Open Spaces shall have landscaping to enhance the aesthetic value of the overall development.
- B. Common Open Space shall meet the City of Lakeland Zoning Ordinance and Design Guidelines.
- C. No perimeter fence may exceed 6’ in height. A 4’ in height 4–Rail Horse Fence shall be installed along the rear property lines abutting a common open space.
- D. See the Landscape Plates submitted with the P.D. Plan set for additional requirements.
- E. There is a 50’ Scenic Corridor Buffer along Old Brownsville Road with landscaping requirements and restrictions that shall be adhered to according to the Lakeland Zoning Regulation and are to be maintained by the property owner.
- F. The 10’ wide Pedestrian Walkway / Bike Trail will be composed of asphalt and is to be constructed with before Phase 4 of development, but can be constructed earlier at the Developer’s discretion.
- G. The proposed Pedestrian Walkway / Bike Trail will be owned by the current property owner until the Heathfield on Scott’s Creek Homeowners Association can be formed, at which time trail ownership will be transferred to the HOA.
- H. The 10’ wide Meandering Asphalt Trail within the Seed Tick Road right-of-way will be composed of asphalt and will be constructed in congruence with Seed Tick Road.

VII. Drainage:

- A. A Grading and Drainage plan will be submitted to the City Engineer concurrent with construction plans for review by the City prior to commencement of construction.
- B. Onsite detention will be provided to prevent any downstream drainage issues related to the development of the subdivision.
- C. Adequate EPSC measures will be in place during construction.
- D. Detention to be located in C.O.S. areas and used in conjunction as attenuation for the development.
- E. The property is located in Zone X which is not located in a Special Flood Hazard Area per FEMA FIRM Map Number 47157C0215GF dated February 6, 2013.
- F. All grading shall be in accordance with TDEC and City of Lakeland Regulations. All grading shall be reviewed and approved by the Town Engineer.
- G. Stormwater Detention facilities shall be owned and maintained by the Homeowners Association.

VIII. Utilities

- A. The water system shall be capable of producing a minimum residual pressure of 20 PSI at a minimum fire flow of 1,500 gpm and shall be approved by and constructed in accordance with the requirements of the City of Lakeland.
- B. The sewer system shall be approved by and constructed in accordance with the requirements of the City of Lakeland.
- C. There shall be a 5 foot wide utility easement along all lot lines.

IX. Stream Buffer Requirements

ZONE 1 – STREAMSIDE SECTION

- A. Allowable uses within the streamside section are restricted to:
 - 1. Flood control structures
 - 2. Utility rights-of-way
 - 3. Footpaths
 - 4. Road crossings, where permitted
 - 5. Stormwater management facilities, with approval of the City Engineer

ZONE 2 – OUTER SECTION

- A. Allowable uses within the outer section are restricted to:
 - 1. Biking or hiking paths
 - 2. Stormwater management facilities, with the approval of the City Engineer
 - 3. Recreational uses as approved by the Planning Commission
 - 4. Limited tree clearing with approval from the Planning Commission

X. Legal Description

Tax ID# L0150 00492C (Portion of)

Being a portion of Parcel I, all of Parcel II and all of Parcel III of the 'Harding Academy of Memphis, Inc.' property as recorded in Instrument Number 05182497 at the Shelby County Register's Office, City of Memphis, State of Tennessee being more particularly described by metes and bounds as follows:

Commencing at the POINT OF BEGINNING that is where the East line of the Wiles property (#04111769) intersects with the physical centerline of Old Brownsville Road (set cotton picker spindle with washer); thence with a portion of said centerline, North 75 degrees 14 minutes 04 seconds East a distance of 789.75' to a point; thence South 14 degrees 45 minutes 51 seconds East a distance of 600.06' to a point of curvature; thence in southwesterly direction along the arc of a curve to the right having a radius of 1061.66' (Long Chord = South 01 degrees 25 minutes 26 seconds East, 489.92') an arc distance of 494.37' to a point; thence South 11 degrees 54 minutes 43 seconds West a distance of 1084.34' to a point; thence South 78 degrees 06 minutes 16 seconds East a distance of 502.43' to a point; thence South 56 degrees 46 minutes 24 seconds East a distance of 100.00' to a point; thence South 33 degrees 22 minutes 47 seconds West a distance of 1429.90' to a point in the center of Scott's Creek; thence departing from said south line with the centerline of said Scott's Creek and the east line of the Jones Gilliland Group, LLC property (#12147685) and the east line of the 'Board of Education for the Lakeland School System' property (#15108376) the following twenty-three (23) calls;

- 1. North 46 degrees 36 minutes 39 seconds West a distance of 43.98'
 - 2. North 11 degrees 37 minutes 41 seconds West a distance of 255.88'
 - 3. North 86 degrees 04 minutes 03 seconds West a distance of 55.58'
 - 4. North 11 degrees 32 minutes 12 seconds West a distance of 127.03'
 - 5. North 88 degrees 53 minutes 01 seconds East a distance of 117.96'
 - 6. North 01 degrees 26 minutes 17 seconds West a distance of 141.13'
 - 7. North 31 degrees 11 minutes 42 seconds West a distance of 96.80'
 - 8. North 01 degrees 24 minutes 35 seconds East a distance of 66.67'
 - 9. North 11 degrees 41 minutes 49 seconds West a distance of 111.93'
 - 10. North 13 degrees 51 minutes 09 seconds East a distance of 149.98'
 - 11. North 52 degrees 44 minutes 42 seconds East a distance of 116.50'
 - 12. North 21 degrees 22 minutes 45 seconds West a distance of 123.89'
 - 13. North 28 degrees 40 minutes 58 seconds East a distance of 138.54'
 - 14. North 73 degrees 07 minutes 03 seconds West a distance of 54.79'
 - 15. North 03 degrees 37 minutes 57 seconds East passing the northwest corner of said original Lillian Humphreys 72 acres at a distance of 20.07' but continuing for a total distance of 24.01'
 - 16. North 01 degrees 55 minutes 39 seconds West a distance of 109.37'
 - 17. North 60 degrees 20 minutes 56 seconds East a distance of 198.45'
 - 18. North 09 degrees 52 minutes 04 seconds West a distance of 140.50'
 - 19. North 28 degrees 01 minutes 56 seconds East a distance of 139.00'
 - 20. North 54 degrees 55 minutes 04 seconds West a distance of 127.90'
 - 21. North 00 degrees 33 minutes 56 seconds East a distance of 373.10'
 - 22. North 88 degrees 16 minutes 04 seconds West a distance of 156.83'
 - 23. North 38 degrees 15 minutes 56 seconds East a distance of 122.50'
- North 40 degrees 20 minutes 19 seconds West a distance of 139.73' to a point in the south line of the Wiles property (#04111769);

thence departing from said centerline of Scott's Creek with a portion of said south line, North 86 degrees 57 minutes 07 seconds East a distance of 516.08' to the southeast corner of said Wiles property (found fence post); thence with the east line of said Wiles property, North 04 degrees 34 minutes 53 seconds East a distance of 643.14' to the said POINT OF BEGINNING.

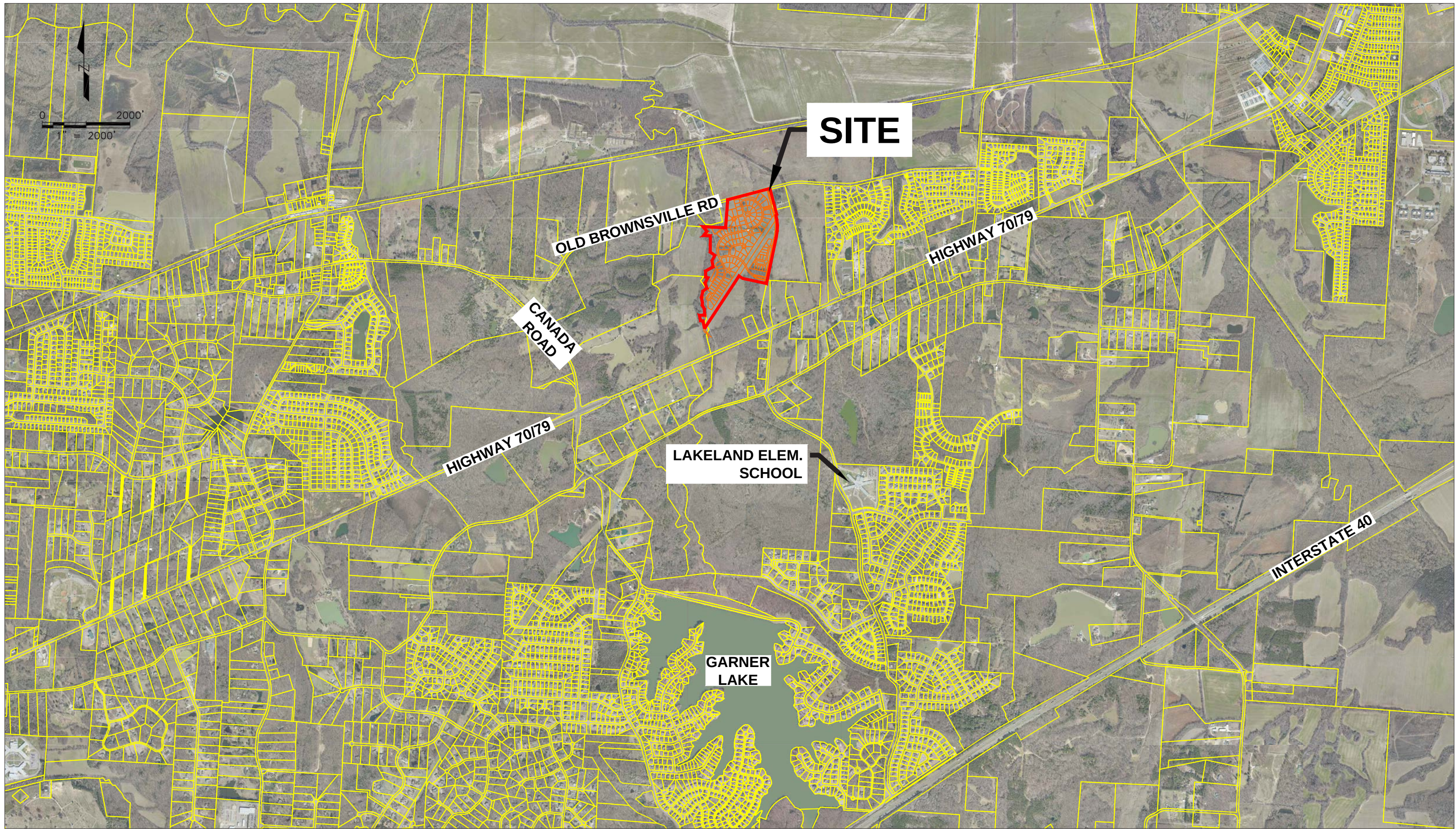
Said described property described containing 2,873,939 square feet or 65.98 acres, more or less.

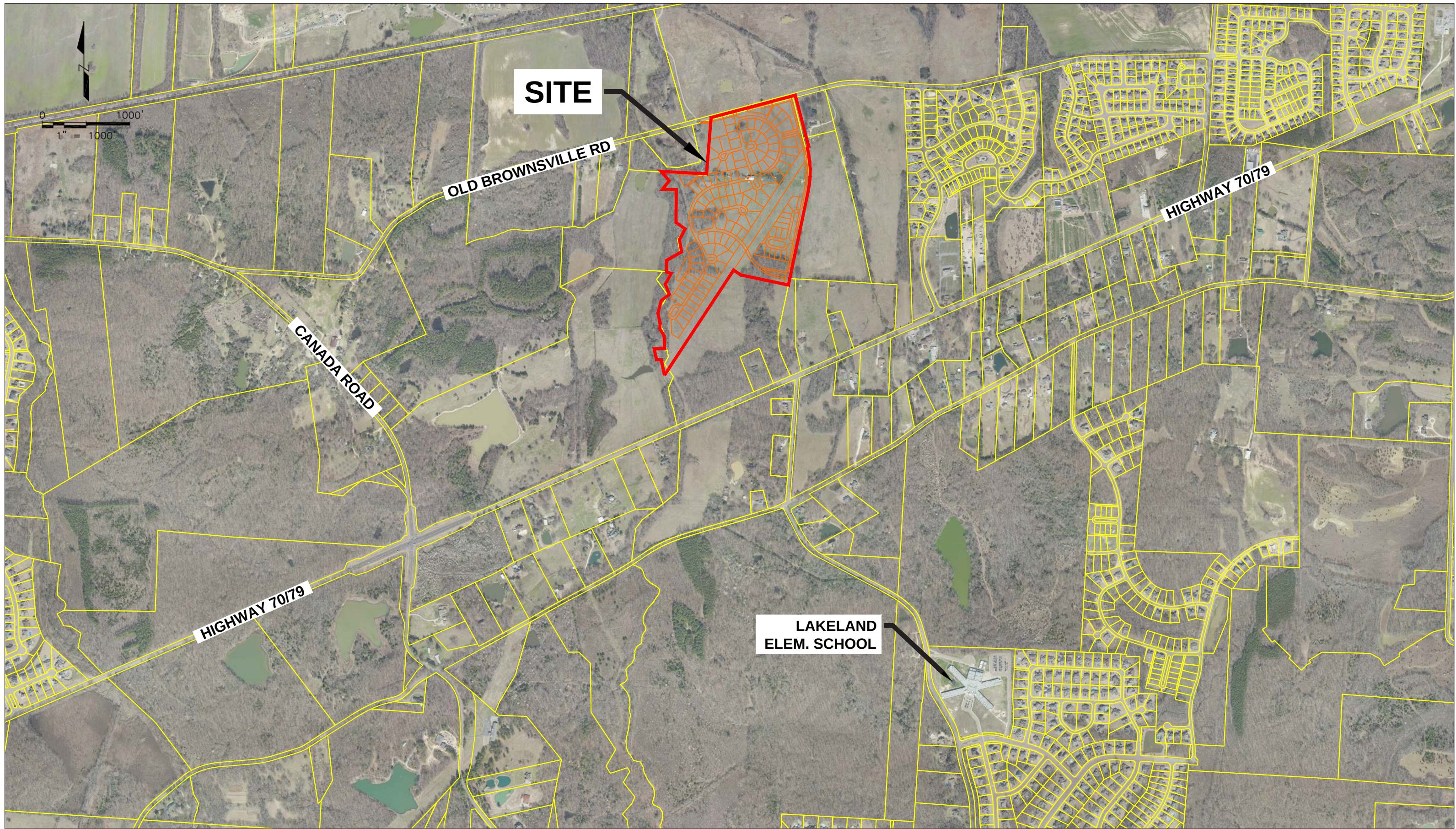
INDEX OF EXHIBITS:

- Exhibit A – Regional Location Map
- Exhibit B – Immediate Area Location Map
- Exhibit C – Boundary Plot Plan / Legal Description
- Exhibit D – Aerial Photograph
- Exhibit E – Slope Analysis
- Exhibit F – Natural Features Map
- Exhibit G – Soils Map
- Exhibit H – Preliminary Site Plan
- Exhibit I – Master Plan Illustration
- Exhibit J – Phasing Plan
- Exhibit K – Circulation Plan
- Exhibit L – Common Open Space Plan
- Exhibit M – Existing Trees Map
- Exhibit N – Tree Protection & Removal Map
- Exhibit O – Landscape Plates & Buffers
- Exhibit P – Street Tree Plan
- Exhibit Q – Schematic Sewer Plan
- Exhibit R – Schematic Water Plan
- Exhibit S – Preliminary Grading & Drainage Plan
- Exhibit T – Detention Areas Plan
- Exhibit U – Typical Road Cross Sections
- Exhibit V – Neighborhood Identification Monument Signage
- Exhibit W – Architectural Character
- Exhibit X – Declaration of Covenants, Conditions and Restrictions for Heathfield on Scott’s Creek

MASTER PLAN



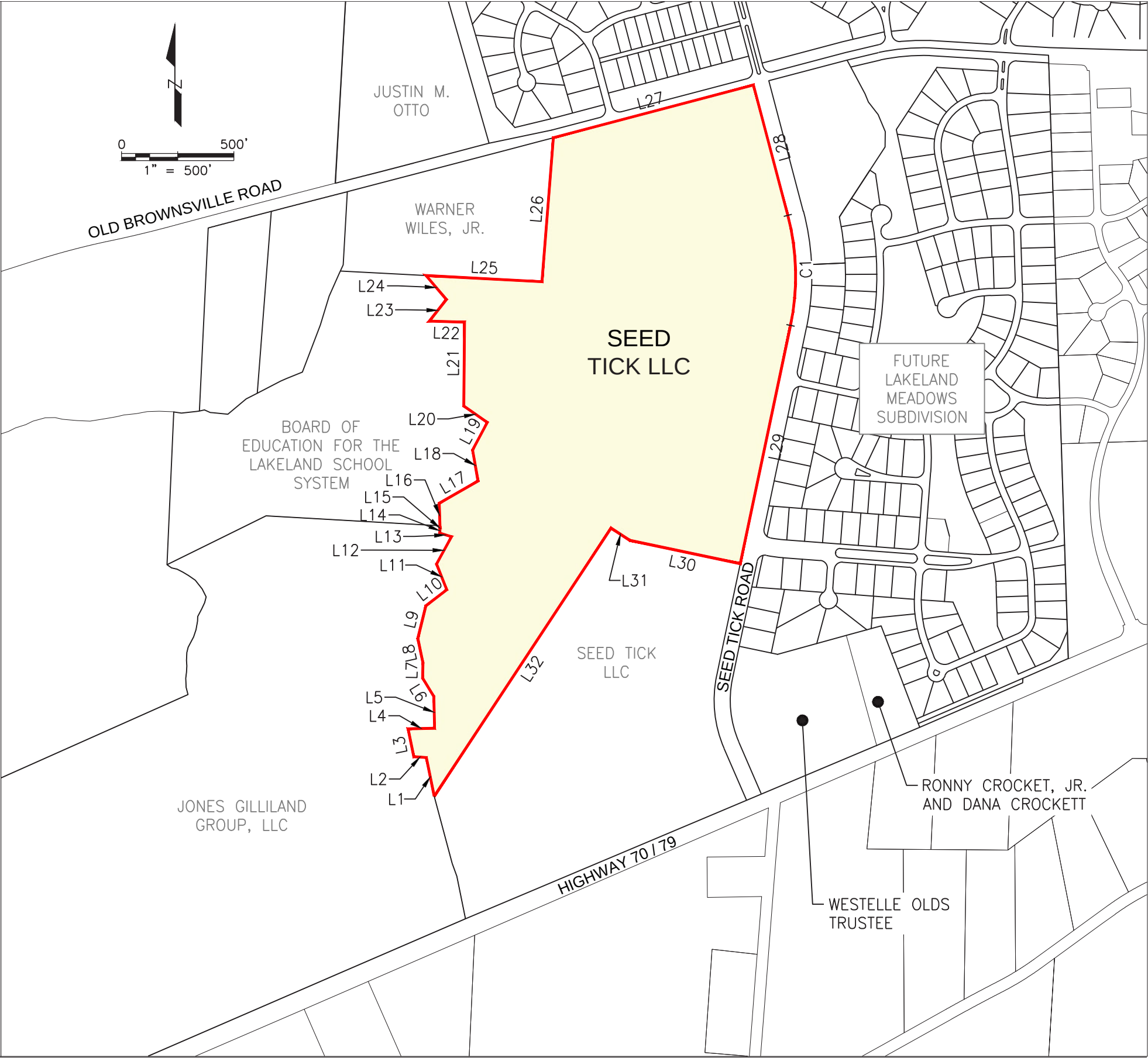




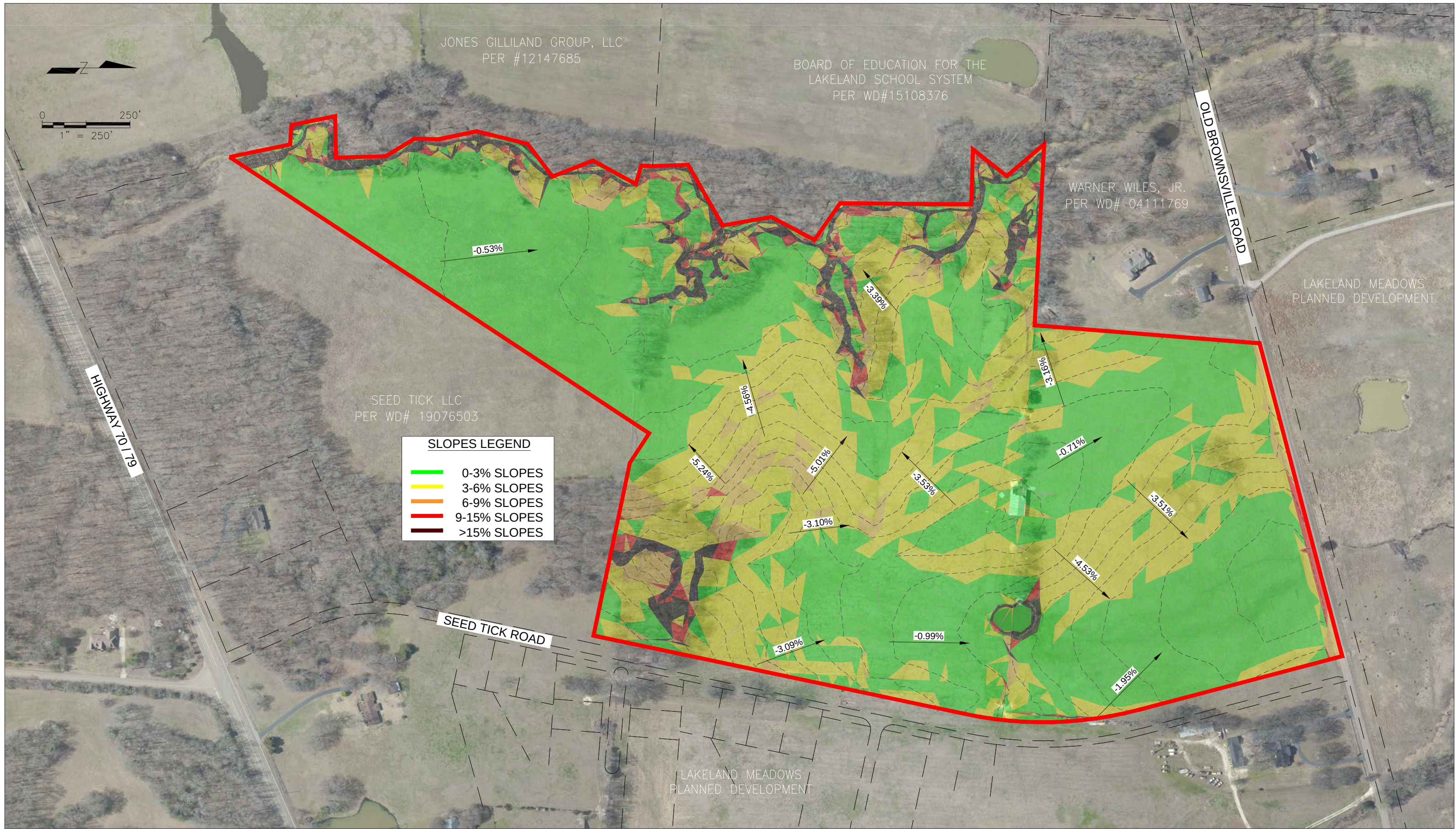
PARCEL LINE TABLE		
LINE #	LENGTH	DIRECTION
L1	175.72	N11° 37' 41"W
L2	55.58	N86° 04' 03"W
L3	127.03	N11° 32' 12"W
L4	117.96	N88° 53' 01"E
L5	141.13	N1° 26' 17"W
L6	96.80	N31° 11' 42"W
L7	66.67	N1° 24' 35"E
L8	111.93	N11° 41' 49"W
L9	149.98	N13° 51' 09"E
L10	116.50	N52° 44' 42"E
L11	123.89	N21° 22' 45"W
L12	138.54	N28° 40' 58"E
L13	54.79	N73° 07' 03"W
L14	20.07	S3° 37' 57"W
L15	3.94	S3° 37' 57"W
L16	109.37	N1° 55' 39"W
L17	198.45	N60° 20' 56"E
L18	140.50	N9° 52' 04"W
L19	139.00	N28° 01' 56"E
L20	127.90	S54° 55' 04"E

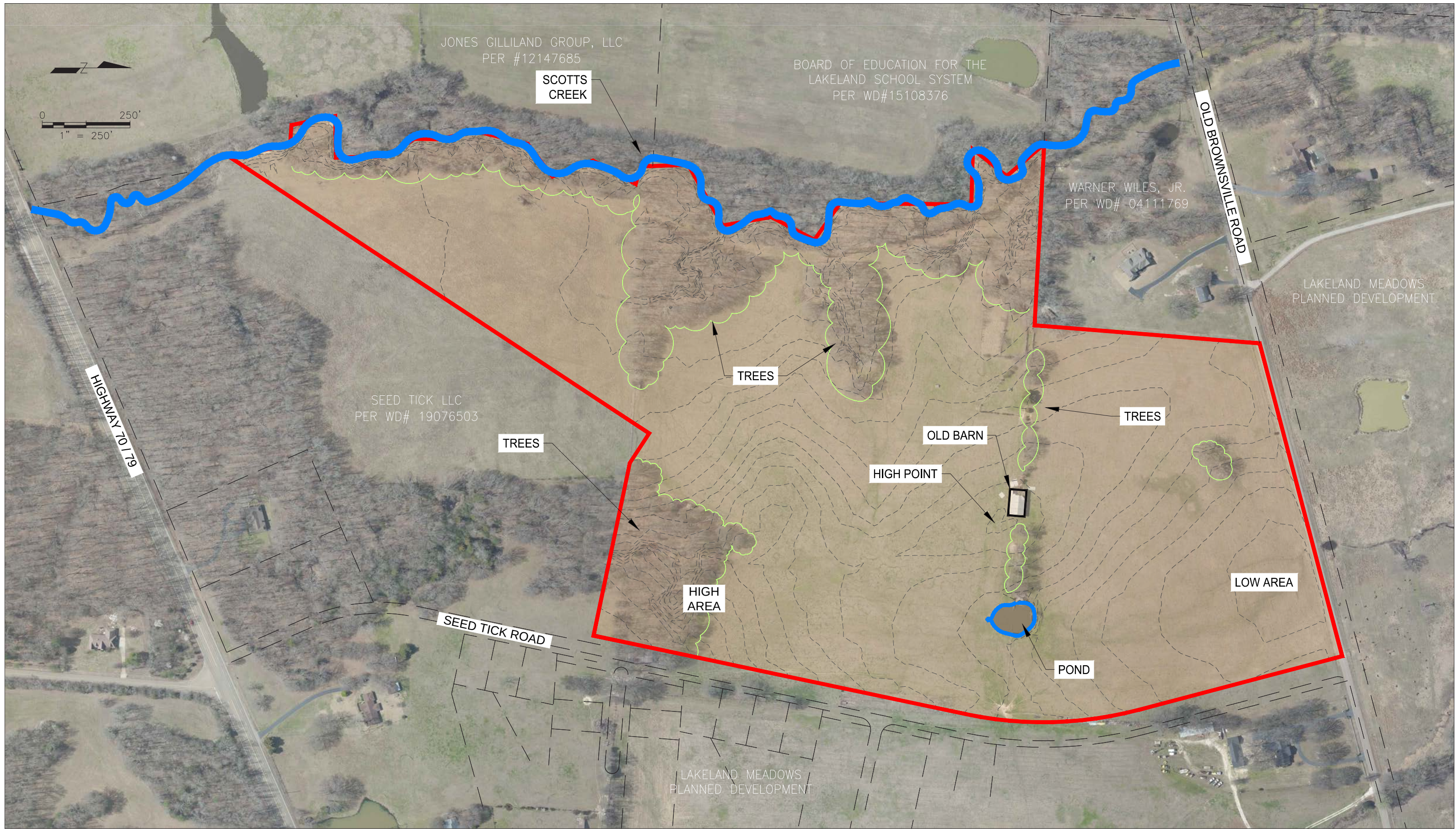
PARCEL LINE TABLE		
LINE #	LENGTH	DIRECTION
L21	373.10	N0° 33' 56"E
L22	156.83	N88° 16' 04"W
L23	122.50	N38° 15' 56"E
L24	139.73	N40° 20' 19"W
L25	516.08	S86° 57' 07"E
L26	643.14	N4° 34' 53"E
L27	920.70	N75° 14' 04"E
L28	600.06	S14° 45' 51"E
L29	1084.34	S11° 54' 43"W
L30	502.43	N78° 06' 16"W
L31	100.00	N56° 46' 24"W
L32	1429.90	S33° 22' 47"W

CURVE TABLE					
CURVE #	LENGTH	RADIUS	DELTA	CHORD DIRECTION	CHORD LENGTH
C1	494.37	1061.66	26.68	N1° 25' 26"W	489.92



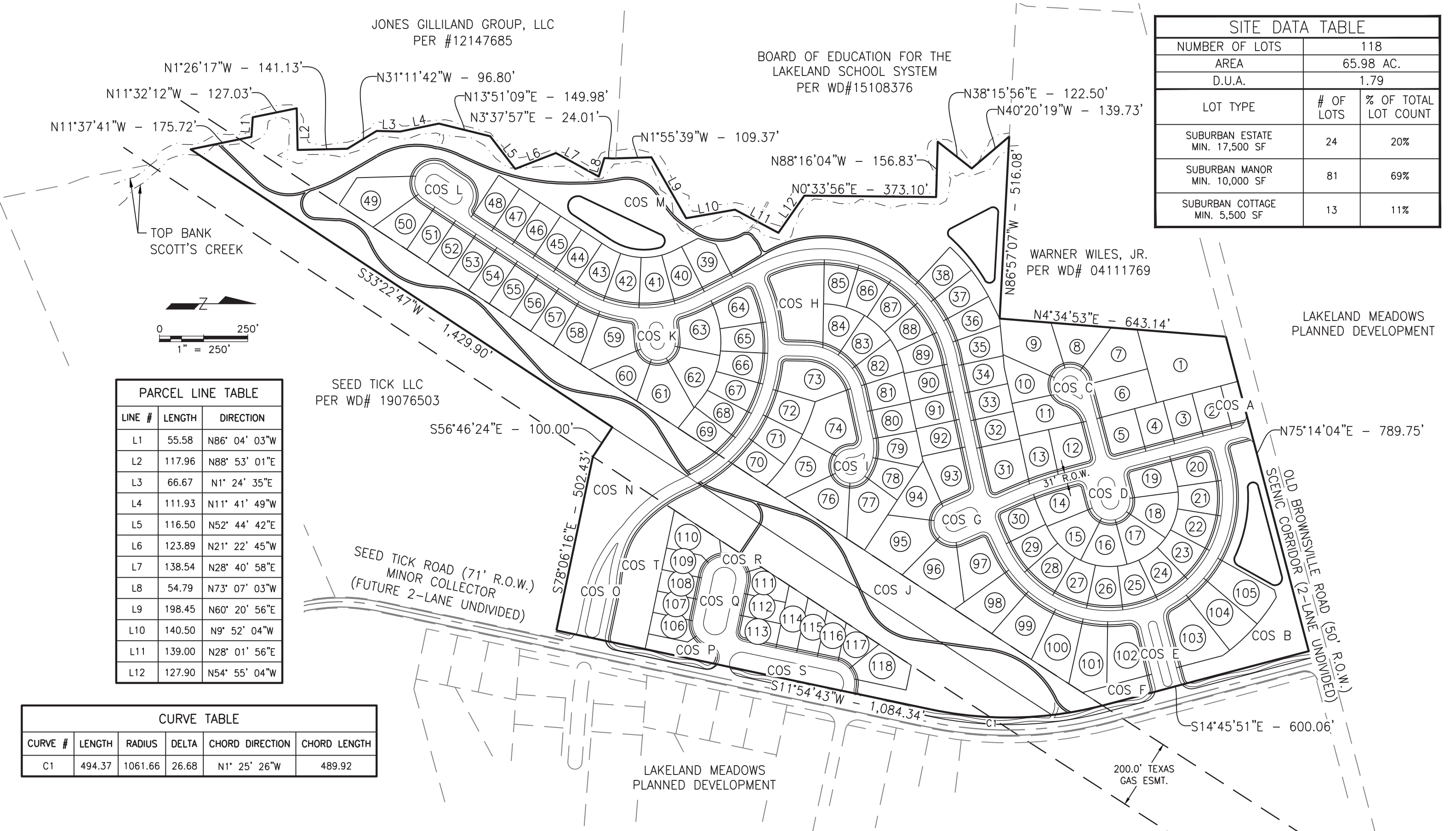








SOILS MAP - EXHIBIT G
HEATHFIELD ON SCOTT'S CREEK
LAKELAND, SHELBY COUNTY, TN



SITE DATA TABLE		
NUMBER OF LOTS	118	
AREA	65.98 AC.	
D.U.A.	1.79	
LOT TYPE	# OF LOTS	% OF TOTAL LOT COUNT
SUBURBAN ESTATE MIN. 17,500 SF	24	20%
SUBURBAN MANOR MIN. 10,000 SF	81	69%
SUBURBAN COTTAGE MIN. 5,500 SF	13	11%

PARCEL LINE TABLE		
LINE #	LENGTH	DIRECTION
L1	55.58	N86° 04' 03"W
L2	117.96	N88° 53' 01"E
L3	66.67	N1° 24' 35"E
L4	111.93	N11° 41' 49"W
L5	116.50	N52° 44' 42"E
L6	123.89	N21° 22' 45"W
L7	138.54	N28° 40' 58"E
L8	54.79	N73° 07' 03"W
L9	198.45	N60° 20' 56"E
L10	140.50	N9° 52' 04"W
L11	139.00	N28° 01' 56"E
L12	127.90	N54° 55' 04"W

CURVE TABLE					
CURVE #	LENGTH	RADIUS	DELTA	CHORD DIRECTION	CHORD LENGTH
C1	494.37	1061.66	26.68	N1° 25' 26"W	489.92



MASTER PLAN - LOT TABULATION CHART

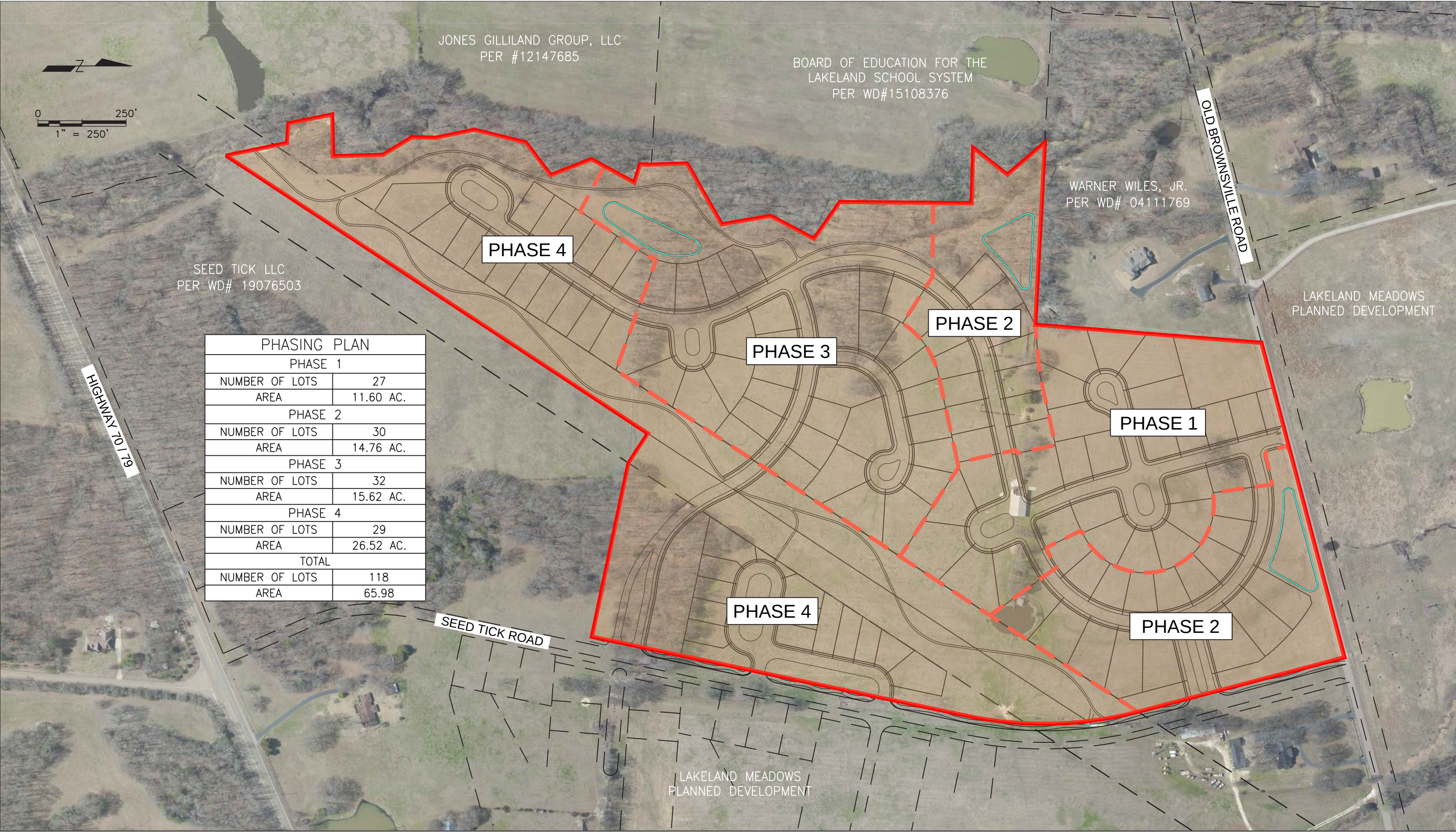
LOT NO.	SQFT.	ACERAGE
1	41,080	0.94
2	10,500	0.24
3	10,500	0.24
4	10,500	0.24
5	13,724	0.32
6	17,500	0.40
7	19,075	0.44
8	13,457	0.31
9	20,732	0.48
10	12,221	0.28
11	15,836	0.36
12	14,174	0.33
13	11,398	0.26
14	13,507	0.31
15	12,029	0.28
16	11,486	0.26
17	11,486	0.26
18	12,029	0.28
19	13,115	0.30
20	11,842	0.27
21	10,235	0.23
22	10,391	0.24
23	10,391	0.24
24	10,391	0.24
25	10,391	0.24
26	10,391	0.24
27	10,391	0.24
28	10,391	0.24
29	10,006	0.23
30	11,847	0.27

LOT NO.	SQFT.	ACERAGE
31	17,519	0.40
32	10,000	0.23
33	10,000	0.23
34	10,066	0.23
35	10,306	0.24
36	11,242	0.26
37	11,189	0.26
38	11,189	0.26
39	12,157	0.28
40	10,803	0.25
41	11,604	0.27
42	11,604	0.27
43	11,028	0.25
44	10,010	0.23
45	10,010	0.23
46	10,010	0.23
47	10,010	0.23
48	10,009	0.23
49	20,478	0.47
50	12,713	0.29
51	10,150	0.23
52	10,150	0.23
53	10,150	0.23
54	10,150	0.23
55	10,150	0.23
56	10,150	0.23
57	10,502	0.24
58	11,809	0.27
59	17,575	0.40
60	12,634	0.29

LOT NO.	SQFT.	ACERAGE
61	18,017	0.41
62	14,634	0.34
63	15,138	0.35
64	13,569	0.31
65	10,129	0.23
66	10,032	0.23
67	10,372	0.24
68	10,064	0.23
69	10,208	0.23
70	10,433	0.24
71	11,039	0.25
72	11,039	0.25
73	20,330	0.47
74	21,111	0.48
75	17,548	0.40
76	17,540	0.40
77	18,009	0.41
78	10,022	0.23
79	10,497	0.24
80	10,144	0.23
81	10,177	0.23
82	10,160	0.23
83	10,583	0.24
84	11,007	0.25
85	10,324	0.24
86	10,324	0.24
87	10,324	0.24
88	10,324	0.24
89	10,056	0.23
90	10,000	0.23

LOT NO.	SQFT.	ACERAGE
91	10,000	0.23
92	10,000	0.23
93	15,967	0.37
94	13,436	0.31
95	21,606	0.50
96	19,902	0.46
97	17,506	0.40
98	17,500	0.40
99	17,500	0.40
100	17,500	0.40
101	17,500	0.40
102	18,297	0.42
103	21,873	0.50
104	17,684	0.41
105	17,567	0.40
106	7,606	0.17
107	7,130	0.16
108	7,130	0.16
109	7,223	0.17
110	12,399	0.28
111	8,291	0.19
112	7,439	0.17
113	8,284	0.19
114	10,184	0.23
115	8,780	0.20
116	7,376	0.17
117	7,687	0.18
118	13,592	0.31

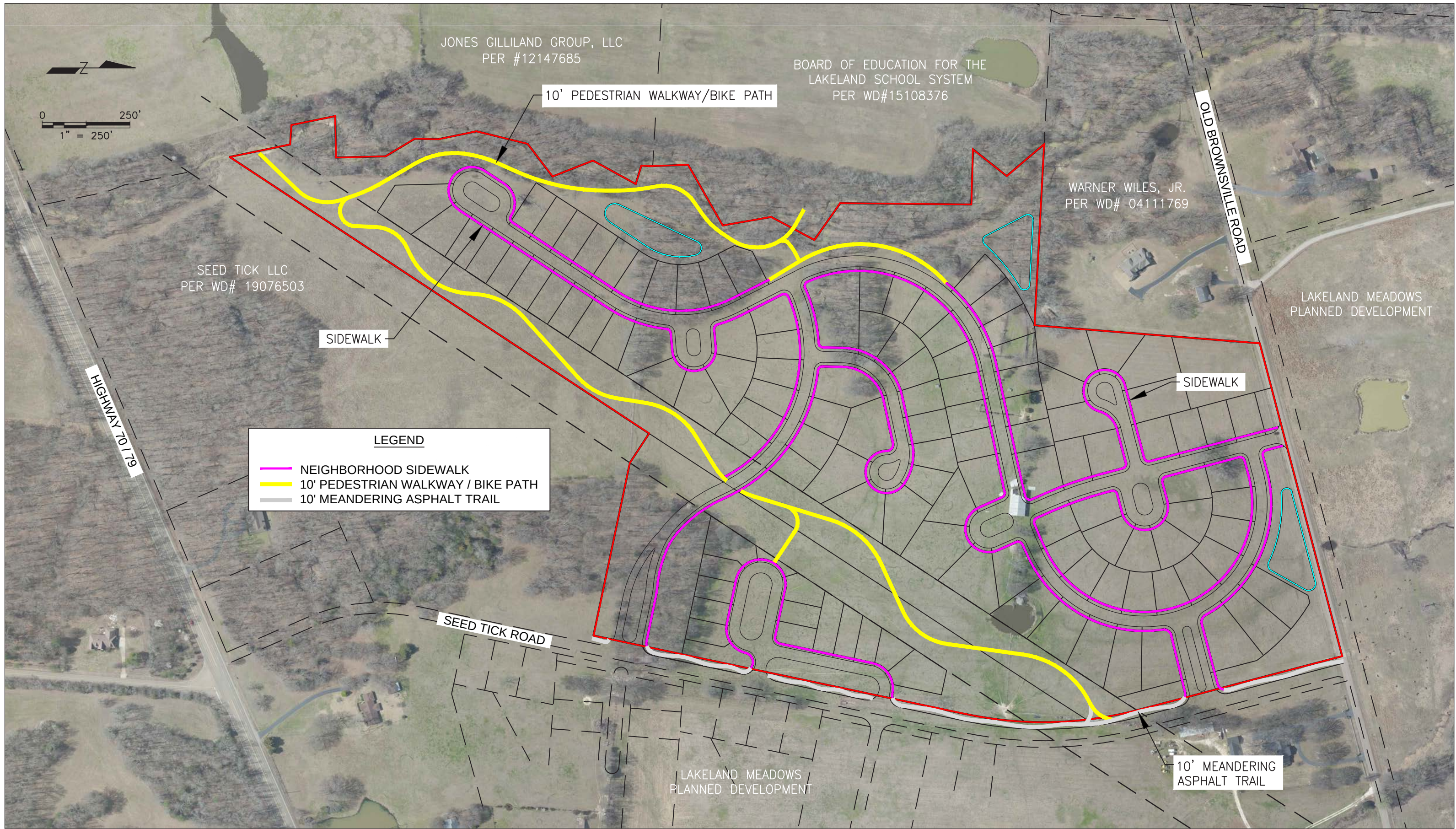


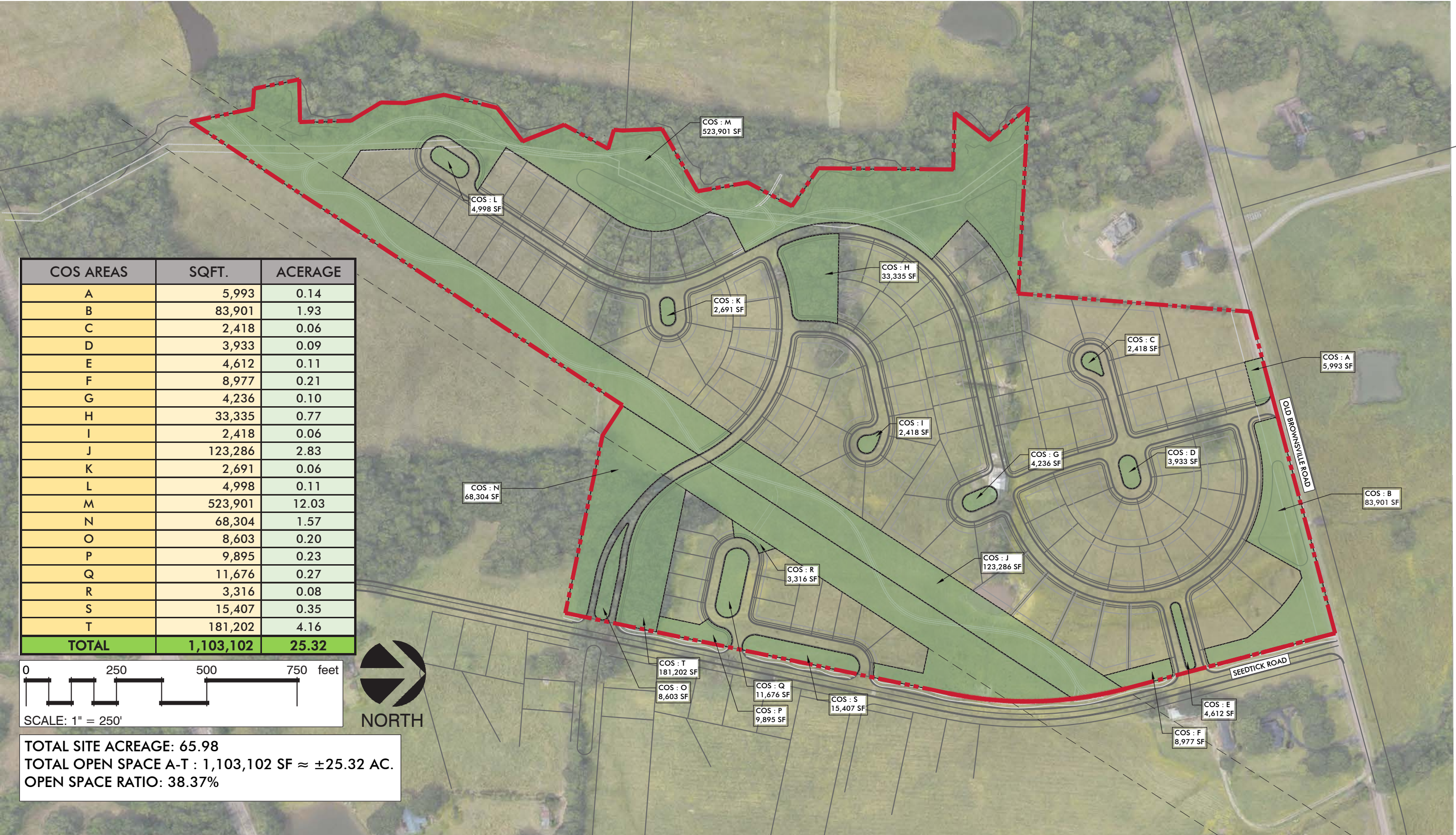


PHASING PLAN	
PHASE 1	
NUMBER OF LOTS	27
AREA	11.60 AC.
PHASE 2	
NUMBER OF LOTS	30
AREA	14.76 AC.
PHASE 3	
NUMBER OF LOTS	32
AREA	15.62 AC.
PHASE 4	
NUMBER OF LOTS	29
AREA	26.52 AC.
TOTAL	
NUMBER OF LOTS	118
AREA	65.98



PHASING PLAN - EXHIBIT J
HEATHFIELD ON SCOTT'S CREEK
LAKELAND, SHELBY COUNTY, TN

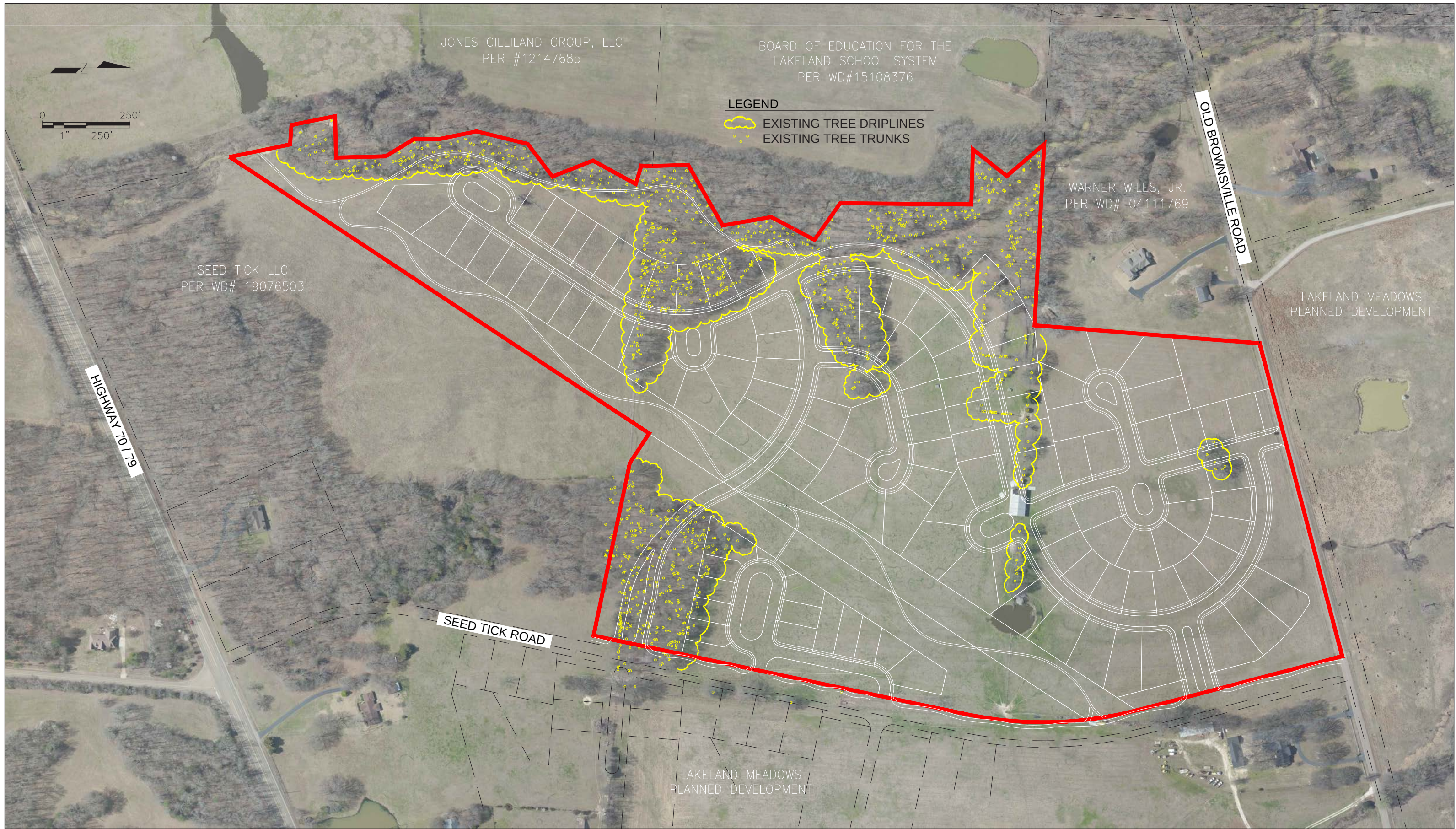




COMMON OPEN SPACE PLAN - EXHIBIT L

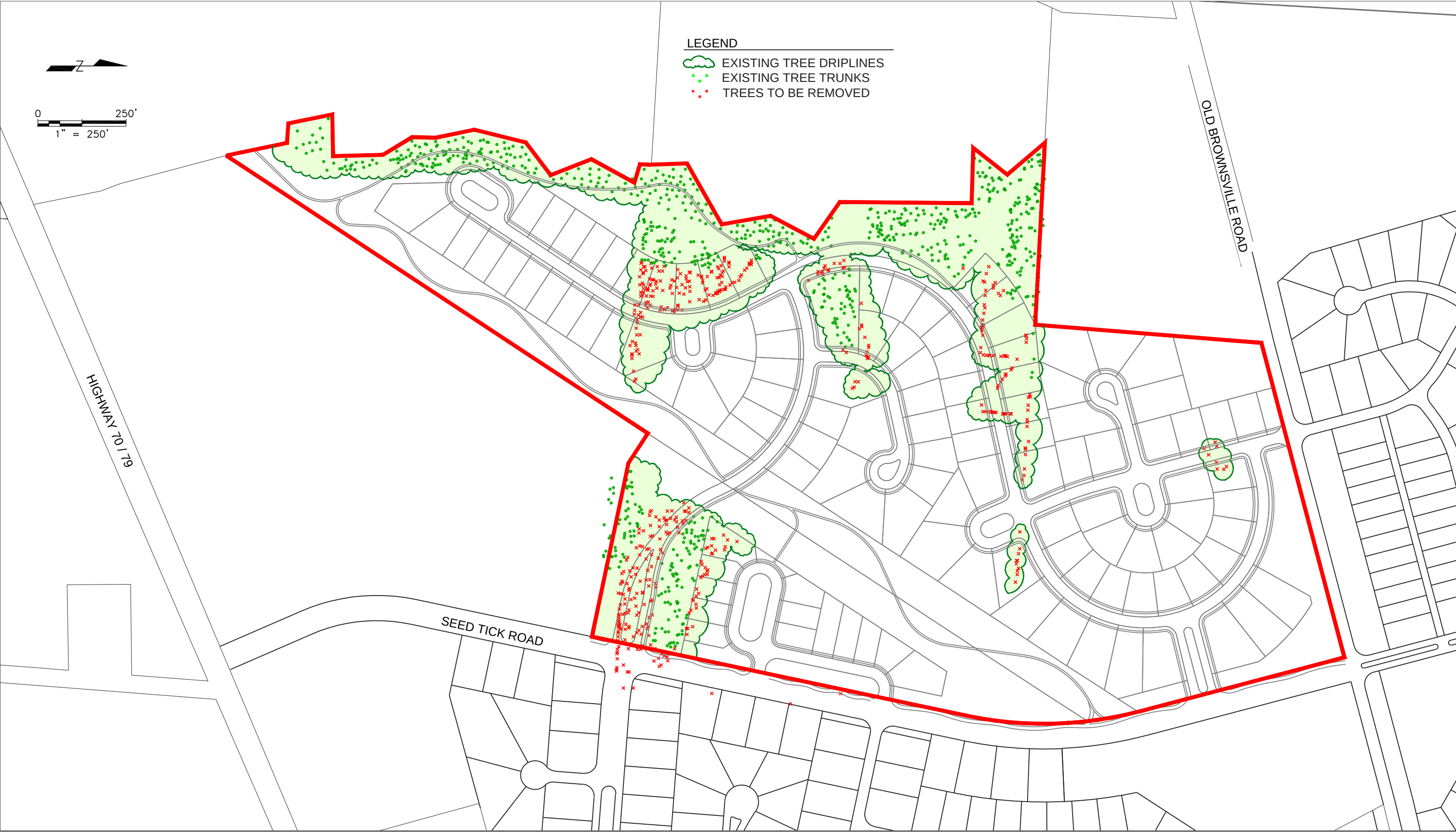
HEATHFIELD ON SCOTT'S CREEK

LAKELAND, SHELBY COUNTY, TN



EXISTING TREES

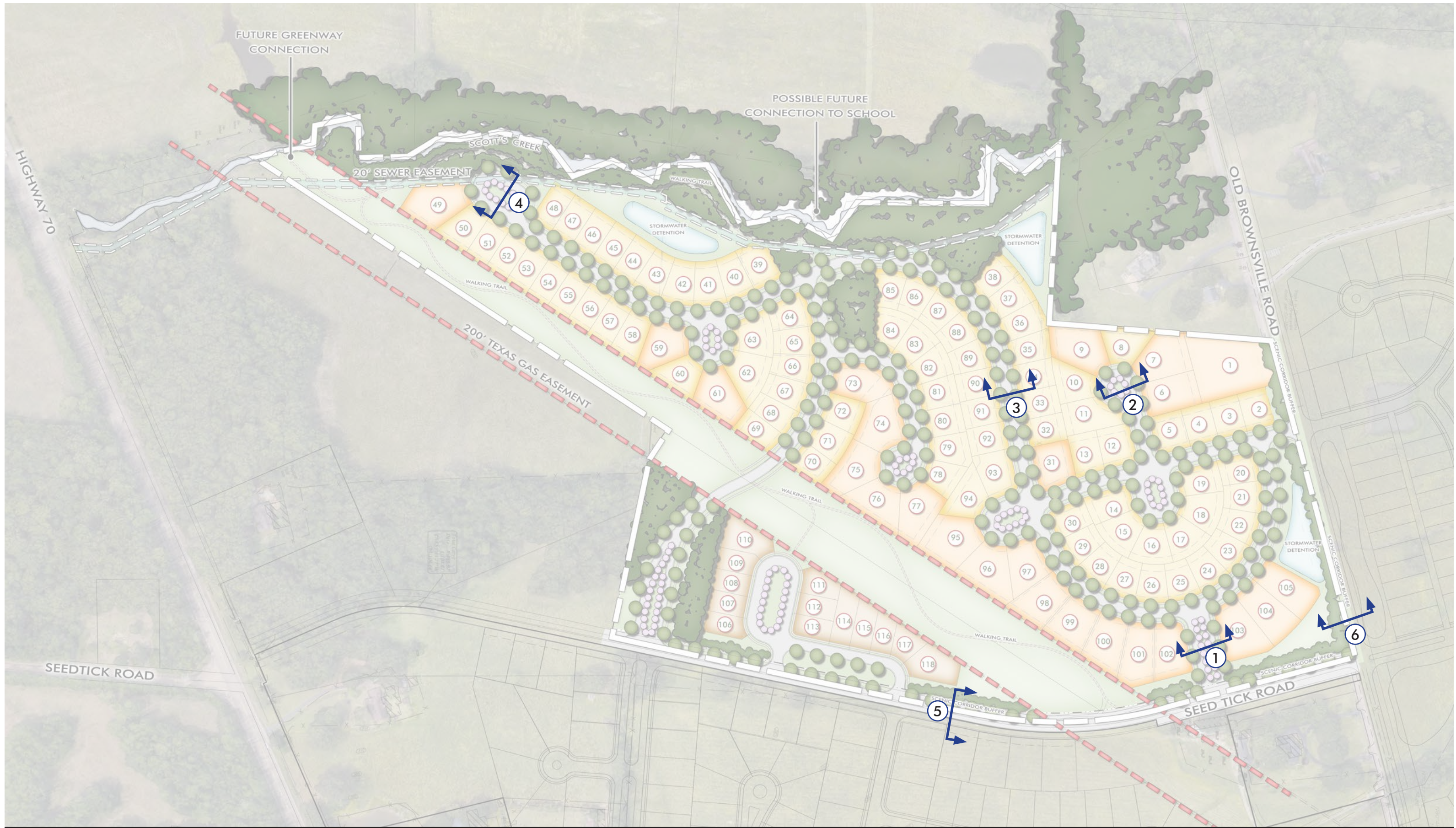
SIZE (in)	ASH	BIRCH	BRADPEAR	CEDAR	CHERRY	CHESTNUT	COTTONWOOD	CRAPEMYRTLE	DEAD	ELM	GUM	HACKBERRY	HICKORY	HOPHORN	LOCUST	MAPLE	OAK	PERSIMMON	SYCAMORE	TULIPPOPLAR	WALNUT	TOTAL
6	2			25	1					98	15	2	46		1	7	88		1			286
8	8	2		15	1				3	43	7		32		4	7	66	1	1			190
10	7	6	1	13						24	7		10		1	10	73	1				153
12	4	16		6		1	1	1	9	35	13		3		2	4	77		1		1	174
14	3	4		1						4	9	1	1	1		2	28		1		1	56
16	1	2					1	1	1	7	9		9		1	1	42		2			77
18	2	3							1	15	5		7		1	2	38				1	75
20		2		2					1	1	2						30					38
22		2									4						9					15
24	5			1					2	17	10	1	11		1	1	46			1		96
26				1						5			1			0	20					27
28											3		2			1	18					24
30	2								2	9	2		1			1	29					46
32		1															6		1			8
34										1	1						6					8
36	1									1	1				1		14		1			19
38											1						2					3
40																	5					5
42		1															9					10
44																	2					2
46																	1					1
48																	2					2
50																	1					1
52																	1					1
54																	1					1
56																	1					1
58																	0					
60																	1					1
62																	2					2
64																						
66																						
68																						
70																	1					1
	ASH	BIRCH	BRADPEAR	CEDAR	CHERRY	CHESTNUT	COTTONWOOD	CRAPEMYRTLE	DEAD	ELM	GUM	HACKBERRY	HICKORY	HOPHORN	LOCUST	MAPLE	OAK	PERSIMMON	SYCAMORE	TULIPPOPLAR	WALNUT	TOTAL
	35	39	1	64	2	1	2	2	19	260	89	4	123	1	12	36	619	2	8	1	3	1323

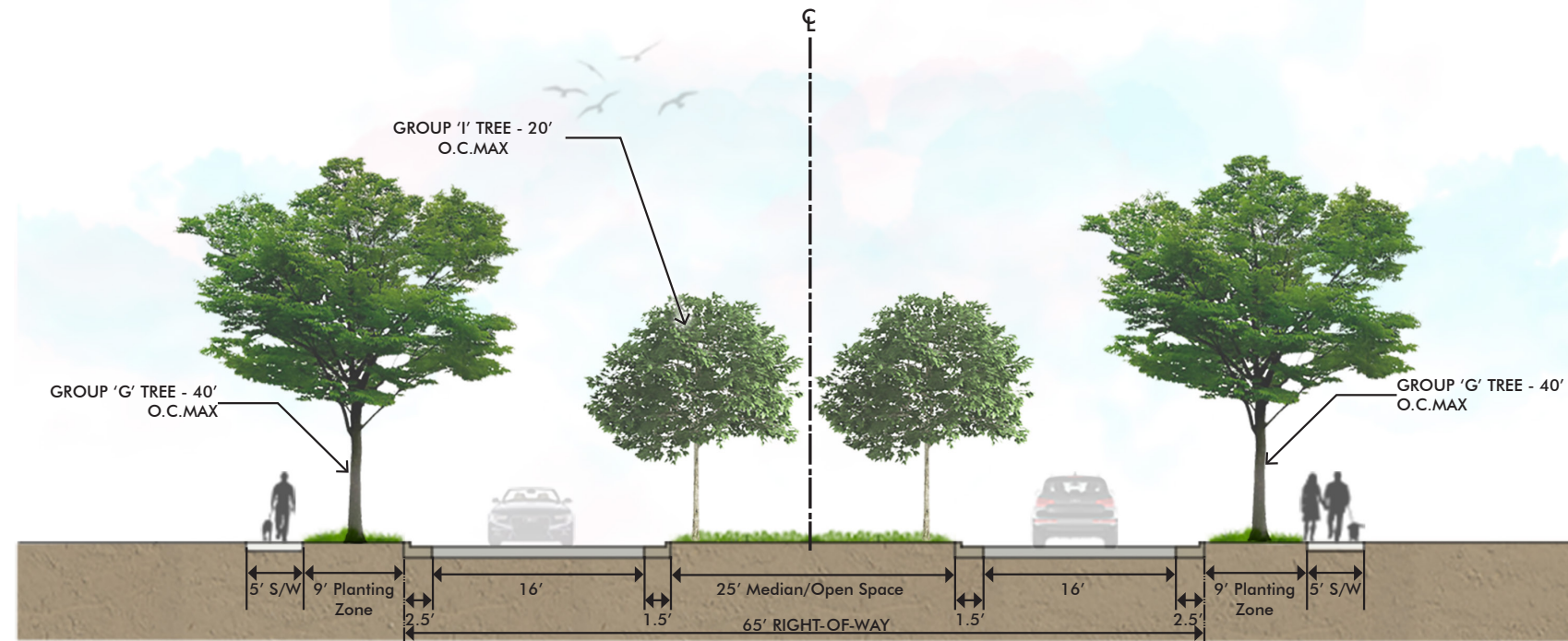


TREE DENSITY CALCULATION

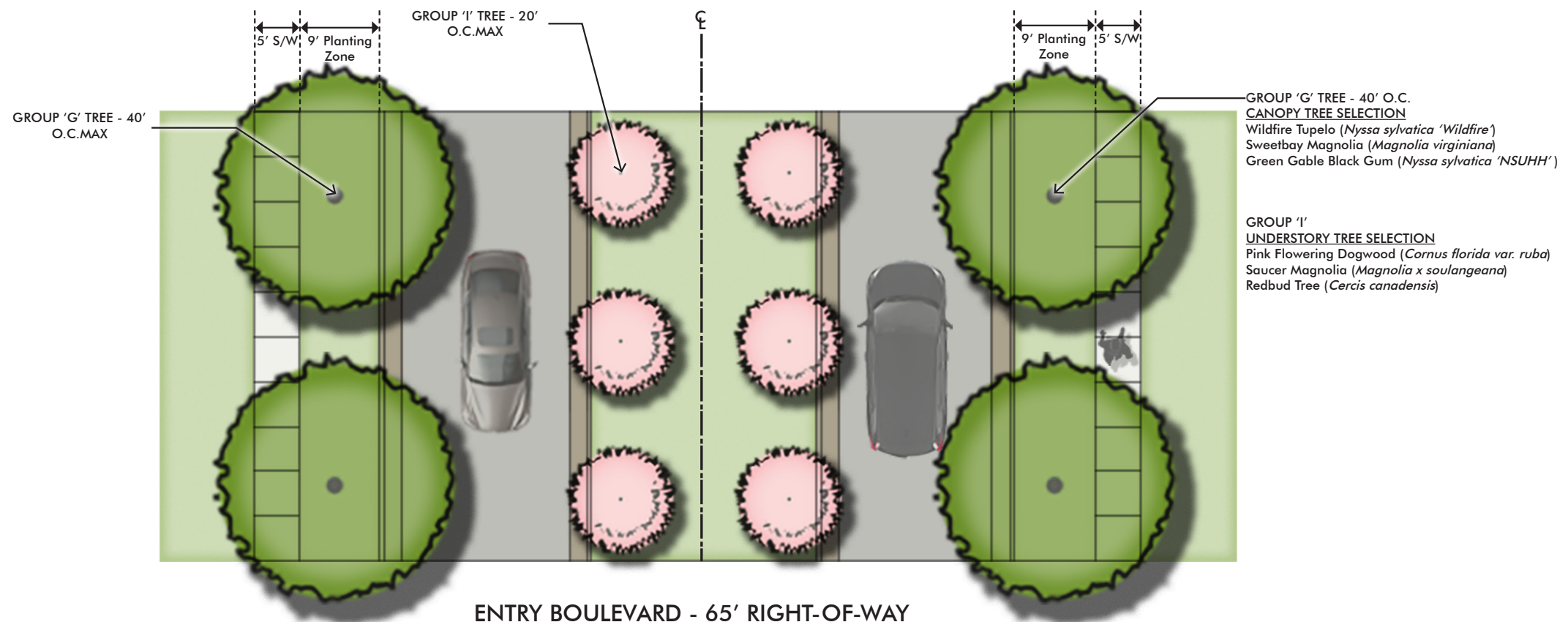
SITE ACREAGE	65.98
REQUIRED DENSITY UNITS / ACRE	20
REQUIRED SITE DENSITY FACTOR (SDF)	1,319.6

CALCULATION OF EXISTING DENSITY FACTOR (EDF)										
	DIA. (in)	TREES TO BE PRESERVED	DENSITY UNITS	EDF			DIA. (in)	TREES TO BE PRESERVED	DENSITY UNITS	EDF
HARDWOOD	5-7	175	2.3	402.5	SOFTWOOD	5-7	2	1.0	2.0	
	8-9	119	2.5	297.5		8-9	6	1.9	11.4	
	10	80	2.6	208.0		10	2	2.0	4.0	
	12	106	2.8	296.8		12	2	2.1	4.2	
	14	23	3.1	71.3						
	16	59	3.4	200.6						
	18	57	3.8	216.6						
	20	21	4.2	88.2						
	22	9	4.6	41.4						
	24	62	5.1	316.2						
	26	22	5.7	125.4						
	28	17	6.3	107.1						
	30	31	6.9	213.9						
	32	3	8.6	25.8						
	34	6	9.3	55.8						
	36	8	10.1	80.8						
	38	2	10.9	21.8						
	40	3	11.7	35.1						
	42	4	12.6	50.4						
	44	2	14.5	29.0						
	46	1	15.6	15.6						
	52	1	20.0	20.0						
	60	1	20.0	20.0						
	TOTAL EXISTING DENSITY FACTOR (EDF)									

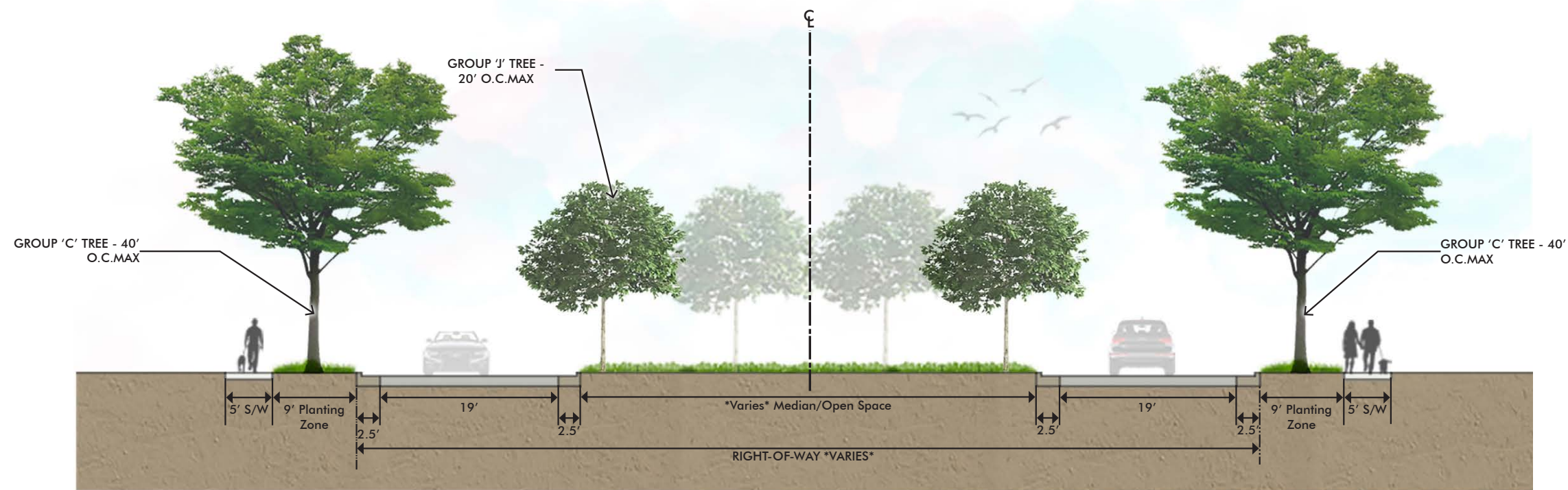




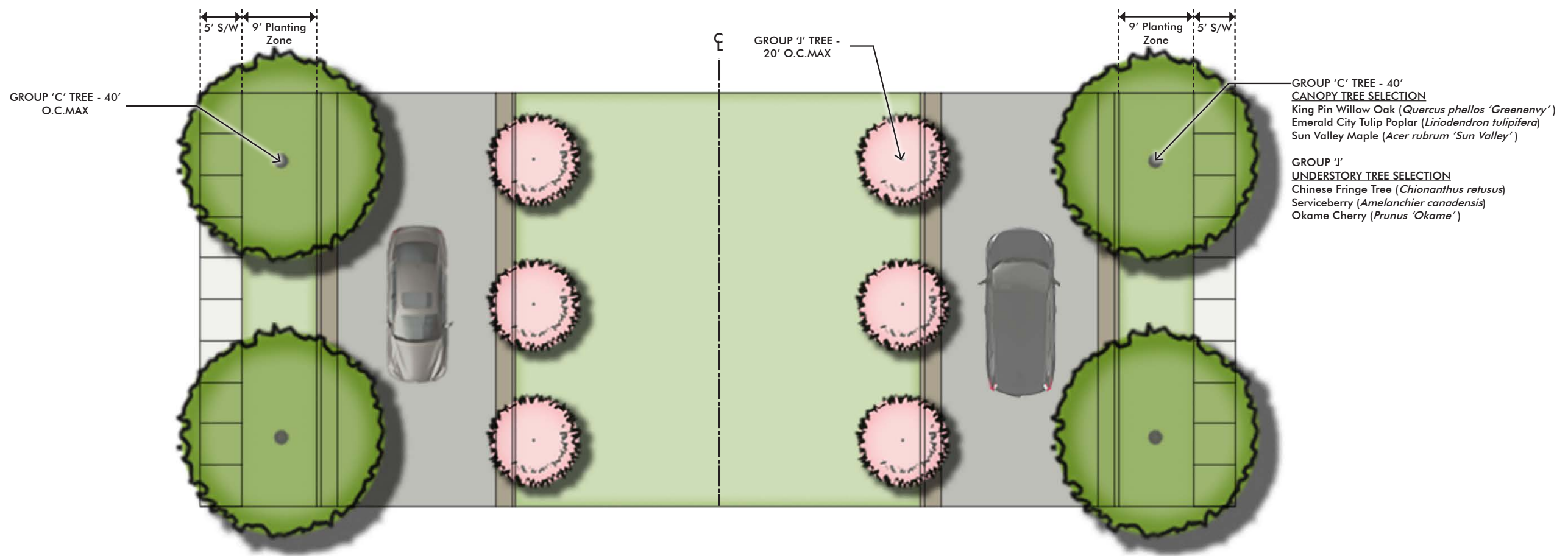
ENTRY BOULEVARD - 65' RIGHT-OF-WAY



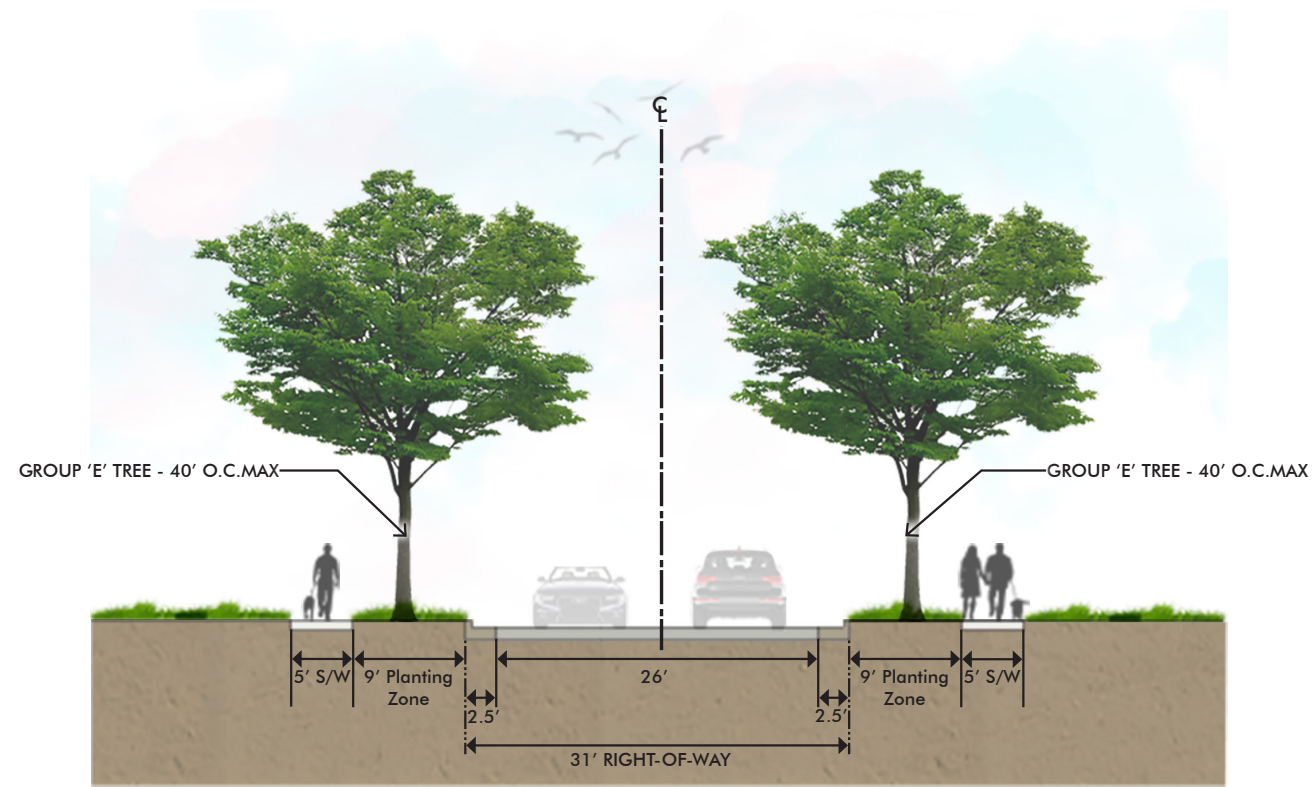
ENTRY BOULEVARD - 65' RIGHT-OF-WAY



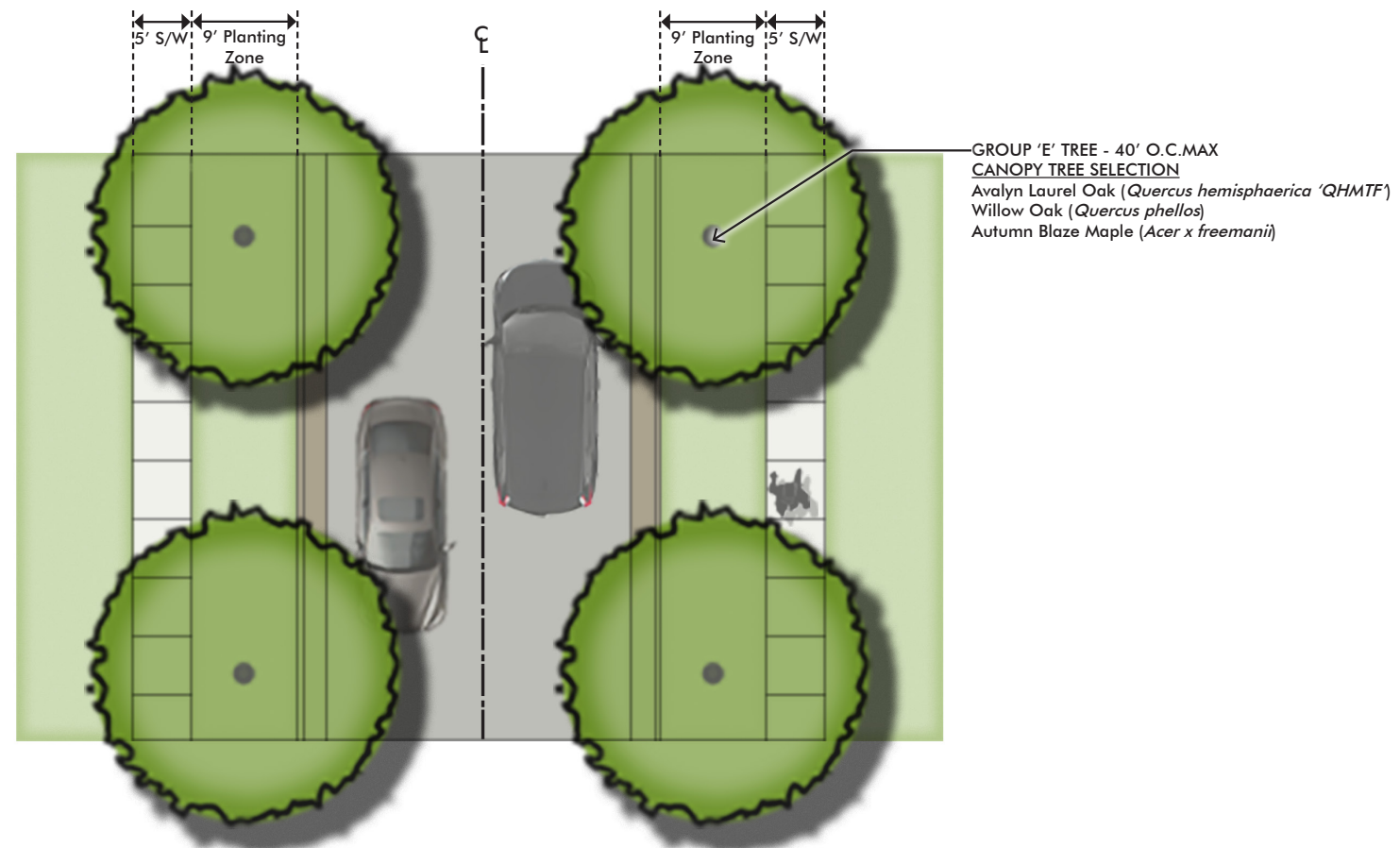
CUL-DE-SAC



CUL-DE-SAC

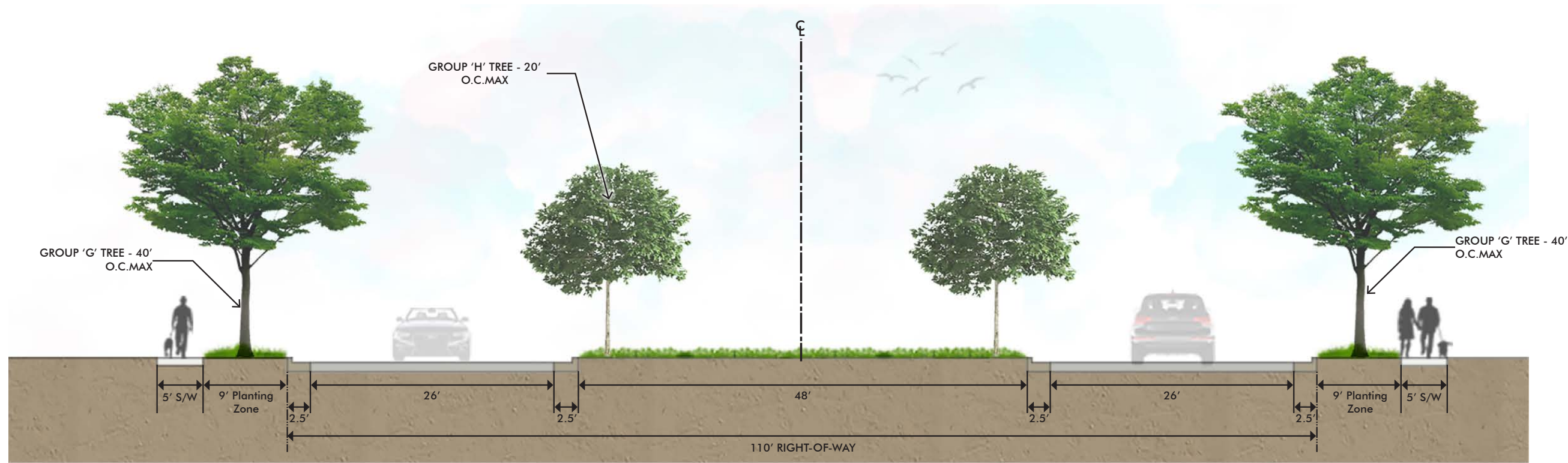


LOCAL STREET 31' RIGHT-OF-WAY

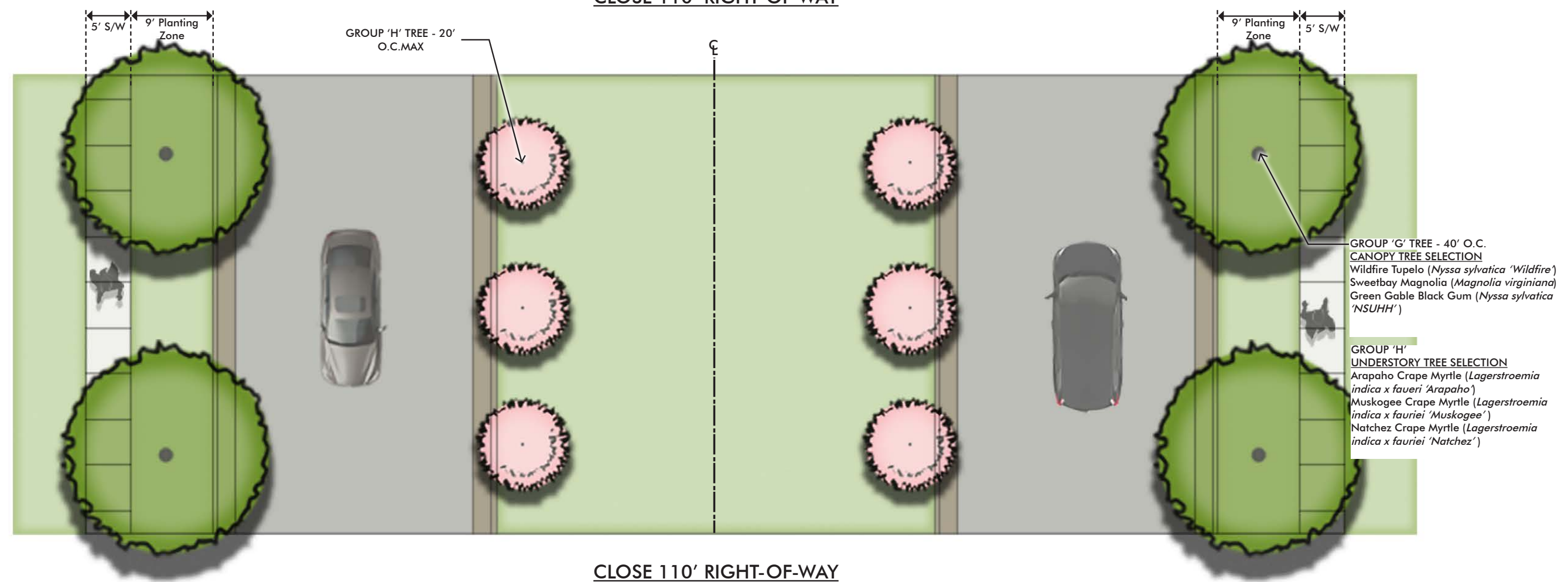


LOCAL STREET 31' RIGHT-OF-WAY

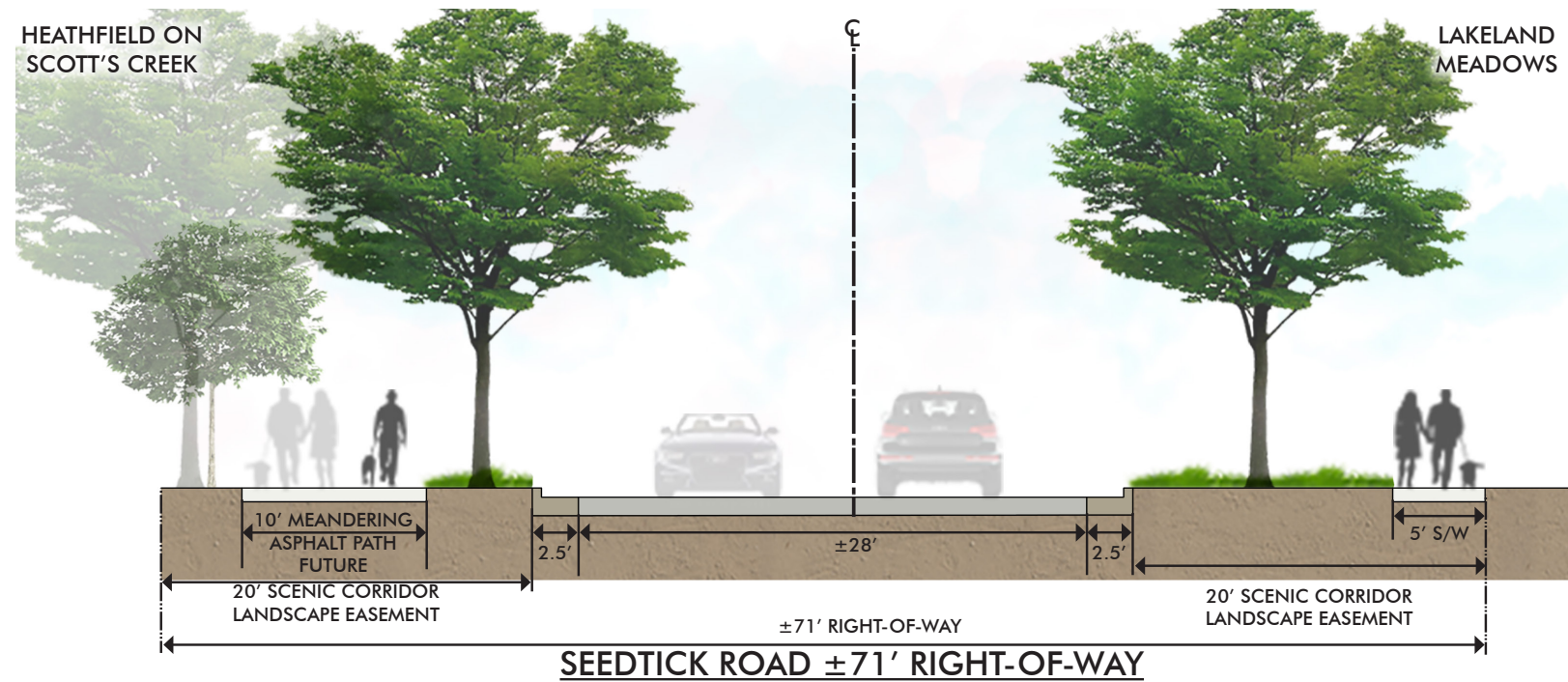
GROUP 'E' TREE - 40' O.C. MAX
CANOPY TREE SELECTION
Avalyn Laurel Oak (*Quercus hemisphaerica* 'QHMTF')
Willow Oak (*Quercus phellos*)
Autumn Blaze Maple (*Acer x freemanii*)



CLOSE 110' RIGHT-OF-WAY



CLOSE 110' RIGHT-OF-WAY



SCENIC CORRIDOR EASEMENT

SEED TICK ROAD = +/- 1,527 LF (EXCLUDING ENTRANCES AND TEXAS GAS EASEMENT)

SCENIC CORRIDOR BUFFER REQUIREMENTS PER 100 LF:

- MINIMUM 10 LARGE OR MEDIUM CANOPY/OVERSTORY TREES
- MINIMUM 2 UNDERSTORY TREES
- MINIMUM 2 EVERGREEN TREES

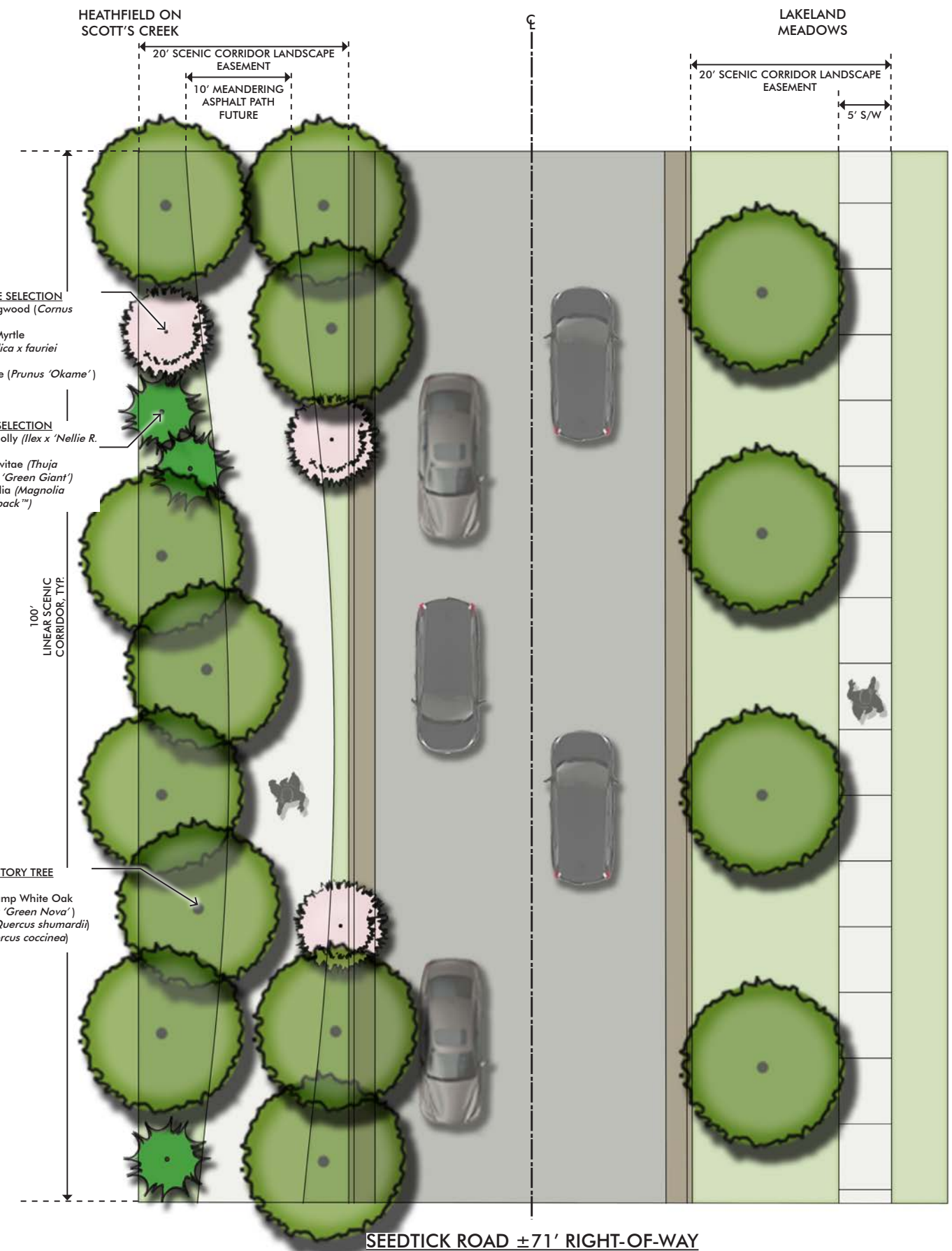
SEED TICK ROAD = +/- 1,527 LF REQUIREMENTS:

- MINIMUM 153 LARGE OR MEDIUM CANOPY/OVERSTORY TREES
- MINIMUM 31 UNDERSTORY TREES
- MINIMUM 31 EVERGREEN TREES

UNDERSTORY TREE SELECTION
 Pink Flowering Dogwood (*Cornus florida* var. *rubra*)
 Muskogee Crape Myrtle (*Lagerstroemia indica* x *fauriei* 'Muskogee')
 Okame Cherry Tree (*Prunus* 'Okame')

EVERGREEN TREE SELECTION
 Nellie R. Stevens Holly (*Ilex* x 'Nellie R. Stevens')
 Green Giant Arborvitae (*Thuja standishii* x *plicata* 'Green Giant')
 Greenback Magnolia (*Magnolia grandiflora* 'Greenback')

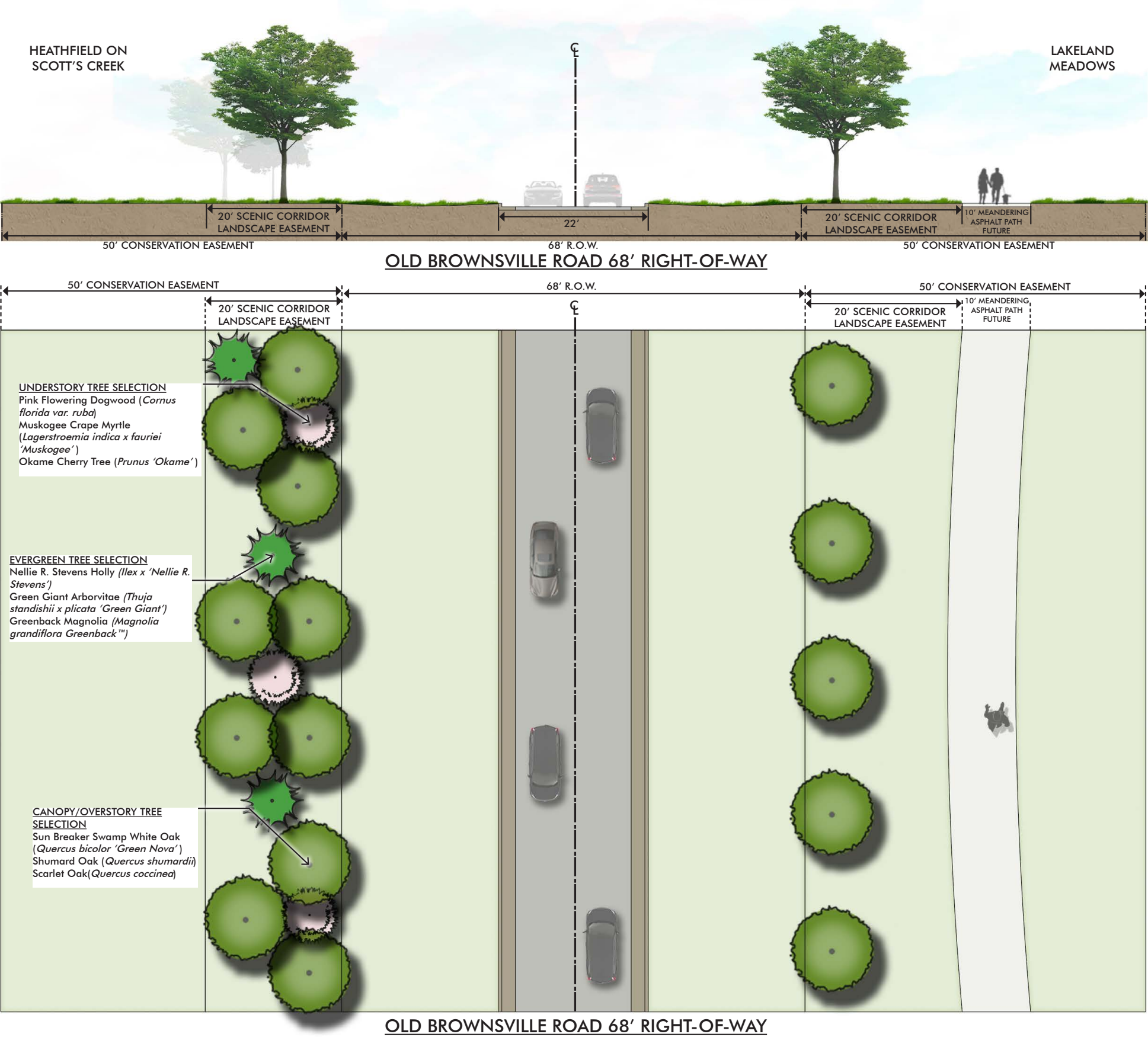
CANOPY/OVERSTORY TREE SELECTION
 Sun Breaker Swamp White Oak (*Quercus bicolor* 'Green Nova')
 Shumard Oak (*Quercus shumardii*)
 Scarlet Oak (*Quercus coccinea*)



SCENIC CORRIDOR EASEMENT
OLD BROWNSVILLE ROAD = +/- 820.70 LF (EXCLUDING THE ENTRANCE)

- SCENIC CORRIDOR BUFFER REQUIREMENTS PER 100 LF:
- MINIMUM 10 LARGE OR MEDIUM CANOPY/OVERSTORY TREES
 - MINIMUM 2 UNDERSTORY TREES
 - MINIMUM 2 EVERGREEN TREES

- OLD BROWNSVILLE ROAD = +/- 820.70 LF REQUIREMENTS:
- MINIMUM 82 LARGE OR MEDIUM CANOPY/OVERSTORY TREES
 - MINIMUM 16 UNDERSTORY TREES
 - MINIMUM 16 EVERGREEN TREES

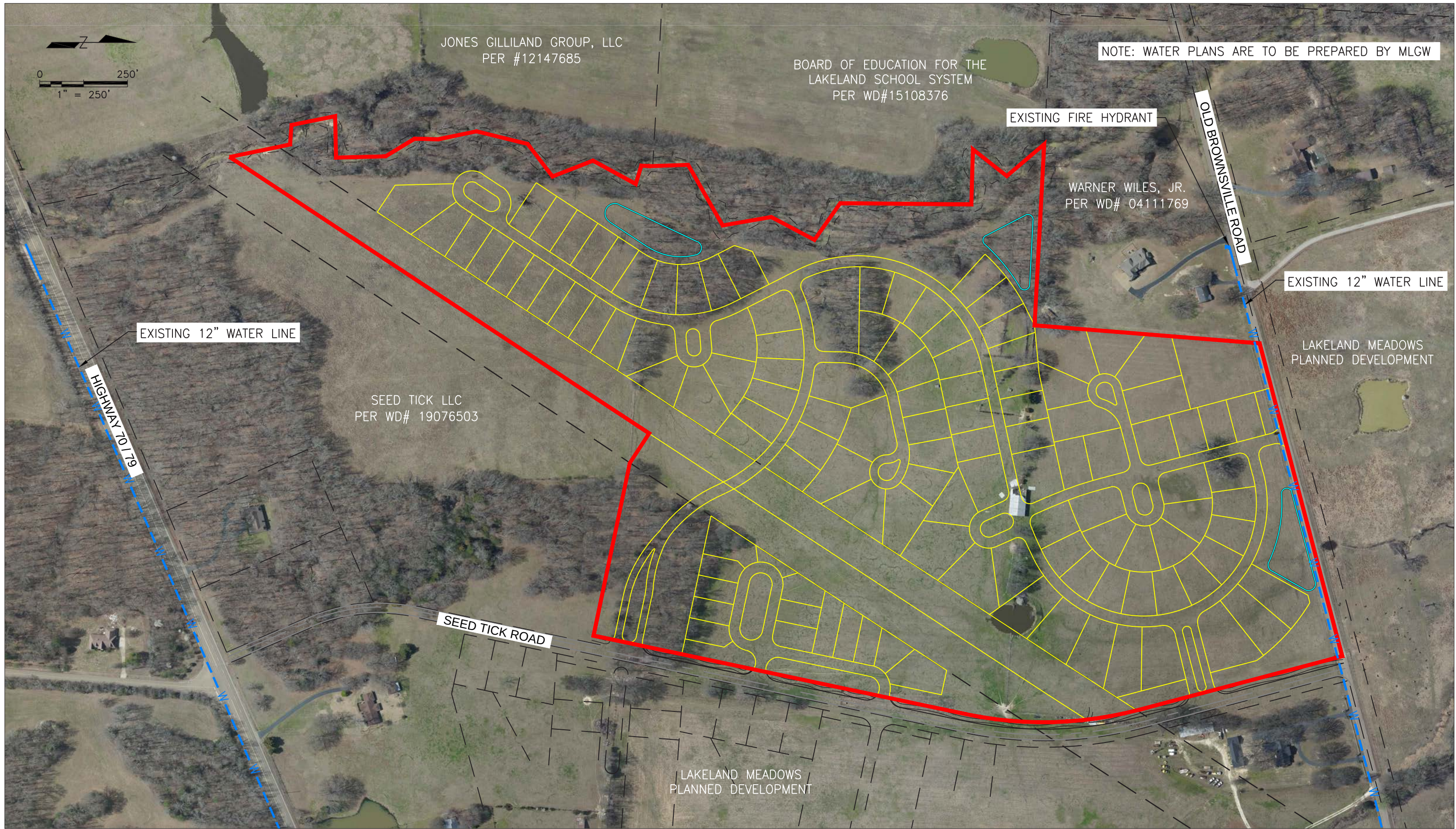


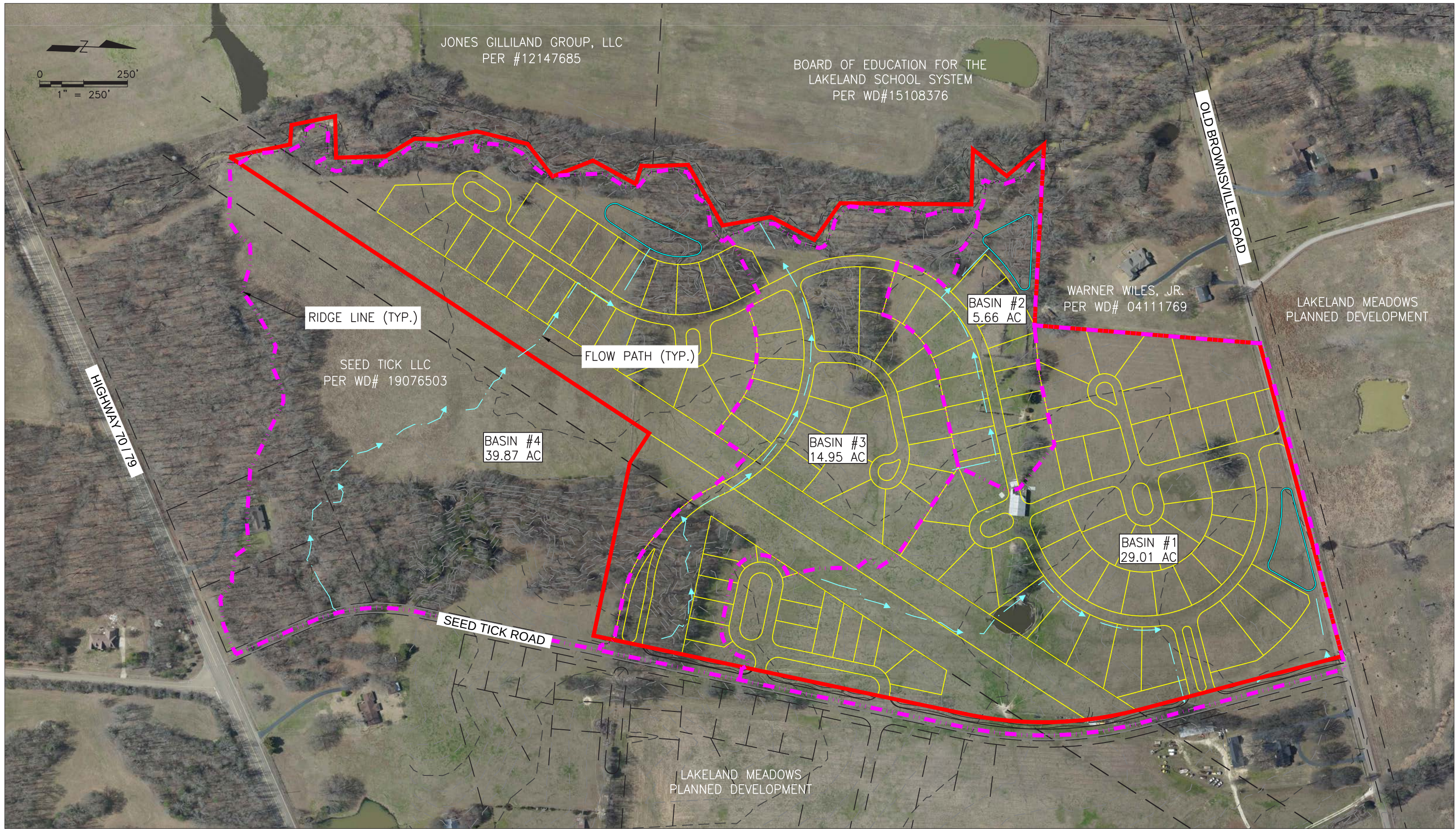
STREET TREE LEGEND

- GROUP A:**
 - Bur Oak(*Quercus macrocarpa*)
 - Overcup Oak (*Quercus lyrata*)
 - Beacon Swamp White Oak (*Quercus bicolor* Beacon)
- GROUP B:**
 - Sun Breaker Swamp White Oak (*Quercus bicolor* 'Green Nova')
 - Shumard Oak (*Quercus shumardii*)
 - Scarlet Oak(*Quercus coccinea*)
- GROUP C:**
 - King Pin Willow Oak (*Quercus phellos* 'Greenenvy')
 - Emerald City Tulip Poplar (*Liriodendron tulipifera*)
 - Sun Valley Maple (*Acer rubrum* 'Sun Valley')
- GROUP D:**
 - Green Vase Zelkova (*Zelkova serrata* 'Green Vase')
 - Valley Forge Elm (*Ulmus americana* 'Valley Forge')
 - Princeton Elm (*Ulmus americana* 'Princeton')
- GROUP E:**
 - Avalyn Laurel Oak (*Quercus hemisphaerica* 'QHMTF')
 - Willow Oak (*Quercus phellos*)
 - Autumn Blaze Maple (*Acer x freemanii*)
- GROUP F:**
 - Allee Elm (*Ulmus parvifolia* 'Emer II')
 - October Glory Maple (*Acer rubrum* 'October Glory')
 - Autumn Gold Gingko (*Ginkgo biloba* 'Autumn Gold')
- GROUP G:**
 - Wildfire Tupelo (*Nyssa sylvatica* 'Wildfire')
 - Sweetbay Magnolia (*Magnolia virginiana*)
 - Green Gable Black Gum (*Nyssa sylvatica* 'NSUHH')
- GROUP H:**
 - Arapaho Crape Myrtle (*Lagerstroemia indica* x *faueri* 'Arapaho')
 - Muskogee Crape Myrtle (*Lagerstroemia indica* x *fauriei* 'Muskogee')
 - Natchez Crape Myrtle (*Lagerstroemia indica* x *fauriei* 'Natchez')
- GROUP I:**
 - Pink Flowering Dogwood (*Cornus florida* var. *ruba*)
 - Saucer Magnolia (*Magnolia x soulangeana*)
 - Redbud Tree (*Cercis canadensis*)
- GROUP J:**
 - Chinese Fringe Tree (*Chionanthus retusus*)
 - Serviceberry (*Amelanchier canadensis*)
 - Okame Cherry (*Prunus* 'Okame')

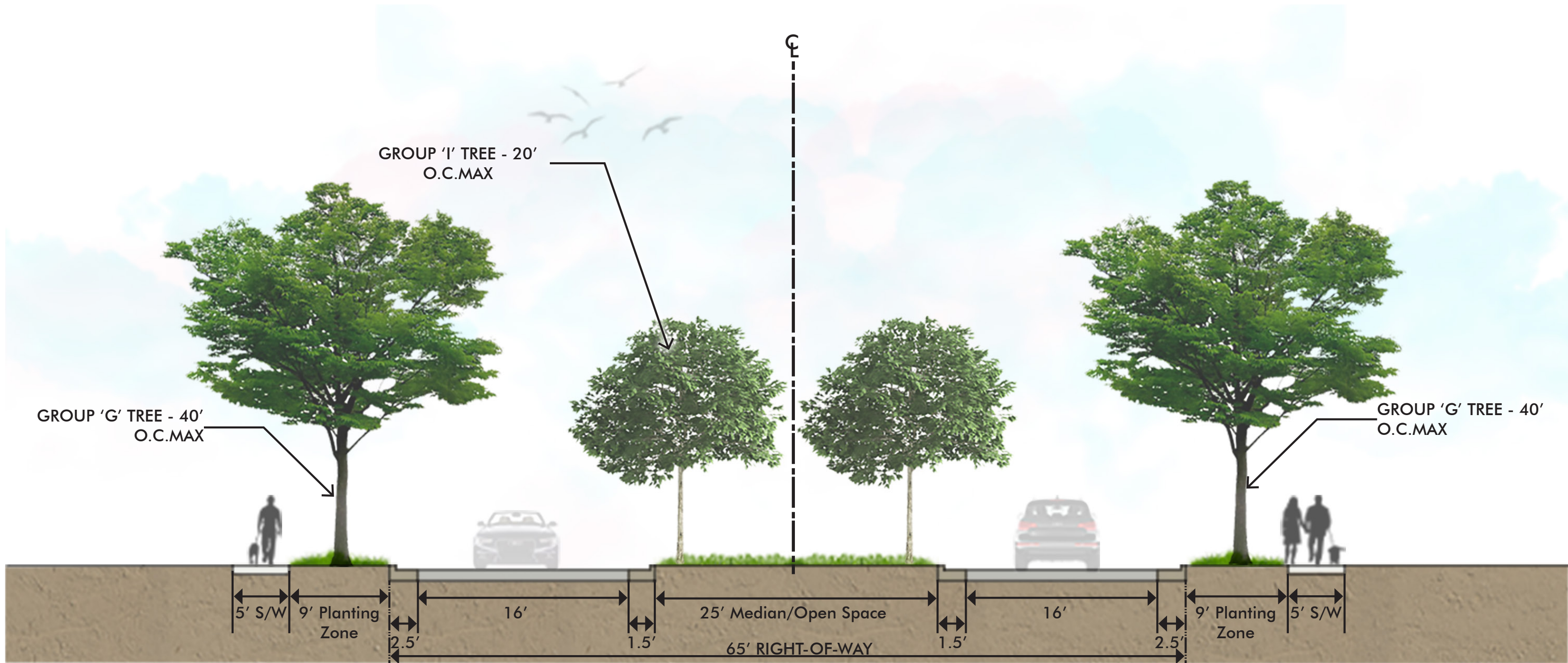




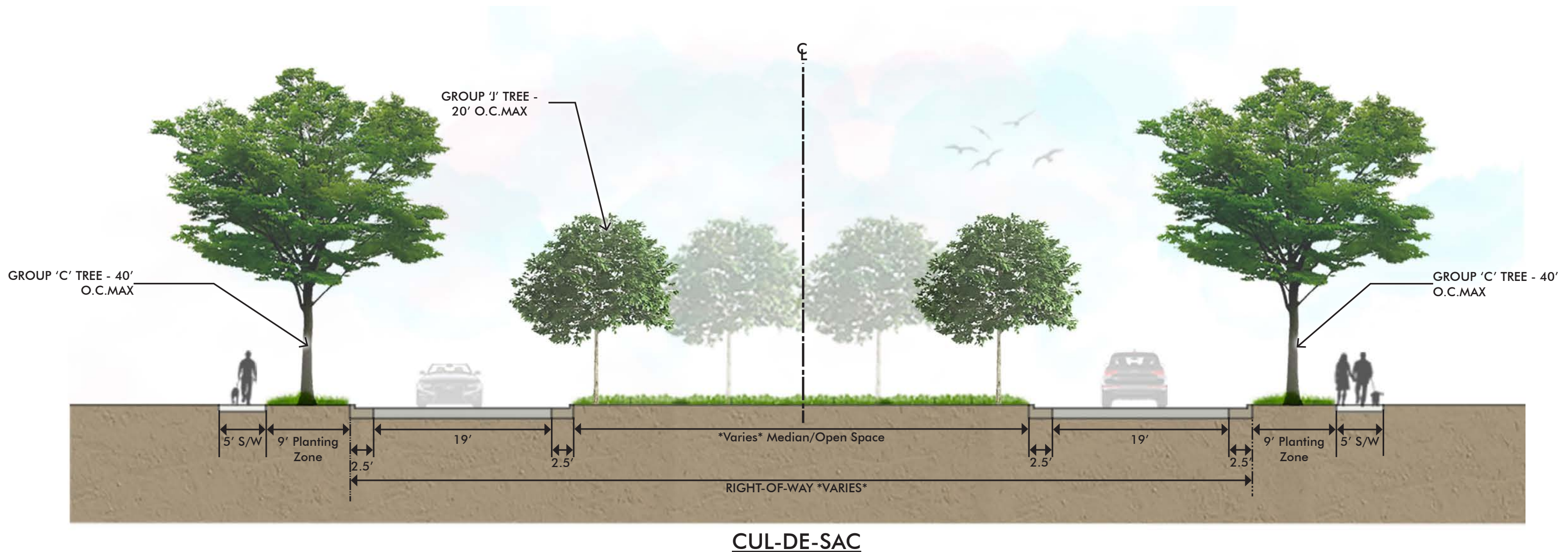


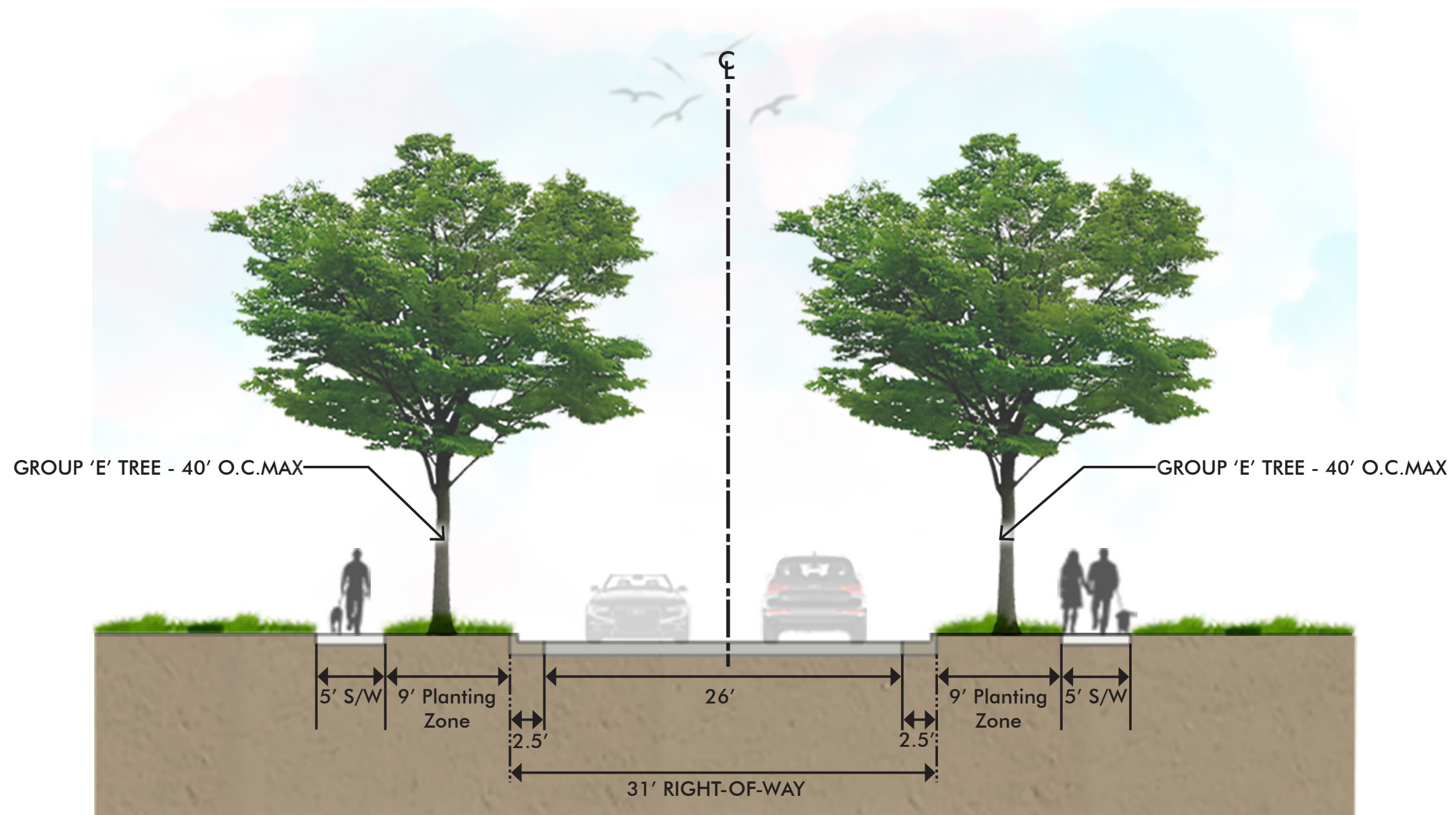




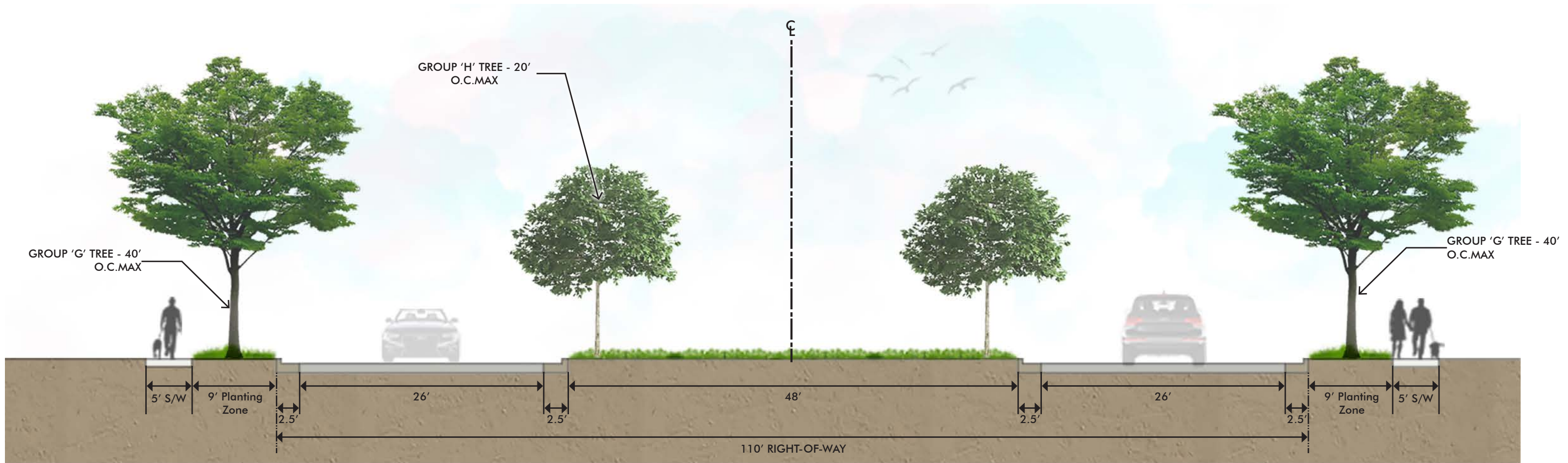


ENTRY BOULEVARD - 65' RIGHT-OF-WAY





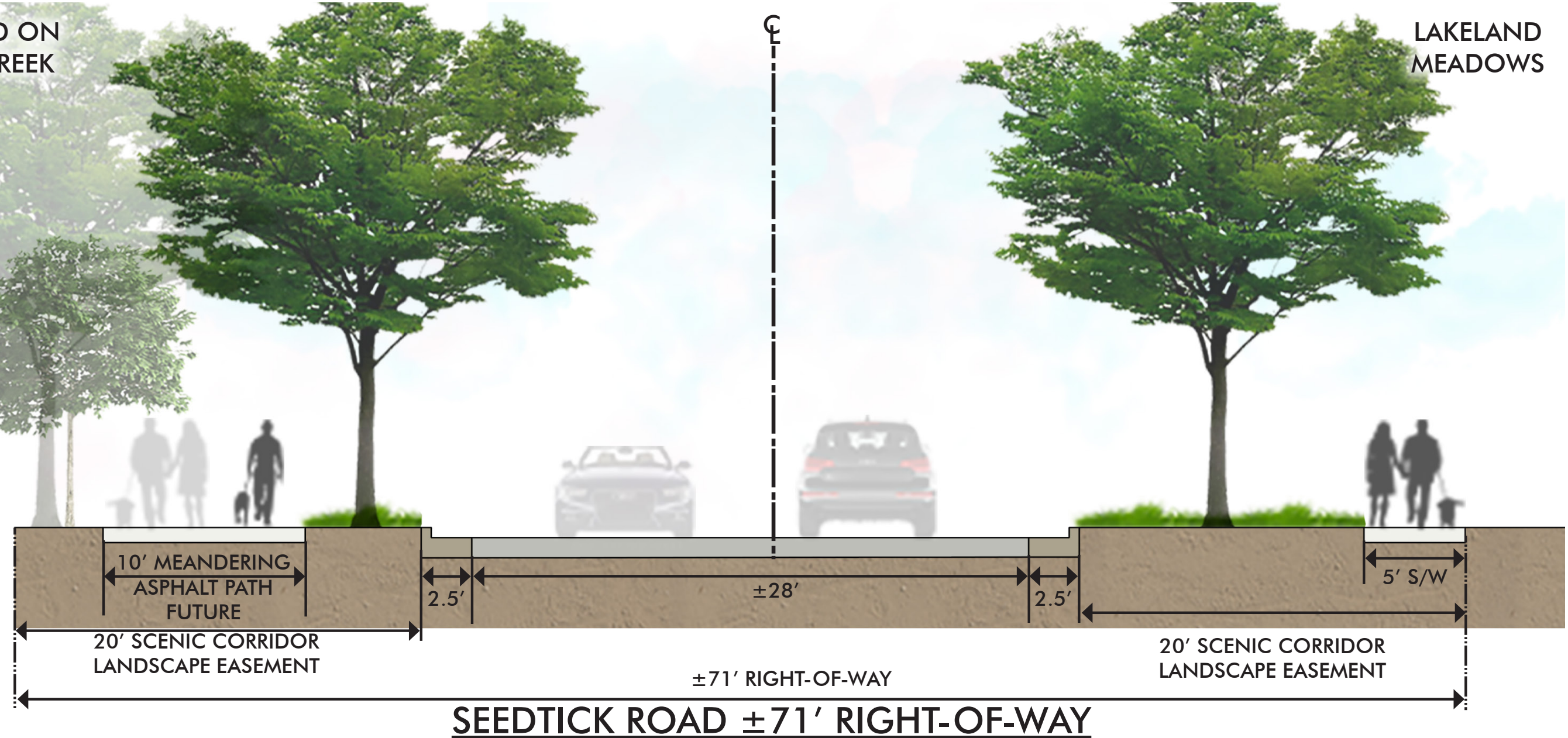
LOCAL STREET 31' RIGHT-OF-WAY



CLOSE 110' RIGHT-OF-WAY

HEATHFIELD ON
SCOTT'S CREEK

LAKELAND
MEADOWS







Below are vision imagery examples of Monument Identification Signage that the design team has envisioned for Heathfield on Scott's Creek.





The Developer will form a Homeowners' Association and adopt a Declaration of Covenants, Conditions, and Restrictions, hereinafter "Declaration", to provide for harmony, continuity, and maintenance within the Community. The Declaration shall be applicable to all properties within the Community. As a part of the above, the Developer will establish an Architectural Review Committee, hereinafter "ARC", to ensure that improvements are consistent with and conform to the quality expected within the Community. This committee, or their designated architect, will review all proposed structures, site plans, building elevations, landscaping and construction materials. The ARC shall adhere to the guidelines as set forth by the Planned Development's Conditions of approval, the Declaration, and the Developer.

Heathfield on Scott's Creek Homeowner's Association will own all Common Open Spaces and ensure that all features and amenities of the development that are considered common assets are continuously maintained and repaired as needed in a quality manner.

Design Guidelines

The overall neighborhood setting shall be maintained through the use of unifying architectural guidelines that shall be set forth by the Planned Developments Conditions of approval and the Heathfield on Scott's Creek Declaration of Covenants, Conditions, and Restrictions. From the distinctive entrance to the special attention provided to open spaces. Heathfield on Scott's Creek will establish itself as a unique and carefully planned neighborhood that will compliment other developments in the area.

The purpose of these Preliminary Design Guidelines is to ensure that the homes are consistent and complimentary of one another within Heathfield on Scott's Creek. The Guidelines will govern and control the design of buildings to ensure the high quality and desirability of the Community. The Guidelines shall apply to all original construction, additions, and accessory structures. Owners, developers, consultants, and builders shall adhere to these Guidelines.

Administrative approval by the City Manager or his designate is permitted for minor deviations from the Design Guidelines. Minor deviations might be described as changes that do not substantially affect the massing, form, style, overall building materials, streetscape of the lot or its structures, while maintaining overall consistency with the Design Guidelines. Major deviations shall require amendments to the PDP, Final Development Plan (FDP), and / or any approval deemed applicable for amendment by the City of Lakeland.

1. The photographs (See Exhibit "W (1)") provided convey general architectural intent Heathfield on Scott's Creek's homes shall consist of a variety of architectural styles in order to promote a diversity of home styles that complement one another in the setting of a cohesive yet diversified community. Permitted architectural styles shall include, but not be limited to, Craftsman, Bungalow, Farmhouse, Federal, French Provincial, French Country, Georgian, Gothic Revival, Greek Revival, Queen Anne, Regency, Tudor, and Victorian.

Each home shall contain the following architectural features:

- Exterior materials shall be consistent with the architectural style of the home
- Exterior material other than brick, natural stone, and manmade stone shall be Hardie concrete siding or equivalent.
- Architectural shingles
- Rear facades of homes on reverse frontage lots shall use the same materials and have similar architectural elements as the front and side facades of the home.

In addition, home designs are encouraged to provide many of the following features that may not be appropriate on every home:

- Covered porches
- Decorative shutters
- Concrete walkways from front door to decorative iron mailbox at street

Meeting Cycle: Thursday, July 1, 2021

Subject: Resolution – approving an amendment to the Preliminary Development Plan for The Lake District Planned Development.

Staff Contact: Richard Donovan, Planning Consultant

STAFF RECOMMENDATION

The MPC recommended approval of the amendment with the following following condition of approval:

- 1) Upon approval, a complete updated digital copy of the PDP will be provided to City Staff before any additional approvals for/or within the Lake District are issued, this includes but is not limited to PDP amendments, Final Plats, or building permits

DISCUSSION

SITE INFORMATION:

LOCATION: 3304 Canada Road

PARCEL ID: L0159 00595, L0159Q A00001-A00014

ZONING: C2 (Regional Business) with PD Overlay

LOT SIZE: 160 acres

APPLICANT/OWNER: Yehuda Netanel, Lake District, LLC.

REPRESENTATIVE: David Smith, A2H, Inc.

Background

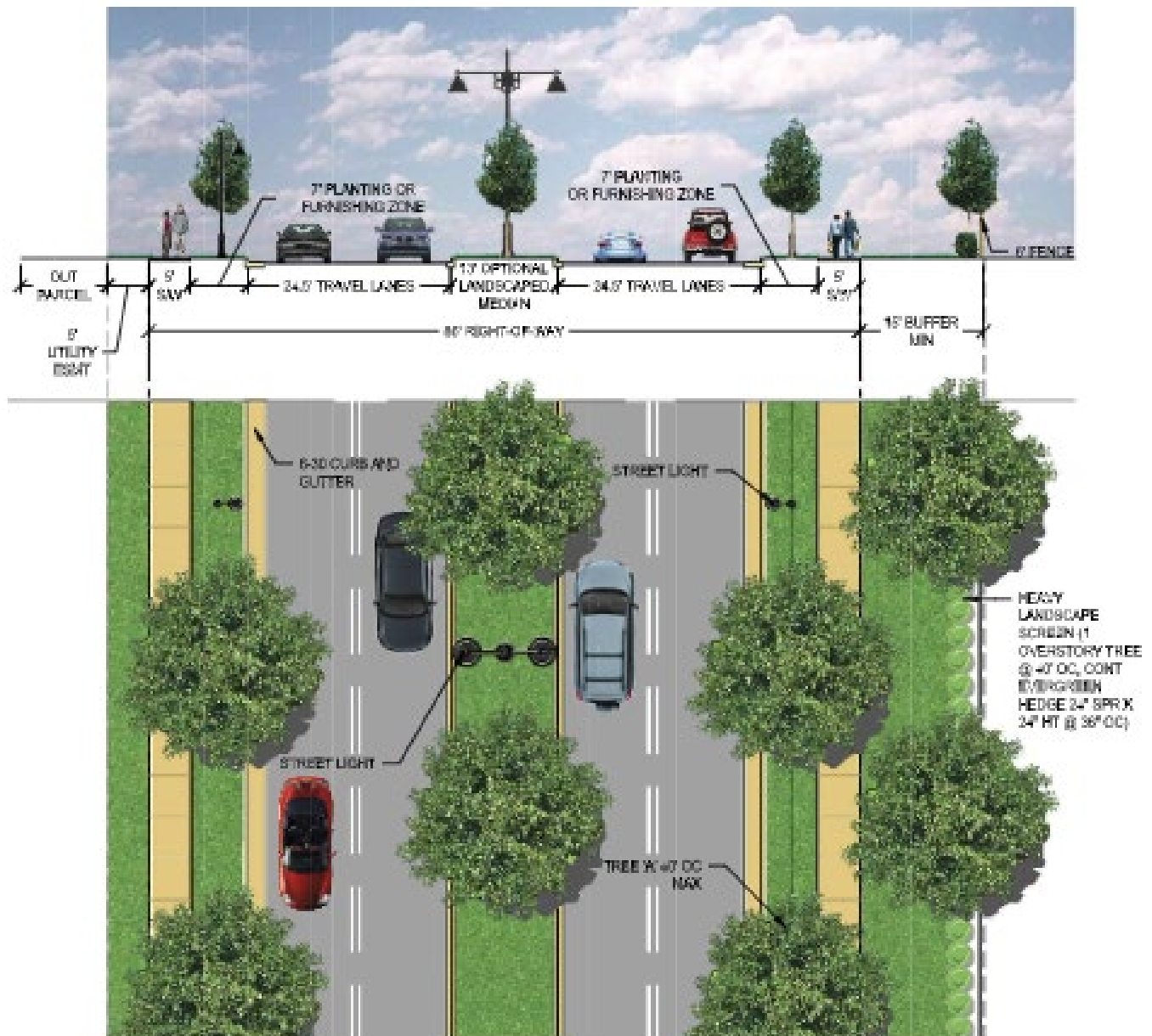
The Lake District Outline Plan was approved by the MPC/DRC on 5/19/2016 and by the BOC on 6/9/2016. The Preliminary Development Plan (PDP) was approved by MPC/DRC on 10/18/2018 and BOC on 11/8/2018. The construction plans for Phase 1 infrastructure were approved on 9/4/19.

Walking Path

The applicant to proposing a minor change to the location of the sidewalk. The proposed amendment will allow the sidewalk to meander through a portion of the open space that backs the Willows (townhomes). The current approved plans provides sidewalks behind the planting strip in a traditional context. Staff would recommend at least sidewalks into the rear of the townhomes to allow residents to walk to the commercial uses if desired.

Below are the current approved landscape plates and street cross sections.

URBAN BOULEVARD WITH ADJACENT RESIDENTIAL & HEAVY LANDSCAPE SCREEN PLATE

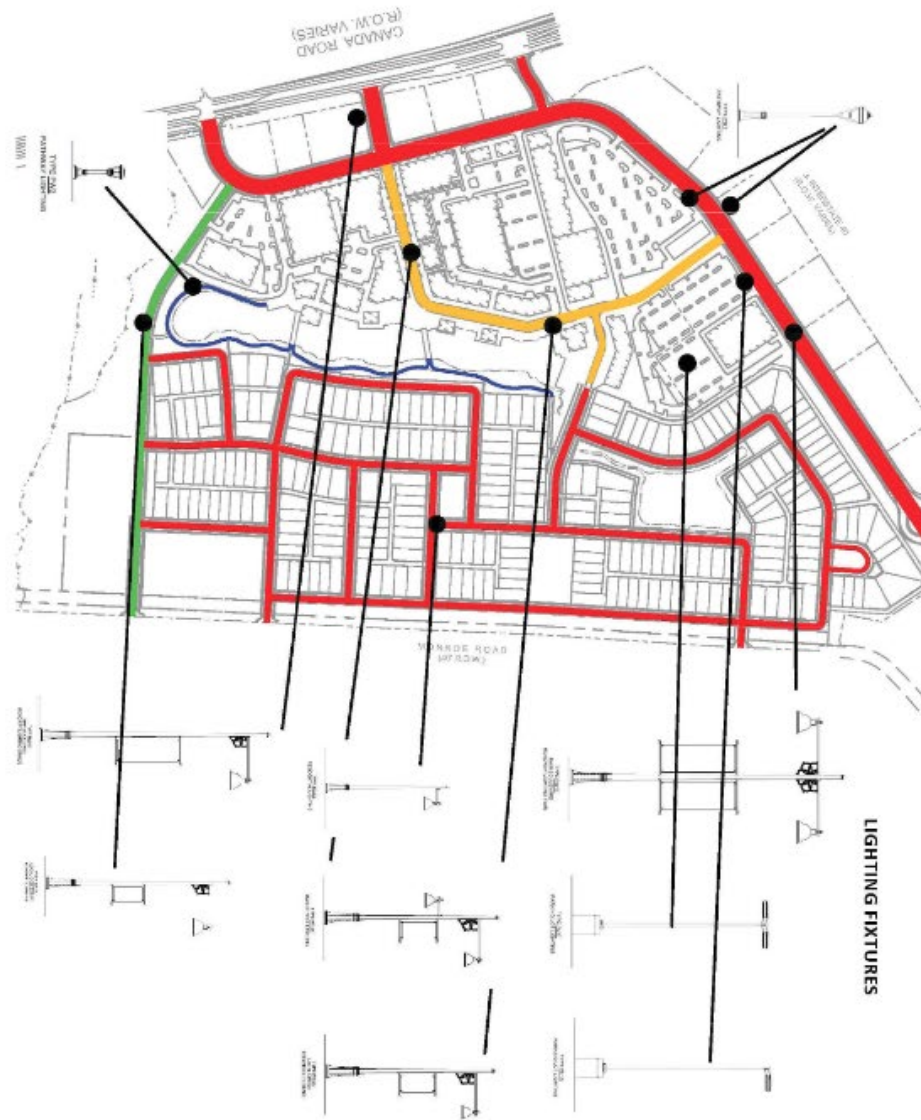




Steet Lighting Fixtures

The following pages included the currently proposed street lights fixtures. The proposed changes transitions from a more decroitive style to a style more typical of modern street lights. Any light that is installed must be reviewed and approved by MLGW for compliance for their standards.

EXHIBIT U - LIGHTING FIXTURES



October 18, 2018

© 2018 AECOM Engineering Corporation - All Rights Reserved

PRELIMINARY DEVELOPMENT PLAN

THE LAKE DISTRICT

RESOLUTION R-51-2021

A RESOLUTION APPROVING AN AMENDMENT TO THE PRELIMINARY DEVELOPMENT PLAN FOR THE LAKE DISTRICT PLANNED DEVELOPMENT

WHEREAS, The Preliminary Development Plan for The Lake District, substantially conforms to The Lake District Planned Development, as amended; and

WHEREAS, On June 17, 2021, the City of Lakeland Municipal Planning Commission recommended approval for The Lake District Planned Preliminary Development Plan, as amended, with conditions; and

WHEREAS, On June 6, 2016, the City of Lakeland Board of Commissioners approved The Lake District Outline Plan with conditions; and

NOW, THEREFORE, BE IT RESOLVED by the Board of Commissioners of the City of Lakeland: That the amendment to the Preliminary Development Plan for The Lake District be approved, subject to the following conditions:

1. Upon approval, a complete updated digital copy of the PDP will be provided to City Staff before any additional approvals for/or within the Lake District are issued, this includes but is not limited to PDP amendments, Final Plats, or building permits

Passed and Adopted by the Board of Commissioners of Lakeland, Tennessee on this 8th day of July 2021, the public welfare requiring it.

Mike Cunningham, *Mayor*

ATTEST:

Debra Murrell, *City Recorder*



CITY OF LAKELAND
Application for Planned Developments

Case No.		Date of Application	05/20/2021	
Name of Applicant	Yehuda Netanel, Lake District LLC			
Address	5959 TOPANGO CANYON BLVD, WOODLAND HILLS, CA 91367			
Daytime Telephone Number	818-917-3537		Fax Number	
Name of Property Owner	Lake District LLC			
Address	5959 TOPANGO CANYON BLVD		Telephone Number	818-917-3537
Name of Project Planning/Engineering Firm	A2H, Inc.			
Name of Project Manager or Contact Person	David Smith			
Address	3009 Davies Plantation Road, Lakeland, TN 38002			
Telephone Number	901-237-9182		Fax Number	
E-mail	davids@a2h.com			
Name of Planned Development	The Lake District		Parcel ID#	
Site Location	Southeast corner of I-40 / Canada Road			
Site Acreage	160		Zoning District(s)	C-2 (PD)
Proposed Use(s)	Mixed Use (PDP Amendment)			
Proposed Number of Lots/Dwelling Units	NA		Proposed Gross Floor Area	NA Sq. ft.
Multiple Phases?	Yes		If yes, total number of phases and schedule	Amendment Request
Approval requested:	☐ Outline Plan ☒ Preliminary Development Plan ☐ Final Development Plan			



May 20, 2021

Mr. Shane Horn
City Manager
City of Lakeland
10001 US Highway 70
Lakeland, TN 38002

Mr. Horn,

We are pleased to submit a Planned Development amendment for the Lake District. The amendment contained within the application includes two separate parts and described as follows:

There are two separate topics included in this amendment request:

1. Relocate the sidewalk along the south side of Lake District Drive adjacent to the Phase 9 townhomes. As shown in the attached exhibit, the revised sidewalk would meander through the common open space to create a more interesting, pleasant experience for pedestrians. All currently approved connections would remain intact.
2. Redefine the allowable locations for light fixture types along roadways throughout the Lake District.

Exhibit U would be replaced to focus specifically on roadway and parking lot lighting. Individual tenant lighting would continue to be regulated by the Lake District Architectural Lighting guidelines found in the Lake District Design Guideline Manual.

A more detailed description of each part of the amendment is attached. We would like to submit this amendment application for consideration at the next available MPC for a recommendation to the BOC.

Please let me know if you have any questions or require additional information.

Sincerely,

David Smith, Ph.D., PE
A2H, Inc.

Amendment 1

Relocate the sidewalk along the south side of Lake District Drive adjacent to the Phase 9 townhomes.

Exhibit R of the approved PDP designates pedestrian routes and connectivity throughout the Lake District. As shown, pedestrian routes along Lake District Drive are designated as sidewalks within the public right of way.

The presence of common open space within Phase 9 adjacent to Lake Main Boulevard presents an opportunity to raise the quality of the pedestrian experience in that area. As shown in the attached concept plan, the sidewalk would wind through the common open space among the landscaping to create this elevated pedestrian environment. In addition, sidewalks within the common open space and throughout the Lake District would have the option to use colored concrete to further enhance the pedestrian routes. Materials used for sidewalks would be approved as part of the construction plans in each phase.

If the PDP amendment is approved by the Board of Commissioners, the applicant shall:

- Replace all PDP exhibits to show the new pedestrian alignment on the base file.
- Place a 10-foot wide public pedestrian easement along the sidewalk route through the Common Open Space. The easement would be added as part of the Final Development Plan and recorded with the Shelby County Register.

Amendment 2

Redefine the allowable locations for light fixture types along roadways and in parking lots throughout the Lake District.

The intent of this amendment is to promote consistent lighting levels and aesthetic style within vehicular areas of the Lake District. The existing plan provides for separate lighting styles for parking lots, roadways, and architectural building lighting. After further review of the design intent regarding lighting, the project designers are forwarding this amendment to create a more consistent style for all areas where vehicles are prominent. Specifically, the roadway light fixture would match the parking lot light fixture.

Architectural building lighting standards will not change and would continue to be regulated by the Lake District Design Guidelines lighting section.

The specific PDP amendments for lighting include the following:

1. Added text to the conditions of approval

Lake District Preliminary Development Plan
X. Design Guidelines

- Lighting

Existing text:

Site Lighting will generally comply with the intent of the photometric plan as presented which may exceed standards defined under III Zoning regulations, section 13-Site Lighting Requirements.

The mounting height of a light fixture shall be measured from the center of the lamp to the finished grade or surface immediately below the light fixture. Lake District Drive is primarily illuminated by fixtures that are 25 feet to the optics as allowed by the lighting regulations. This includes a section on the North side that is adjacent to the back side of a residential property and is within 150 feet of the property line. This violates Section 13, Part C, 4, c. However, the fixtures create virtually zero trespass lighting on most of the properties. A few properties experience trespass lighting that is very low and meets the limits of Part I, 3. Should the exemption not be allowed, the fixture height would be decreased and the quantity increased, changing the lighting theme from that on the rest of the main boulevard. This violates the spirit of maintaining a theme throughout the development.

Proposed text to be added to the existing text:

Architectural lighting standards are outlined in the Lake District Design Guidelines. These regulations provide guidance for individual users/tenants to be consistent with an overall theme for properties within the Lake District.

Separately, Exhibit U in this PDP document describes lighting for public roadways and lighting within parking lots. The intent of these lights is to provide a uniform lighting level that reduces both hot spots and dark areas to promote visibility and safety.

2. Exhibit U would be replaced with the attached exhibit.

The exhibit describes the allowable locations and styles for lighting within parking areas and along roadways.

Amendment 1: Concept Plan

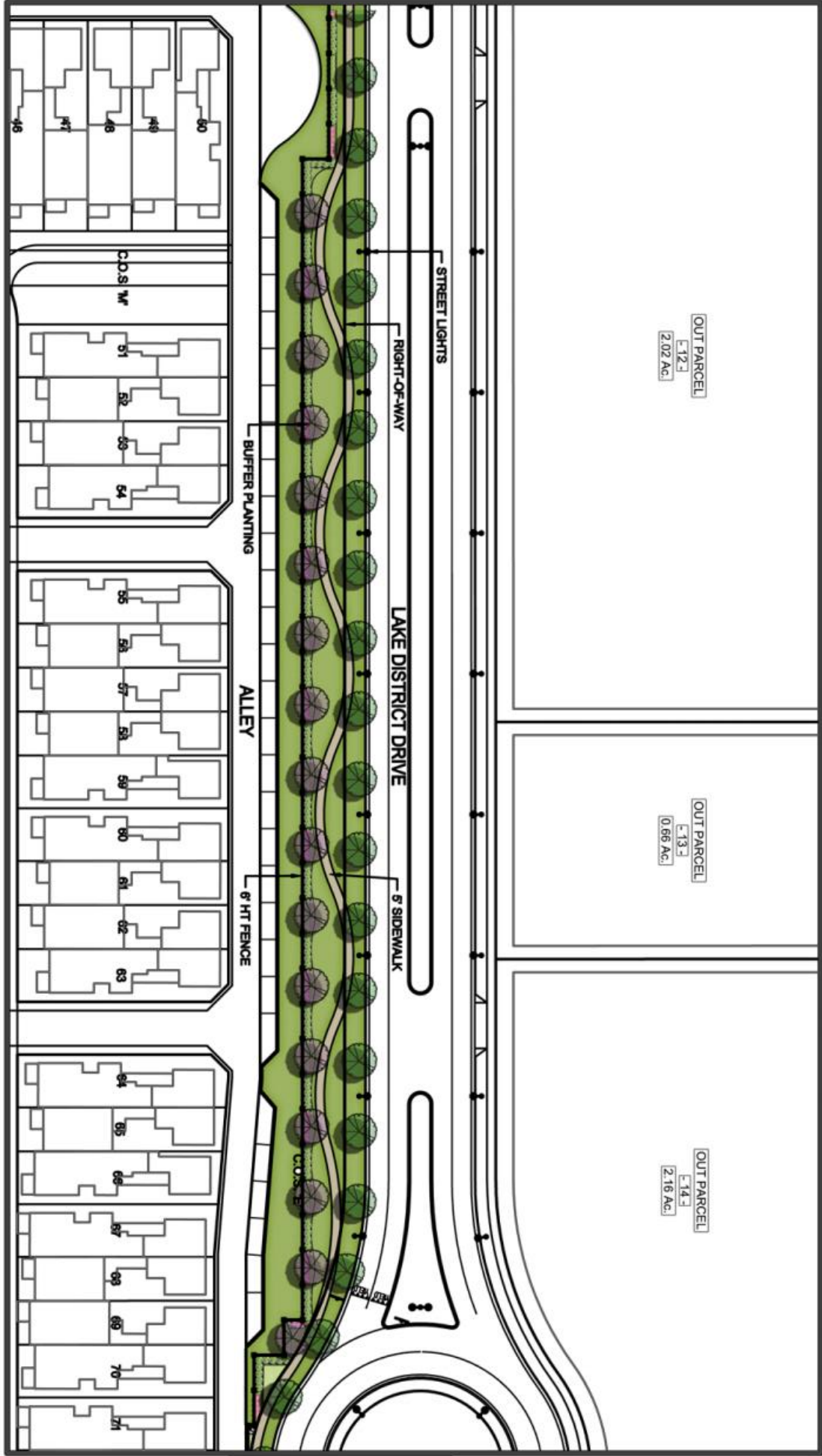
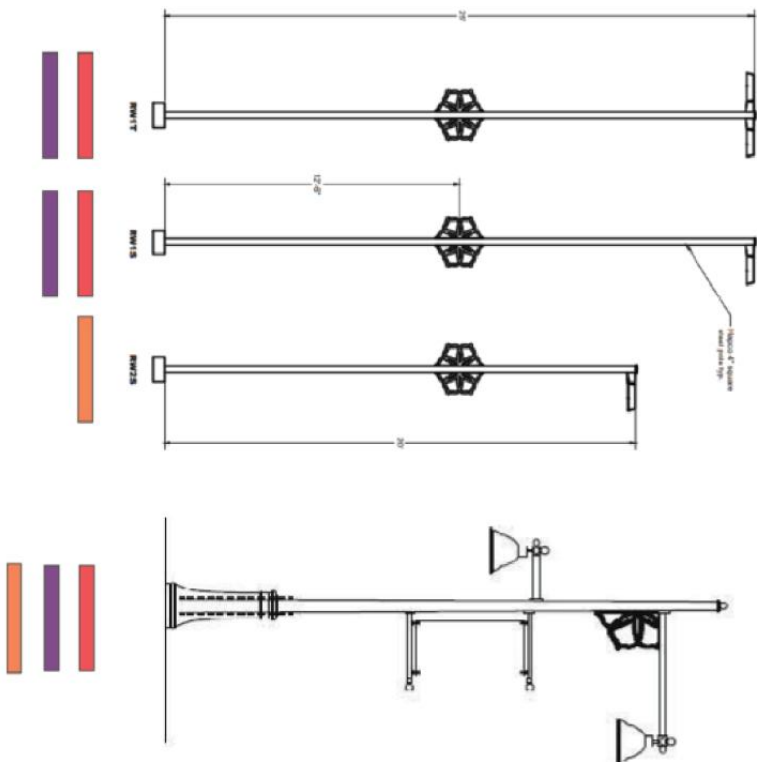


EXHIBIT U - ROADWAY LIGHTING FIXTURES



The lighting standard described in this exhibit shall be permitted in all vehicular parking areas as well as the roadways as labeled.

Meeting Cycle: Thursday, July 1, 2021

Subject: **Resolution** - approving the purchase of a 2021 Ford Ranger 4x4 SuperCrew cab from Ford of Murfreesboro through State of Tennessee Statewide Contract #64470. *Sponsored by Pat O'Mara*

Staff Contact: Patrick O'Mara, Parks & Recreation Director

STAFF RECOMMENDATION

Staff Recommends the Board of Commissioner, by resolution, approve the purchase of a 2021 Ford Ranger 4x4 SuperCrew Cab XL from Ford of Murfreesboro through State of Tennessee Statewide Contract #64470 in the amount of Twenty-Seven Thousand, Three Hundred Forty-Six Dollars (\$27,346.00)

BUDGET IMPACT

This vehicle will be purchased from the State of Tennessee Statewide Contract #64470. Funds are budgeted in the FY22 Park Development Fund.

DISCUSSION

Athletic staff is preparing for the expansion of available athletic facilities coming online beginning August 1, 2021. With the expansion of these facilities comes the ability and plans for additional programming, and the corresponding equipment. This vehicle will enable the two Recreation Supervisors to transport equipment and supplies between locations for these programs.

RESOLUTION R-52-2021

RESOLUTION APPROVING THE PURCHASE OF A 2021 FORD RANGER 4X4
SUPERCREW XL FROM FORD OF MURFREESBORO THROUGH STATE OF
TENNESSEE STATEWIDE CONTRACT #64470

WHEREAS, the City desires to purchase a new pick-up truck to be used for recreation programming in the Parks and Recreation Department; and,

WHEREAS, the truck is available for order and purchase from Ford of Murfreesboro through State of Tennessee Statewide Contract; and,

WHEREAS, Funding for this purchase will be from Fiscal Year 2022 Park Development Funds

NOW, THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE CITY OF LAKELAND, TENNESSEE: That the City Manager is hereby authorized to purchase a new 2021 Ford Ranger 4x4 SuperCrew Cab XL in the amount of Twenty-Seven Thousand, Three Hundred Forty-Six Dollars (\$27,346.00).

PASSED AND ADOPTED by the Board of Commissioners of Lakeland, Tennessee on this 8th day of July 2021.

Mike Cunningham, *Mayor*

ATTEST:

Debra Murrell
City Recorder

2021 Ranger 4x4 SuperCrew 5' box 126.8" WB XL (R4F)

Price Level: 125



Client Proposal

Prepared by:

DONALD SMITH (DONNIE)

Office: 615-571-3314CELL

Quote ID: LAKER4F

Date: 06/16/2021



Ford of Murfreesboro | 1550 N.W. Broad St., Murfreesboro, Tennessee, 371291709

Office: 888-505-4898 | Fax: 6158939730



Prepared by: DONALD SMITH (DONNIE

)

06/16/2021

Ford of Murfreesboro | 1550 N.W. Broad St. Murfreesboro Tennessee | 371291709

2021 Ranger 4x4 SuperCrew 5' box 126.8" WB XL (R4F)

Price Level: 125 | Quote ID: LAKER4F

As Configured Vehicle

Code	Description	MSRP
Base Vehicle		
R4F	Base Vehicle Price (R4F)	\$31,325.00
Packages		
101A	Equipment Group 101A High <i>Includes:</i> - Engine: 2.3L EcoBoost - Includes auto start-stop technology. - Transmission: Electronic 10-Speed SelectShift Auto - 3.73 Axle Ratio - GVWR: 6,050 lbs - Tires: P255/70R16 A/S BSW - Wheels: 16" Silver Steel - Radio: AM/FM Stereo - Includes Bluetooth pass thru and 1 USB port. - Cruise Control - Day/Night Rearview Mirror - Perimeter Anti-Theft Alarm - Power Glass Sideview Mirrors - Remote Key Fob w/Tailgate Lock - 6 Speakers - SYNC - Includes enhanced voice recognition communications and entertainment system, 911 Assist, 4.2" LCD display in center stack, AppLink and 1 smart charging USB port.	\$1,135.00
Powertrain		
99H	Engine: 2.3L EcoBoost <i>Includes auto start-stop technology.</i>	Included
44U	Transmission: Electronic 10-Speed SelectShift Auto	Included
STDAX	3.73 Axle Ratio	Included
STDGV	GVWR: 6,050 lbs	Included
Wheels & Tires		
STDTR	Tires: P255/70R16 A/S BSW	Included
64A	Wheels: 16" Silver Steel	Included
Seats & Seat Trim		
S	Front Vinyl Bucket Seats <i>Includes 8-way manual adjustable driver including lumbar, 6-way manual adjustable passenger and driver and passenger manual reclining seats.</i>	N/C
Other Options		

Prices and content availability as shown are subject to change and should be treated as estimates only. Actual base vehicle, package and option pricing may vary from this estimate because of special local pricing, availability or pricing adjustments not reflected in the dealer's computer system. See salesperson for the most current information.



Prepared by: DONALD SMITH (DONNIE)

06/16/2021

Ford of Murfreesboro | 1550 N.W. Broad St. Murfreesboro Tennessee | 371291709

2021 Ranger 4x4 SuperCrew 5' box 126.8" WB XL (R4F)

Price Level: 125 | Quote ID: LAKER4F

As Configured Vehicle (cont'd)

Code	Description	MSRP
126WB	126.8" Wheelbase	STD
PAINT	Monotone Paint Application	STD
STDRD	Radio: AM/FM Stereo <i>Includes Bluetooth pass thru and 1 USB port.</i>	Included
53R	Trailer Tow Package <i>Includes towing capability up to TBD lbs and 4-pin/7-pin wiring harness. Includes: - Class IV Trailer Hitch Receiver</i>	\$495.00
153	Front License Plate Bracket <i>Standard in states requiring 2 license plates and optional to all others.</i>	N/C
Emissions		
425	50-State Emissions System	STD
Interior Color		
SH_03	Ebony	N/C
Exterior Color		
YZ_01	Oxford White	N/C
SUBTOTAL		\$32,955.00
Destination Charge		\$1,195.00
TOTAL		\$34,150.00

Prices and content availability as shown are subject to change and should be treated as estimates only. Actual base vehicle, package and option pricing may vary from this estimate because of special local pricing, availability or pricing adjustments not reflected in the dealer's computer system. See salesperson for the most current information.



Prepared by: DONALD SMITH (DONNIE)

06/16/2021

Ford of Murfreesboro | 1550 N.W. Broad St. Murfreesboro Tennessee | 371291709

2021 Ranger 4x4 SuperCrew 5' box 126.8" WB XL (R4F)

Price Level: 125 | Quote ID: LAKER4F

Warranty

Standard Warranty

Basic

Distance	36,000 miles	Months	36 months
----------	--------------	--------	-----------

Powertrain

Distance	60,000 miles	Months	60 months
----------	--------------	--------	-----------

Corrosion Perforation

Distance	Unlimited miles	Months	60 months
----------	-----------------	--------	-----------

Roadside Assistance

Distance	60,000 miles	Months	60 months
----------	--------------	--------	-----------

Prices and content availability as shown are subject to change and should be treated as estimates only. Actual base vehicle, package and option pricing may vary from this estimate because of special local pricing, availability or pricing adjustments not reflected in the dealer's computer system. See salesperson for the most current information.



Prepared by: DONALD SMITH (DONNIE)

06/16/2021

Ford of Murfreesboro | 1550 N.W. Broad St. Murfreesboro Tennessee | 371291709

2021 Ranger 4x4 SuperCrew 5' box 126.8" WB XL (R4F)

Price Level: 125 | Quote ID: LAKER4F

CITY OF LAKELAND

33,795.00 MSRP STATE

\$27,346.00 SWC 209 CONTRACT 64470

QUOTE GOOD TILL 8/31/2021

Prices and content availability as shown are subject to change and should be treated as estimates only. Actual base vehicle, package and option pricing may vary from this estimate because of special local pricing, availability or pricing adjustments not reflected in the dealer's computer system. See salesperson for the most current information.



Board of Commissioners

Meeting Cycle: Thursday, July 1, 2021

Subject: **Resolution** - approving the 2021 Shelby County Hazard Mitigation Plan.
Sponsored by Shane Horn

Staff Contact: Shane Horn, City Manager, Emily Harrell, City Engineer

STAFF RECOMMENDATION

Staff recommends the Board of Commissioners, by Resolution, approve the 2021 Shelby County Multi-Jurisdictional Hazard Mitigation Plan

BUDGET IMPACT

DISCUSSION

Shelby County Emergency Management is required to review, update, and resubmit a Hazard Mitigation Plan every five (5) years to the Federal Emergency Management Agency (FEMA).

City of Lakeland staff worked on the Shelby County Hazardous Mitigation Committee to identify potential natural and man-made disasters and recognize the impact they could have on our community. Lakeland, as well as all other Shelby County municipalities in Shelby County, are included in the plan.

RESOLUTION

A RESOLUTION ADOPTING THE 2021 SHELBY COUNTY HAZARDS MITIGATION PLAN

WHEREAS, the City of Lakeland, Tennessee recognizes the potential threat that natural and technological hazards pose to persons and property; and

WHEREAS, the act of undertaking hazards mitigation actions prior to disaster occurrence will reduce the potential for personal harm and the destruction of property, thereby saving taxpayer dollars; and

WHEREAS, the adoption of a hazards mitigation plan is required as a condition of receiving future grant funding for mitigation projects; and

WHEREAS, the City of Lakeland participated in the planning process with other units of local government within Shelby County to prepare the Hazards Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED by the Board of Commissioners of the City of Lakeland, Tennessee, that the City of Lakeland hereby adopts the 2021 Shelby County Hazards Mitigation Plan as an official plan.

BE IT FURTHER RESOLVED that the Lakeland Board of Commissioners authorizes the Shelby County Office of Preparedness Emergency Management Agency, on behalf of the City of Lakeland as well as other municipalities located within Shelby County, to submit the adopted Hazards Mitigation Plan to Federal Emergency Management Agency officials for final review and approval.

PASSED AND ADOPTED by the Board of Commissioners of Lakeland, Tennessee on this 8th day of July, 2021, the public welfare requiring it.

Mike Cunningham, *Mayor*

ATTEST:

Debra Murrell
City Recorder

Patrick Sheehan
Director

Major General
Jeff H. Holmes
The Adjutant General

May 26, 2021

Ms. Kristen Martinenza, P.E, CFM
Branch Chief
FEMA Region IV
Mitigation Division – Risk Analysis Branch
3003 Chamblee Tucker Road
Atlanta, GA 30341

Attention: Mr. Carl Mickalonis, Planning Team Lead

Reference: Shelby County Multijurisdictional Hazard Mitigation Plan 2021 Update

Dear Mr. Mickalonis:

This is to confirm that we have completed the State of Tennessee review of the Shelby County Multijurisdictional Hazard Mitigation Plan for compliance with the hazard mitigation planning requirements contained in 44 CFR 201.6(b)-(d). The state has determined that the plan is compliant with all planning requirements, subject to formal community adoption.

Thank you,



Brent Phillips
Regional Planner
West Region
Tennessee Emergency Management Agency
PO Box 1383, Jackson, TN, 38302
731-225-2823
Brent.Phillips@tn.gov

Shelby County Hazard Mitigation Plan



2021 Update

Prepared By:

**Shelby County Hazard Mitigation Committee
Shelby County Emergency Management Agency**

Assistance Provided By:

Tennessee Emergency Management Agency
as part of the Tennessee Mitigation Initiative

Executive Summary

Over the past two decades, hazard mitigation has gained increased national attention due to the large number of natural disasters that have occurred throughout the U.S. and the rapid rise in costs associated with those disaster recoveries. It has become apparent that money spent mitigating potential impacts of a disaster event can result in substantial savings of life and property. With these benefit cost ratios being extremely advantageous, the Disaster Mitigation Act of 2000 was developed as U.S. Federal legislation that reinforces the importance of pre-disaster mitigation planning by calling for local governments to develop mitigation plans (*44 CFR 201*).

The purpose of a local hazard mitigation plan is to identify the community's notable risks and specific vulnerabilities, and then to create/implement corresponding mitigation projects to address those areas of concern. This methodology helps reduce human, environmental, and economical costs from natural and man-made hazards through the creation of long-term mitigation initiatives.

The advantages of developing a local hazard mitigation plan are numerous including improved post-disaster decision making, education on mitigation approaches, an organizational method for prioritizing mitigation projects, etc. It has been noted that communities who successfully complete and maintain a mitigation plan receive larger amounts of Federal and State funding to be used on mitigation projects, and receive these funds faster, than communities who do not have a plan. Such funding sources that the plan caters to are Pre-Disaster Mitigation, Flood Mitigation Assistance, Severe Repetitive Loss, and Hazard Mitigation Grant Programs.

The 2021 update of the Shelby County Hazard Mitigation Plan was created to act as a well-thought -out guide to be used by, and for, the people of Shelby County. For this plan to be successful, each jurisdiction/district within the county participated in the drafting and preparation of the plan update. These participating jurisdictions/districts include:

- Shelby County (Unincorporated)
- City of Memphis (County Seat)
- Town of Arlington
- City of Bartlett
- Town of Collierville
- City of Germantown

- City of Lakeland
- City of Millington
- Shelby County Schools
- Arlington Community Schools
- Bartlett City Schools
- Collierville Schools
- Lakeland School System
- Millington Municipal Schools

In reference to federal code title *44 CFR 201*, an updated hazard mitigation plan is required to be submitted to both TEMA (State) and FEMA (Federal) for review every five-years to be reapproved. When the plan is deemed “approval pending adoption” by FEMA (*44 CFR 201.6(c)5*), each of the participating jurisdictions will adopt the plan through a local resolution.

Table of Contents

Section 1: Planning Process

Planning Process Update	1
Review of Existing Information	4
Updates within the Plan	4

Section 2: County Profile

Development Trends	6
Jurisdictional & School District Capabilities	8
Expanding & Improving Mitigation Policies	9

Section 3: Risk Assessment

Hazard Identification	10
Flooding	10
Severe Weather	16
Extreme Temperatures	28
Earthquake	28
Communicable Diseases	29
Shelby County Federal Disaster Declarations	37

Section 4: Mitigation Strategy

Mitigation Goals	38
Identification and Prioritization of Mitigation Projects	38
Shelby County Project List	39
Project List Update	48
National Flood Insurance Program Compliance	49

Section 5: Plan Maintenance

Monitoring, Evaluating, and Updating	51
Incorporation into Planning Cycle	52
Continued Public Participation	53

Appendices

- 1: Attendance Sheet Meeting #1
- 2: Attendance Sheet Meeting #2
- 3: Public Notice/Meeting Minutes/Letters
- 4: Flood Insurance Rate Maps for Shelby County
- 5: HAZUS: 500 Year Flood
- 6: Ongoing Performance Tasks
- 7: Ordinances

Section 1: Planning Process

Planning Process Update

The previous Shelby County Hazard Mitigation Plan was approved by FEMA on April 14th, 2016. Per federal requirements stated in *44 CFR 201*, all local hazard mitigation plans are required to go through a FEMA update review every 5 years to remain eligible for hazard mitigation grants. This update methodology was developed to assure that local governments are continuing to re-evaluate their risks and to regularly implement mitigation projects that can reduce community vulnerabilities.

The plan's five-year update process began in a meeting (via WebEX) on August 26th, 2020 (See [Appendix 1](#) for WebEx chat log/attendance sheet) . At this meeting Shelby County Emergency Management Agency stated that they would continue the role of leading staff and interested persons in updating their mitigation plan. The tasks to be undertaken by Shelby County Emergency Management Agency consisted of continuing to get agencies and the public involved in the county's mitigation efforts and performing the written plan's required 5-year update.

Prior to this meeting Shelby County began reorganizing the county-wide hazard mitigation committee. Realizing that a successful mitigation committee includes a number of representatives, specialists, and individuals who can give valuable/unique insights that local emergency management staff may not have considered; invites to be a part of this plan update included open invitations, via email and phone, to the following agencies/entities:

- Arlington Community Schools
- Arlington Fire Department
- Arlington Public Works
- Arlington Schools
- Assessor of Property
- Baptist College of Health Sciences
- Bartlett Fire
- Bartlett Police Department
- Bartlett Public Works
- Bartlett Schools
- Collierville Fire
- Collierville Public Works
- Collierville Schools
- Federal Emergency Management Agency
- Germantown Fire

- Germantown Municipal Schools
- Germantown Public Works
- Lakeland
- Lakeland Public Works
- Lakeland Schools
- Memphis Area Transit Authority
- Memphis Fire
- Memphis Fire- OEM
- Memphis Public Works
- Millington Fire
- Millington Public Works
- Millington Schools
- Memphis Light, Gas, & Water
- Municipal Technical Advisory Service
- Shelby County Regional Geographic Information Systems
- Rehkopf Civil Engineering Company
- Shelby County Health Department
- Shelby County Sheriff
- Shelby County / Memphis Planning
- Shelby County Assessor
- Shelby County Board of Conservation
- Shelby County Emergency Management and Homeland Security
- Shelby County Fire
- Shelby County Public Works
- Shelby County Roads and Bridges
- Shelby County Schools
- Shelby County/Memphis Division of Planning
- Tennessee Emergency Management Agency
- University of Memphis - GIS
- University of Memphis- Center for Earthquake Research and Information

In addition to public advertisements, Fayette and Tipton Counties (all adjacent counties) were invited to participate via announcements at the West Tennessee Regional Emergency Management Quarterly Director's Meetings. Despite notices to representatives from adjacent counties, none were present at either meeting. Additionally, there was no public input as no members of the public were in attendance.

The Shelby County Hazard Mitigation Committee for the plan update consists of the following members:

Member	Title	Agency	Representation
Shannon Towery (Committee Chairperson)	Planning Coordinator	Shelby County Emergency Management and Homeland Security	Shelby County
James Harvill	Chief	Arlington Fire Department	Arlington
Jeremy Yow	Supervisor-Student Services and HR	Arlington Community Schools	Arlington Community Schools
Miracle Roberts	Chief Financial Officer	Arlington Community Schools	Arlington Community Schools
Tim Ruff	Director of Operations	Arlington Community Schools	Arlington Community Schools
Eric Leppanen	Captain	Bartlett Police Department	Bartlett
Jeff Cox	Chief	Bartlett Police Department	Bartlett
Rick McClanahan	City Engineer	Bartlett	Bartlett
Steve Sones	Assistant Chief	Bartlett Police Department	Bartlett
Terry Wiggins	Chief	Bartlett Fire	Bartlett
Gary Rikard	Security Manager	Bartlett City Schools	Bartlett City Schools
John Fox	Public Works Manager	Collierville	Collierville
Tommy Kelley	Chief of Operations	Collierville Fire Department	Collierville
Nancy Kelley	Safe Schools Director	Collierville Schools	Collierville Schools
Robin Berzins	Tennessee FEMA Integration Team	Federal Emergency Management Agency	Federal Emergency Management Agency
John Selberg	Fire Chief / Emergency Manager	Germantown Fire Department	Germantown
Dennis Wolf	Fire Management Consultant	Lakeland	Lakeland
Shane Horn	City Manager	Lakeland	Lakeland School Sytem
Brandon Carpenter	Planning	Memphis Office of Emergency Management	Memphis
Christopher Favaloro	Operations Officer	Office of Emergency Management	Memphis
Evan Boulanger	Senior Design Engineer	Memphis	Memphis

Greg Waymon	Planning	Memphis Fire & Office of Emergency Management	Memphis
Jonathan Haley	Grants Coordinator	Memphis Fire Department	Memphis
Lopa Naik	Senior Design Engineer	Memphis	Memphis
Manny Belen	City Engineer	Memphis	Memphis
Patrina Chambers	Director of Grants and Procurement	Memphis Area Transit Authority	Memphis
Robert Rehkopf	Consultant	Memphis	Memphis
Gary Graves	Public Safety Director	Millington	Millington
Philip Leblanc	Director of Operations and Transportation	Millington Municipal Schools	Millington Municipal Schools
Angela Brown	Grant Manager	Shelby County Emergency Management and Homeland Security	Shelby County
Angela Hill	Administrator	Shelby County Parks and Neighborhood	Shelby County
Benjamin Hamilton	Asset Management Engineer	Memphis Light, Gas, and Water	Shelby County
Brenda Jones	Director	Shelby County Emergency Management and Homeland Security	Shelby County
Chris Masin	Senior Engineer	Shelby County Roads, Bridges, and Engineering	Shelby County
Cliff Norville	Director	Shelby County Public Works	Shelby County
Daniel Hochstein	Lead Project Engineer	Memphis Light, Gas, and Water	Shelby County
Erin Stirgus	Project Engineer	Memphis Light, Gas, and Water	Shelby County
George Boyington	Intergovernmental Affairs & Speicla Projects Manager	Shelby County Assessor of Property	Shelby County
Glen Kneeland	Deputy Chief	Shelby County Fire	Shelby County
Jared Darby	Senior Manager	Shelby County Office of Resilience and Sustainability	Shelby County
Madelyn Lukens	Project Engineer	Memphis Light, Gas, and Water	Shelby County

Misty Haley	Emergency Operations Manager	Shelby County Emergency Management and Homeland Security	Shelby County
Oussama Terrab	Crisis Management	Memphis Light, Gas, and Water	Shelby County
Rick Stieg	GIS Administrator	Shelby County	Shelby County
Ryan Groves	Regulatory Compliance Coordinator	Memphis Light, Gas, and Water	Shelby County
Steve Fort	Emergency Response Coordinator	Shelby County Health Department	Shelby County
Jimmy Tuggers	Emergency Management	Shelby County Schools	Shelby County Schools
LaTonya McGowan	Emergency Management Specialist	Shelby County Schools	Shelby County Schools
Quentin Reed	Special Project Assistant	Shelby County Schools	Shelby County Schools
Brent Phillips	Planner	Tennessee Emergency Management Agency	Tennessee
Jane Waldrop	Regional Director	Tennessee Emergency Management Agency	Tennessee
Mack Green	District Coordinator	Tennessee Emergency Management Agency	Tennessee
Brian Waldron	Director	Center for Applied Earth Science and Engineering (CAESER)	University of Memphis
Gary Patterson	Director of Education and Outreach	Center for Earthquake Research and Information (CERI)	University of Memphis

The Shelby County Hazard Mitigation Committee continues to be the county's lead in all mitigation efforts and in the development of the county's mitigation plan. The committee member's efforts in the plan update were broken down into five stages: **1)** analysis of the original plan (*the plan as it stood prior to the updates*), **2)** updating of the plan, **3)** public participation, **4)** review of the final updated plan, and **5)** adoption of the plan.

Stage 1: During the analysis of the plan, Shelby County Emergency Management Agency reviewed the original county plan and made notes on what sections would require the main updates. Shelby County Emergency Management Agency suggested that the two core areas for needed updates were in the risk/vulnerability assessment and in the restructuring of the county's listed hazard mitigation projects, as well as re-evaluating the plan's hazards, re-assessing their risks, re-calculating each jurisdiction's vulnerable areas, and re-establishing the county's mitigation goals.

Stage 2: From there the committee started making the updates to the plan. A large amount of this effort took place at the second Shelby County Hazard Mitigation Committee meeting that was held on September 20th, 2020. Tasks included developing and prioritizing projects for the new plan and concluding any remaining business. TEMA personnel were present at this meeting to answer mitigation planning and grant questions. [Appendix 2](#) provides a copy of the meeting's attendance sheet.

Stage 3: To encourage public involvement, the Shelby County Hazard Mitigation Committee meetings were given public notice. [Appendix 3](#) presents a copy of the public notices.

Stage 4: Next the committee evaluated the written updates of the plan against FEMA's crosswalk requirements via email correspondence. This also included having the jurisdictions review the drafts that specifically addressed aspects of their jurisdiction before the plan is sent to FEMA for review.

Stage 5: Upon receiving the "Approval Pending Adoption" designation from FEMA's review, the public will be given a chance to comment on the final draft of the update plan prior to its adoption by each local jurisdiction. This opportunity will take place at a local board meeting for each jurisdiction before the updated plan adoption decision takes place. The opportunity for final public comment will therefore be documented through the receipt of a signed adoption resolution.

Review of Existing Information

A preliminary review of existing plans, reports, and information was conducted during the initial phase of creating the Shelby County Hazard Mitigation Plan. The primary purpose of reviewing this information was to identifying local hazards, recognizing local risks, and understanding different local vulnerabilities. The following list of sources identifies some of the existing studies that were reviewed:

- State of Tennessee Hazard Mitigation Plan
- Tennessee Emergency Management Plan (TEMP)
- U.S. Census Bureau
- FEMA Mitigation “How to” Guides
- NOAA National Climatic Data Center (NCDC) storm reports
- Shelby County BEOP
- County & Jurisdictional Schools Emergency Plans
- Shelby County Highway Department Plan
- County & Jurisdictional Public Works Development Plans
- County & Jurisdictional Fire Department 5 Year Plans
- Jurisdictional Plans, SOP’s, & SOG’s

These sources helped to develop the plan’s hazard, risk, and vulnerability assessment sections that in return led to the establishment of meaningful mitigation actions.

Updates within the Plan

It is important to note that this countywide plan was a minor revision of the previous Shelby County Hazard Mitigation Plan. Shelby County reviewed and analyzed each section of the original plan and made updates in the following ways:

Section 1: Planning Process

Shelby County updated the original plan’s description of the planning process to include the new or no longer participating committee members, the most recent countywide mitigation meetings that took place for the plan’s update, and the latest opportunity for the public to get involved. Shelby County also compiled a new list of existing documents that they reviewed in updating their sections in the plan.

Section 2: County Profile

Shelby County created a new development trends section in this plan update.

Section 3: Risk Assessment

Shelby County kept all of their listed natural hazards from the original hazard mitigation plan. As part of the plan update, Shelby County updated their previous occurrence hazard listings to cover all occurrences for flood and tornado events, the most recent twenty years for all other hazards. The committee then re-evaluated each hazard’s extent, probability, and potential impacts.

Section 4: Mitigation Strategy

Shelby County has brainstormed some new mitigation projects that were added to the list, used a new chart method to profile project details, and developed a system to describe where their previous plan's projects are in terms of being implemented. Projects were then prioritized based on specific criteria.

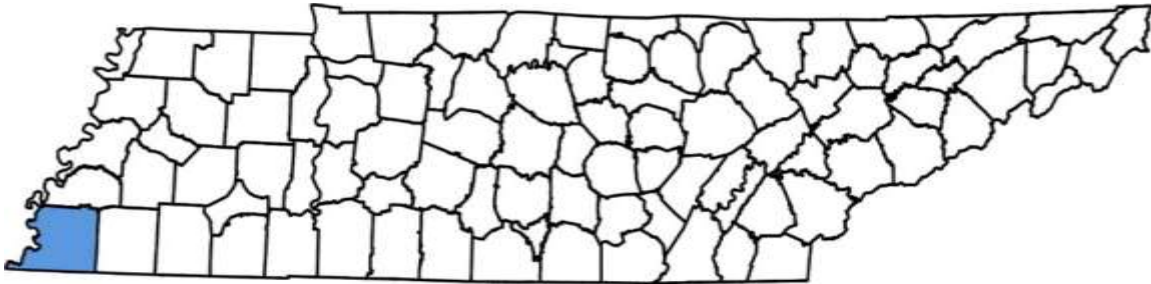
Section 5: Plan Maintenance

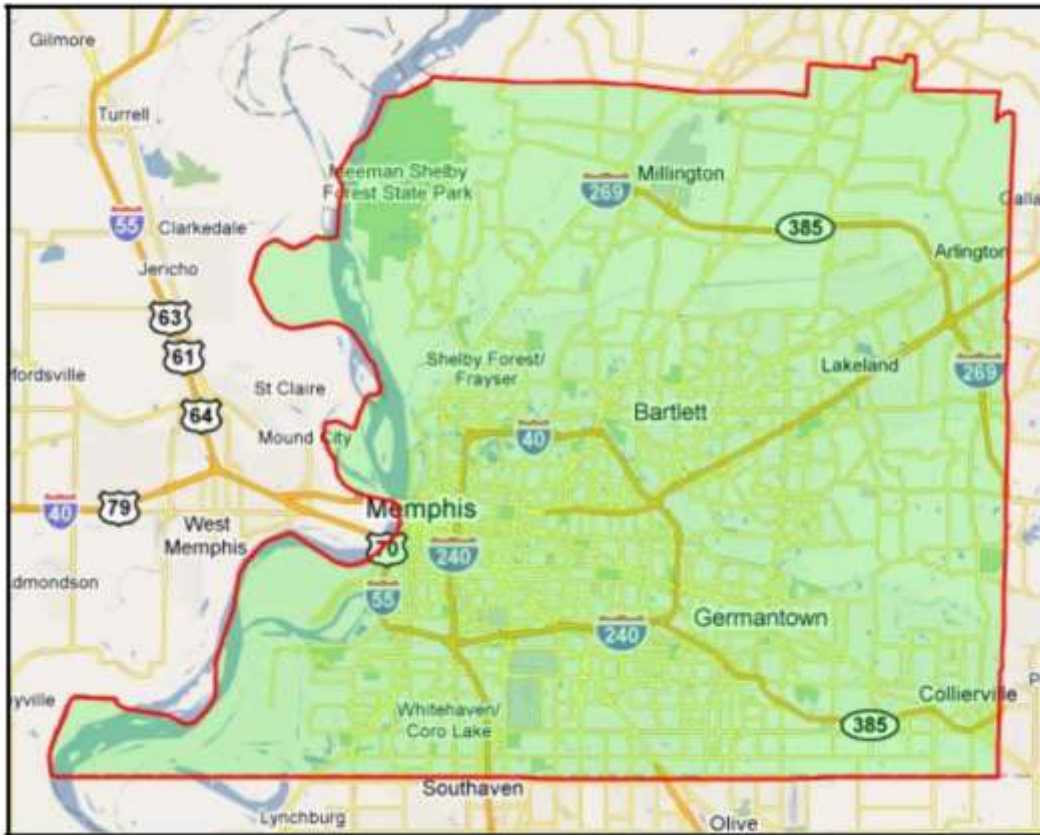
Shelby County updated how they would work with the other jurisdictions in monitoring, evaluating, and updating the plan; provided an updated list of mechanisms they could incorporate mitigation within; stated that now the Shelby County BEOP has mitigation concepts incorporated into it; and updated how all the jurisdictions would keep the public involved in updating processes.

Section 2: County Profile

Development Trends

Shelby County and its jurisdictions can be found in the south -western portion of West Tennessee. It is bordered by the Mississippi River and Arkansas to the west, Tipton County to the north, Fayette County to the east, and Mississippi to the south. Shelby County has a population of 927,644 (2010 census), and is second in county population only to Davidson County (Metro Nashville) in Tennessee. The county has a total area of 785 square miles, of which 763 square miles is land and 22 square miles is water. Memphis is the county seat.





The incorporated jurisdictions have populations as follows (2010 census):

Jurisdiction	Population
Memphis	646,889
Arlington	11,517
Bartlett	54,613
Collierville	43,965
Germantown	38,844
Lakeland	12,430
Millington	10,176

Shelby County has many noteworthy attributes. It is home to the major hub for Federal Express (FedEx), among other major global corporations. The International Port of Memphis is the second largest inland port on the shallow draft portion of the Mississippi River, and the 5th largest inland port in the United States overall. Memphis is a frequent travel destination and is known as the “Home of the Blues”. Surrounding the metropolitan areas of the county is a vibrant agricultural industry, supplying cotton, corn, and soybeans, among others.

Due to current land use trends, the Shelby County and jurisdictional officials predict significant growth in all areas. Significant projected growth includes the following:

Projected County/Jurisdictional Growth	
Industrial	• South Memphis- XPO Logistics is expanding local industrial operations in South Memphis adding new operating space, processing areas and over 300 distribution jobs • Memphis Airport Area- DHL Express expanding two industrial warehouse expansions, adding 250 jobs • South Memphis- Airport Area- Siemens Healthineers Industrial Products is launching a \$70M factory expansion • Memphis, South- Blues City Brewery, LLC expansion of manufacturing capabilities and machinery processing at primary distillery located at 5151 E Raines Road. • Memphis, Riverside - Hyosung Heavy Industries Corporation is developing new construction and site improvements in the City of Memphis at 2865 Riverport Road, to produce electrical power equipment and industrial machinery • Memphis, Riverside- The Pallet Factory Inc, expanding existing 46,508 square foot manufacturing facility, in addition to adding a 40,000 sq ft facility. The Pallet Factory makes pine and hardwood pallets and refurbishes existing pallets to customer specifications. • Memphis, Frayser- Penn A Kem LLC., renovation of existing structures and construction of new structures. Penn A Kem is a chemical manufacturing company for agrichemical and pharmaceutical markets. • Memphis- Airport Area, United Parcel Service Inc., is expanding current operating space with the construction of a new combined air and ground sorting facility • Memphis, Riverside- Carvana Distribution Center new facility will create more than 450 jobs with a new regional distribution center • PeroxyChem, a global leader in peroxygen chemistries, plans to construct a new peracetic acid production facility in Memphis, Tennessee. PeroxyChem won a competitive Memphis City contract, and has begun construction at the Maynard C. Stiles Wastewater Treatment Plant. • Memphis, South- Cummins, Inc. will investing \$6.7 million to expand its current parts and distribution center in Memphis, Tennessee. The expansion will create 70 new jobs for Shelby County. The site designs, manufactures, distributes, and services diesel and natural gas engines and related technologies, including fuel systems, controls, air handling, filtration, emission solutions and electrical power generation systems. • Memphis- Airport Area, United Parcel Service Inc., construction of new combined air and ground sort facility

	• Memphis, Airport Area The modernization project will consolidate airline operations as well as retail. The facility will see reconfigurations to the concourse and runways, giving more aircraft clearance. Facility will also be seismically retrofitted. • The new Amazon processing facility will contain more than 1 million sq ft of operating space and create 500 full-time jobs, It will handle larger bulk items and package sorting2
Commercial	• Downtown, Riverside – Memphis The \$60M makeover of the 30-acre Tom Lee Park will feature 5 new buildings; an open-air rec area and more than 250,000 square feet of open lawn space. • East Memphis - Poplar Plaza at Park Ave- project launched to develop a \$56M redevelopment and expansion of mixed use, and commercial properties • Germantown- Expedient, a leading provider of data center colocation, cloud computing and managed hosting services, opened its newest top-tier data. The new facility will be connected to the company's 10 other data centers, by its 10Gbps fiber optic network. The data center is 35,000 square feet with 7,500 square feet of raised floor production • Memphis- Airport Area, United Parcel Service Inc., construction of new combined air and ground sort facility • Memphis- Downtown- Autozone launches a \$12M Operations Expansion at the downtown site. • Memphis Downtown- FedEx Logistics moving national headquarters to former Gibson Guitar building in Downtown Memphis- The FedEx Logistics Operation began moving operations in April 2020, to expand to the 154,000 sq ft vacant Gibson Guitar Factory. • Memphis- Downtown, Loews Hotels developing a \$240 million Downtown Memphis project with retail space and apartments • Memphis- Raleigh-Fraser – 68,000sq ft Amazon Sorting Facility groundbreaking, adding to the current Amazon network centered in Shelby County. • Memphis, Airport - Mimeo, an online content management service, distribution network, and printing company, invested \$16 million to expand its facility operations, establishing its U.S. headquarters in Memphis, Tennessee, creating 300 jobs in Shelby County. The company's Memphis facility is located adjacent to FedEx's Global Hub • Memphis, Downtown- the ServiceMaster Corporate Headquarters relocated to downtown Memphis, bringing 2300 jobs • Memphis/Germantown- Renovation of existing structures and new construction at two properties at 1100 Ridgeway Loop and 889 Ridge Lake Boulevard. The Memphis facility will expand, providing service for the Private Capital Group, Equity Capital Markets, Fixed Income Markets, and maintaining daily operations

	• Memphis, Downtown/Medical District- UTHSC College of Dentistry is expanding with a 68,000 sq. ft. facility designed to provide special needs clinic • Memphis, Midtown- New headquarters for DEVCON (cybersecurity software), Green Mountain Technology (shipping/technology), and Indigo Ag (agricultural technology) have launched operations • Memphis, Raleigh-The closed Raleigh Springs Mall site was converted to into a \$28 million civic center the end of June 2019, creating civic and commercial space to include a library, rec park, and police precinct. • Memphis/Germantown- Carrefour Redevelopment is a multiphase commercial property development which will include retail space, multi-story office building and hotel space • St. Jude Children's Research Hospital announced a new construction project, a \$13.4 million laboratory and support facility • Memphis, Airport Area- FedEx launched a \$1 billion renovation and expansion of the FedEx hub • Memphis, University Areas- The University of Memphis Research Foundation has funded a research park, established on main University of Memphis campus in 2018. The 10,000-square-foot facility serves as research and technology facility for cybersecurity testing, robotics, smart biomaterials, additive manufacturing, and bioengineering. • Memphis- Raleigh Town Center District ("District") is a 211.5-acre area focused around the intersection of Austin Peay Highway at Yale Road is \$91 million commercial property, mixed use and retail zoned along the Austin Peay Highway. • Power & Tel is expanding a \$25 million headquarters on the border of Shelby and Fayette County to consolidate regional operations to one facility, while expanding operational capabilities. • Memphis Cook Convention Center is currently under renovations, expanding the existing facility instead of constructing a new one. The facility will undergo a \$175 Million investment
Residential	• Shelby County is seeing expanded residential project developments, with over 5000 new apartment units planned or in current development. Projects include: • Downtown Memphis - A local apartment developer has his sights set on the long-vacant building at 2701 Union Ave. Extended • Unincorporated Shelby County, near Germantown The 398-unit project will eventually cost about \$40 million in vertical construction. • Memphis- Cooper Young District 17,000-square-foot brewery and taproom is expected to open at 435 Madison Ave. in 2020

	• Memphis- Getwell \$17M worth of improvements to an apartment complex off of Getwell • Memphis, Medical District- Medical District apartments, Tower Park, a 128-unit apartment high-rise, undergoes \$18M overhaul • Collierville- \$270 million Farms at Bailey Station is now fully financed and under construction in Collierville. • Lakeland- The Lake District Project with Museum Lofts and the Lakeland Commons projects has broken ground • Memphis- Midtown- University Park Apartments is a new development with 80 apartment units and a retail restaurant space at 3637 Park Avenue • Memphis- Raleigh Town Center District ("District") is a 211.5-acre area focused around the intersection of Austin Peay Highway at Yale Road is \$91 million commercial property, mixed use and retail zoned along the Austin Peay Highway • Memphis- Binghampton- Grubb Management is developing and constructing a new residential development of approximately 350 apartment units at the intersection of Broad Avenue and Bingham Street. • Shelby County- Unincorporated, Shelby Farms- Velo at Shelby Farms Parkside at Shelby Farms with 267 Units, 63 Garages on Approximately 23 Acres, Opening 2021 • The Dwell at Shelby Farms is developing 715 apartments, 102 single-family houses and 162 senior-living units on undeveloped land now zoned heavy industrial • Parkside at Shelby Farms comprises approximately 59 acres facing Shelby Farms Park, Parkside at Shelby Farms Park is a 60+ acre development which will include 33,000 square feet of commercial space, 1,700 structured parking spaces, and 1,400 apartments, along with a mixture of garden homes, offices, and support services. The development will also include a 130-room boutique hotel at the corner of Mullins Station and Whitten Road • Memphis, East Park Area-New Project constructing approximately 240 apartment units at the intersection of Poplar Avenue and Highland to be marketed as Poplar Plaza
--	--

Projected School/District Growth	
School	- Arlington Community Schools: new bus lot, new administration building, new middle school gym addition, new indoor practice facility - Bartlett High School located at 5688 Woodlawn St is undergoing major improvement and expansion - Collierville Elementary School addition to building, projection 2021 - Construction of the Lakeland Preparatory School high school addition (capacity for 1100 additional students) is underway, and the school is scheduled to open in August, 2022 - Shelby County Schools: Future school construction at Frayser Community, Kingsbury Area, Orange Mound Community, Raleigh Craigmont Community, Cordova, Southeast, and Hickory Hill Community; Kingsbury ES/ MS/ HS- Major School Renovations

As is often the case, development has led to some flooding problems and will be monitored by county and jurisdictional agencies, which will require careful planning to reduce the risk moving forward.

Jurisdictional & School District Capabilities

The following chart indicates the legal and regulatory adherence of each of the jurisdictions within Shelby County:

Jurisdictional Tools, Plans, & Capabilities	Shelby County	Memphis	Arlington	Bartlett	Collierville	Germentown	Lakeland	Millington
Building Codes	Y	Y	Y	Y	Y	Y	N	Y
Zoning	Y	Y	Y	Y	Y	Y	Y	Y
Emergency Response Plan	Y	Y	Y	Y	Y	Y	Y	Y
National Flood Insurance Program Participant	Y	Y	Y	Y	Y	Y	Y	Y
Post-Disaster Recovery Plan	Y	Y	Y	Y	Y	Y	Y	Y
Law Enforcement	Y	Y	N	Y	Y	Y	N	Y
Full Time Fire Services	Y	Y	Y	Y	Y	Y	N	Y

Jurisdictional Tools, Plans, & Capabilities	Shelby County	Memphis	Arlington	Bartlett	Collierville	Germentown	Lakeland	Millington
Grant Writer	Y	Y	Y	N	N	Y	N	N
Public Information Officer	Y	Y	Y	Y	Y	Y	N	Y

School District Tools, Plans, & Capabilities	Community Schools	Schools	Collierville Schools	Lakeland School System	Millington Municipal Schools	Shelby County Schools
Emergency Response Plan	Y	Y	Y	Y	Y	Y
Post-Disaster Recovery Plan	Y	Y	Y	Y	Y	Y
Law Enforcement/SRO	Y	Y	Y	Y	Y	Y
Grant Writer	N	Y	Y	N	Y	Y
Public Information Officer	Y	Y	N	N	Y	Y
Capital Improvement Funding	N	Y	Y	Y	Y	Y
Bond Funding	N	Y	Y	Y	N	N
Private Contributions	N	Y	Y	Y	N	Y
State/Federal Funding	Y	Y	Y	Y	Y	Y
Emergency Notification System	Y	N	Y	Y	Y	Y

Expanding & Improving Mitigation Programs

All jurisdictions have been active in the past in pursuing mitigation projects. All involved see the opportunity in BRIC state funding minimums, as well as multiple HMGP funding streams from several disasters within the state. Challenges to expanding mitigation programs include funding of the local match, buy-in from elected officials, public support for additional funding for districts, and keeping all stakeholders involved in the planning process between 5-year mitigation plan updates.

Section 3: Risk Assessment

Hazard Identification

To begin to assess Shelby County's risk to natural hazards and identify the community's areas of highest vulnerability, the mitigation committee had to identify which hazards have or could impact the county. This hazard identification process began with researching previous hazard events that have occurred in Shelby County by going through newspaper articles, Shelby County Emergency Management Agency records, and recalling personal experiences. From there Emergency Management staff also analyzed hazard events that could occur in the county by reviewing scientific studies and the State of Tennessee Hazard Mitigation Plan. The following hazards have been identified as hazards of concern by the Shelby County mitigation committee within the update process.

Flooding

Flooding events occur when excess water from rivers and other bodies of water overflow onto riverbanks and adjacent floodplains. In addition, lower lying regions can collect water from rainfall and poorly drained land can accumulate rainfall through ponding on the surface. Floods in Shelby County are usually caused by rainfall, but may also be caused by snowmelt and man-made incidents. The below charts explain common ways flooding occurs and common factors that contribute toward the severity of floods.

Common Ways Flooding Occurs	
Methods	Description
Overland Flow	
(a) Infiltration	-Excess overland flow occurs when the rain is falling more rapidly that it infiltrates into the soil.
(b) Saturation	-Excess overland flow occurs when soil spaces are so full of water that no more rain can be absorbed.
Throughflow	-Rainwater which has infiltrated into unsaturated soil can move horizontally to the river channel. This process is slower than overland flow but faster than base flow.
Baseflow	-Rainwater which has percolated to the aquifer can seep into the river channel. This is the slowest process.

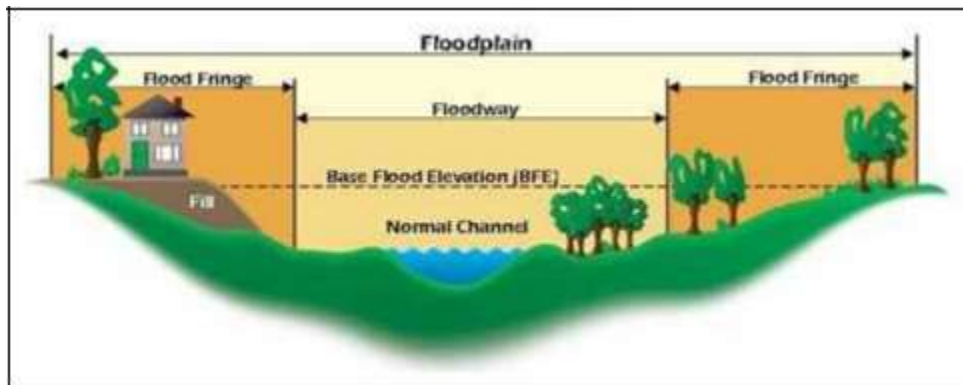
Source: The Field Studies Council

Common Causes of Flooding	
Factor	Effect on Flooding
Geology	Impermeable rocks are saturated more quickly than porous and pervious rocks. Saturation excess overland flow is more common. Sandy soils have larger pore spaces than clay soils. Infiltration is most rapid in sandy soils.
Relief	Water reaches the channel more rapidly in a steeper basin as water is travelling more quickly downhill.
Vegetation	Vegetation intercepts a large proportion of rainfall. Where trees are deciduous, discharge is higher in a forested basin in winter as there is less interception.
Meteorological Factors	Where rain is falling faster than the infiltration rate, there is infiltration-excess overland flow. This is common after a summer storm. Snow does not reach the channel but is stored on the ground surface. As snow melts, the meltwater will reach the channel quickly as infiltration is impeded if the ground is still frozen.
Catchment Shape	It takes less time for water to reach the channel in a circular basin as all extremities are roughly equidistant from the channel.
Land Use	Surface runoff is higher in urban areas because there are more urban surfaces (concrete & tarmac) and sewers take water rapidly to rivers. There is less interception and evapotranspiration and more surface runoff in a deforested catchment.
Catchment Size	Water reaches the channel more rapidly in a smaller basin as water has a shorter distance to travel.
Antecedent Conditions	The level of discharge before the storm is called the antecedent discharge. Even a small amount of rain can lead to flooding.

Source: The Field Studies Council

In Shelby County some areas are more flood-prone than others. One of the ways of identifying these flood-prone areas is through determining the county's 100- and 500-year floodplains. 100- year floods are calculated to be the level of flood water expected to be equaled or exceeded every 100 years on average, meaning a flood that has a 1% chance of being equaled or exceeded in magnitude in any single year. A 500-year floodplain has a 0.2% chance. A 100-year floodplain would include the areas adjoining a stream, river, or watercourse that would be covered by water in the event of a 100-year flood (see diagram below).

Characteristics of a Floodplain



Source: FEMA

Detailed Flood Insurance Rate Maps (FIRMs) are also included in [Appendix 5](#), which shows where FEMA has placed the 500-year floodplain for each jurisdiction.

Shelby County historically has had many flood events in the past. Based on NOAA NCDC data, the following charts provide a list of flood events occurring in Shelby County from January 1950 to present and a list of floods with descriptions of their impacts imposed on the community.

Flood Events in Shelby County: January 1950–Present

Location	Date	Type	Deaths	Injuries	Property Damage
MEMPHIS	7/24/1996	Flash Flood	0	0	5.00K
MEMPHIS	10/27/1996	Flash Flood	0	0	20.00K
SHELBY (ZONE)	3/1/1997	Flood	1	0	100.00K
MEMPHIS	9/23/1997	Flood	0	0	40.00K
MEMPHIS	7/29/1998	Flood	0	0	1.00K
MEMPHIS	8/8/1998	Flash Flood	0	0	1.00K
MEMPHIS	4/3/1999	Flood	0	0	1.00K
MILLINGTON	5/5/1999	Flood	0	0	1.00K
GERMANTOWN	5/5/1999	Flood	0	0	1.00K
MEMPHIS	7/30/2001	Flash Flood	0	6	25.00K
MEMPHIS	8/12/2001	Flash Flood	0	0	1.000M
MEMPHIS	11/24/2001	Flash Flood	0	0	1.00K
SHELBY (ZONE)	11/28/2001	Flood	0	0	1.000M
SHELBY (ZONE)	12/12/2001	Flood	0	0	1.00K
MEMPHIS	3/17/2002	Flash Flood	0	0	1.00K
MEMPHIS	4/30/2002	Flash Flood	0	0	0.50K
FRAYSER	5/25/2002	Flash Flood	0	0	1.00K
BARTLETT	5/28/2002	Flash Flood	0	0	1.00K
MEMPHIS	6/13/2002	Flash Flood	0	0	1.00K
MEMPHIS	7/14/2002	Flash Flood	0	0	2.00K
BARTLETT	9/19/2002	Flash Flood	0	0	1.00K
MEMPHIS	9/20/2002	Flash Flood	0	0	100.00K
COUNTYWIDE	10/10/2002	Flash Flood	0	0	20.00K
MEMPHIS	11/10/2002	Flash Flood	0	0	1.00K
MEMPHIS	12/18/2002	Flash Flood	0	0	5.00K
MILLINGTON	12/19/2002	Flood	0	0	0.50K
MEMPHIS	4/20/2003	Flash Flood	0	0	5.00K
MILLINGTON	5/16/2003	Flash Flood	0	0	1.00K
MEMPHIS	5/17/2003	Flash Flood	0	0	5.00K
MEMPHIS	6/16/2003	Flash Flood	0	0	1.00K
MEMPHIS	2/5/2004	Flash Flood	0	0	1.00K
MEMPHIS	3/20/2004	Flash Flood	0	0	5.00K
MEMPHIS	6/14/2004	Flash Flood	0	0	5.00K
FRAYSER	10/18/2004	Flash Flood	0	0	1.00K

Section 3: Risk Assessment

MEMPHIS	10/19/2004	Flash Flood	0	0	1.00K
MEMPHIS	7/15/2005	Flash Flood	0	0	1.00K
MEMPHIS	7/17/2005	Flash Flood	0	0	1.00K
MEMPHIS	7/19/2005	Flash Flood	0	0	1.00K
MEMPHIS	11/15/2005	Flash Flood	0	0	1.00K
MEMPHIS	5/30/2006	Flash Flood	0	0	0.01K
CORDOVA	6/18/2006	Flash Flood	0	0	0.01K
GERMANTOWN	2/24/2007	Flash Flood	0	0	0.00K
GERMANTOWN	6/25/2007	Flash Flood	0	0	1.00K
ARLINGTON	7/6/2007	Flash Flood	0	0	0.00K
MEMPHIS	7/26/2007	Flash Flood	0	0	0.00K
BARTLETT	8/18/2007	Flash Flood	0	0	0.00K
FRAYSER	10/8/2007	Flash Flood	0	0	0.00K
BARTLETT	11/21/2007	Flash Flood	0	0	0.00K
ELLENDALE	11/21/2007	Flash Flood	0	0	0.00K
MEMPHIS	1/8/2008	Flash Flood	0	0	0.00K
RALEIGH	1/8/2008	Flash Flood	0	0	0.00K
CORDOVA	1/8/2008	Flash Flood	0	0	0.00K
SPRING LAKE	1/10/2008	Flash Flood	0	0	0.00K
GERMANTOWN	1/10/2008	Flash Flood	0	0	0.00K
WHITE STATION	3/3/2008	Flash Flood	0	0	0.00K
MEMPHIS	3/3/2008	Flash Flood	0	0	0.00K
BARTLETT	3/15/2008	Flash Flood	0	0	0.00K
BENJESTOWN	3/31/2008	Flash Flood	1	0	0.00K
PISGAH HGTS	3/31/2008	Flash Flood	1	0	0.00K
MEMPHIS	3/31/2008	Flash Flood	0	0	0.00K
COLLIERVILLE ARPK	4/1/2008	Flood	1	0	10.00K
COLLIERVILLE ARPK	4/4/2008	Flash Flood	0	0	0.00K
LENOW	4/11/2008	Flash Flood	0	0	0.00K
WHITE STATION	5/10/2008	Flash Flood	0	0	0.00K
GERMANTOWN	5/10/2008	Flash Flood	0	0	0.00K
PISGAH HGTS	7/31/2008	Flash Flood	0	0	0.00K
AULON	8/25/2008	Flash Flood	0	0	20.00K
NATIONAL CEMETERY	8/25/2008	Flash Flood	0	0	0.00K
SHELBY CENTER	8/25/2008	Flash Flood	0	0	0.00K
MEMPHIS	12/27/2008	Flash Flood	0	0	0.00K
AULON	5/2/2009	Flash Flood	0	0	0.00K
SHELBY FARMS	6/12/2009	Flash Flood	0	0	0.00K
MILLINGTON	7/5/2009	Flash Flood	1	0	20.00K
BERCLAIR	7/16/2009	Flash Flood	0	0	0.00K
RALEIGH	7/21/2009	Flash Flood	0	0	0.00K
WHITE STATION	7/26/2009	Flash Flood	0	0	0.00K
COLLIERVILLE	7/30/2009	Flash Flood	0	0	500.00K

ARLINGTON	7/30/2009	Flash Flood	0	0	0.00K
COLLIERVILLE	8/1/2009	Flash Flood	0	0	0.00K
AULON	8/18/2009	Flash Flood	0	0	0.00K
GERMANTOWN	8/18/2009	Flash Flood	0	0	0.00K
MEMPHIS	9/16/2009	Flash Flood	0	0	0.00K
WEST JCT	9/18/2009	Flash Flood	0	0	40.00K
CORDOVA	9/20/2009	Flash Flood	0	0	0.00K
ARLINGTON	12/8/2009	Flash Flood	0	0	0.00K
SHELBY FARMS	4/7/2010	Flash Flood	0	0	0.00K
AULON	4/24/2010	Flash Flood	0	0	0.00K
(MEM)MEMPHIS INTL AR	4/24/2010	Flash Flood	0	0	0.00K
SHELBY CENTER	4/24/2010	Flash Flood	0	0	0.00K
GERMANTOWN	4/24/2010	Flash Flood	0	0	0.00K
ARLINGTON MUNI ARPT	4/24/2010	Flash Flood	0	0	0.00K
KERRVILLE	5/1/2010	Flash Flood	1	0	28.900M
PISGAH HGTS	5/1/2010	Flash Flood	0	0	150.00K
ARLINGTON	5/1/2010	Flood	0	0	50.000M
EAST JCT	5/14/2010	Flash Flood	0	0	0.00K
LENOW	5/16/2010	Flash Flood	0	0	0.00K
WOODSTOCK	5/24/2010	Flash Flood	0	0	0.00K
CORDOVA	5/24/2010	Flash Flood	0	0	0.00K
LUCY	5/24/2010	Flash Flood	0	0	0.00K
SHELBY CENTER	5/24/2010	Flash Flood	0	0	0.00K
BARTLETT	6/3/2010	Flash Flood	0	0	0.00K
BAILEY	6/16/2010	Flash Flood	0	0	0.00K
BAILEY	6/17/2010	Flash Flood	0	0	0.00K
MILLINGTON	6/18/2010	Flash Flood	0	0	0.00K
COLLIERVILLE ARPK	6/26/2010	Flash Flood	0	0	0.00K
(MEM)MEMPHIS INTL AR	7/12/2010	Flash Flood	0	0	20.00K
WHITEHAVEN	7/29/2010	Flash Flood	0	0	0.00K
GERMANTOWN	8/9/2010	Flash Flood	0	0	0.00K
BUNTYN	8/10/2010	Flash Flood	0	0	0.00K
WHITEHAVEN	8/13/2010	Flash Flood	0	0	0.00K
LENOW	2/24/2011	Flash Flood	0	0	0.00K
ARLINGTON	4/26/2011	Flash Flood	0	0	20.00K
SHELBY FARMS	4/27/2011	Flood	0	0	150.00K
DARWIN	5/1/2011	Flood	0	0	2.000B
LUCY	5/1/2011	Flash Flood	0	0	0.00K
MALLORY	5/2/2011	Flash Flood	0	0	0.00K
SHELBY FARMS	7/21/2011	Flash Flood	0	0	0.00K
CORDOVA	3/16/2012	Flash Flood	0	0	50.00K
GERMANTOWN	6/11/2012	Flash Flood	0	0	0.00K

FOREST HILL	7/10/2012	Flash Flood	0	0	0.00K
MEMPHIS	9/2/2012	Flash Flood	0	0	0.00K
CORDOVA	1/30/2013	Flash Flood	0	0	100.00K
MALLORY	5/21/2013	Flash Flood	0	0	30.00K
ELLEDALE	7/18/2013	Flash Flood	0	0	250.00K
RUGBY	2/4/2014	Flash Flood	0	0	0.00K
FOREST HILL	6/6/2014	Flash Flood	0	0	0.00K
EADS	6/29/2014	Flash Flood	0	0	50.000M
MILLINGTON	9/11/2014	Flash Flood	0	0	1.100M
ARLINGTON	2/21/2015	Flood	0	0	0.00K
MADGE	4/13/2015	Flash Flood	0	0	0.00K
SHELBY FARMS	7/3/2015	Flash Flood	0	0	15.00K
MEMPHIS	7/23/2015	Flash Flood	0	0	500.00K
(MEM)MEMPHIS INTL AR	8/5/2015	Flash Flood	0	0	0.00K
SHELBY FARMS	8/5/2015	Flash Flood	0	0	0.00K
FELTS	11/17/2015	Flash Flood	0	0	25.00K
SHELBY CENTER	2/2/2016	Flash Flood	0	0	0.00K
MEMPHIS	2/2/2016	Flash Flood	0	0	0.00K
DARWIN	3/9/2016	Flash Flood	0	0	0.00K
EAST ACRES	3/11/2016	Flood	0	0	0.00K
WEST JCT	3/13/2016	Flash Flood	0	0	0.00K
BERCLAIR	4/29/2016	Flash Flood	0	0	0.00K
WHITE STATION	5/25/2016	Flash Flood	0	0	0.00K
ARLINGTON	6/3/2016	Flash Flood	0	0	1.500M
GERMANTOWN	6/27/2016	Flash Flood	0	0	0.00K
GERMANTOWN	7/14/2017	Flash Flood	0	0	0.00K
BERCLAIR	7/14/2017	Flash Flood	0	0	0.00K
MEMPHIS	8/11/2017	Flash Flood	0	0	1.00K
FOREST HILL	8/11/2017	Flash Flood	0	0	1.00K
MEMPHIS	8/31/2017	Flash Flood	0	0	0.00K
PISGAH	8/31/2017	Flash Flood	0	0	0.00K
EAST ACRES	3/1/2018	Flood	0	0	0.00K
ROSEMARK	3/1/2018	Flood	0	0	0.00K
SPRING LAKE	6/24/2018	Flash Flood	0	0	0.00K
GERMANTOWN	8/29/2018	Flash Flood	0	0	0.00K
RALEIGH	2/23/2019	Flash Flood	0	0	0.00K
FOREST HILL	6/7/2019	Flash Flood	0	0	0.50K
FOREST HILL	6/7/2019	Flash Flood	0	0	15.00K
FOREST HILL	6/7/2019	Flash Flood	0	0	1.500M
FOREST HILL	6/7/2019	Flash Flood	0	0	150.00K
GERMANTOWN	8/20/2019	Flash Flood	0	0	0.00K

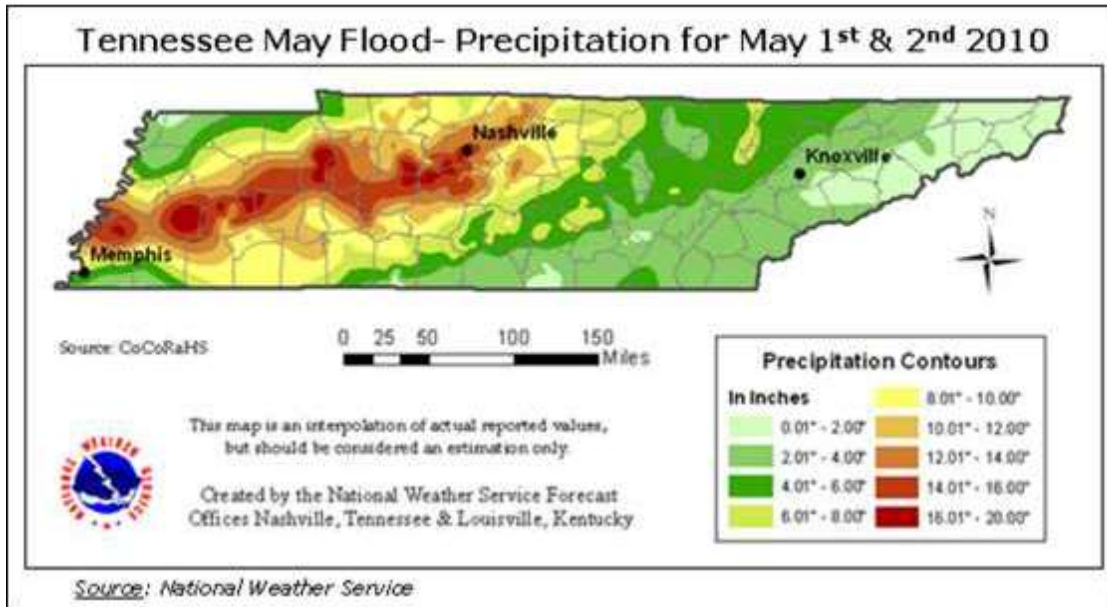
The above list represents all listed incidents from the NCDC site for a given time period. If a jurisdiction or district is not listed, there is not a recorded incident of this nature with the NCDC.

Small localized flood events are likely to occur approximately 6-7 times per year (over the last 25 years) in Shelby County. The severity of flooding that may occur in the county is measured by depth of inundation. The following occurred during the May 1st & 2nd, 2010 flood event (*DR-1909*), which led to up to 16" of precipitation in many areas of Shelby County. The impacts from this (or other) significant flooding events for each applicant are listed below:

Location	Extent
Shelby County	• 1 fatality when vehicle became stranded in a flooded roadway • 576 homes received some kind of flood damage, of which 77 were completely destroyed • 8 businesses were damaged • 403 mobile homes were completely destroyed • Several other buildings (including apartment complexes) were damaged • The flash flooding event transitioned into a flood event where rivers rose rapidly spilling over their banks • Inundation over roadways in the northern end of the county exceeded 5' in some areas
Memphis	• Water covered some streets with water inundation as high as vehicle wheel wells
Arlington	• No significant flooding from May, 2010 event • Arlington experienced flash flooding in 2016, with up to 1-2' of water in several homes
Bartlett	• Widespread flooding, with inundation up to 4'
Collierville	• Johnson Park flooded in 3' of water • Several homes flooded with several inches • Collierville-Arlington road was closed due to 6" of floodwater
Germantown	• Greenway along the Wolf River, as well as the associated out-buildings, experienced as much as 2' of inundation • Businesses built over a former landfill experienced flammable gas in their

	building due to such a fast water table rise
Lakeland	• Steward Road flooding approximately 1' • Salem Road under 1' in areas near Brunswick Road • Ivy Creek Lane had 3-4' of flood water • Homes flood in Ivy Creek and on Stewart Road
Millington	• Levee holding back water from Big Creek was topped • 200-300 homes in base housing at Naval Support Activity Millington were flooded • Numerous people had to be rescued • 4-5' of water covered the navy base • Some locations were covered by as much as 8 feet of water • All roads were closed
Shelby County Schools	• Six schools sustained considerable flood damage in 2011 from up to 12" of flood water in school buildings
Arlington Community Schools	• Roof drains at Arlington Elementary are tied to the city drain system. The system periodically gets overwhelmed, and leads to several inches of flood water in classrooms
Bartlett City Schools	• Flood is low risk/no noted damage
Collierville Schools	• Flood is low risk/no noted damage
Lakeland School System	• No flooding incidents since the inception of the school district. Flood is rated as a moderate risk due to the impact on bus routes.
Millington Municipal Schools	• Millington High School experienced 3+" of inundation in flooding during 2016

Precipitation Map – May 1st & 2nd, 2010

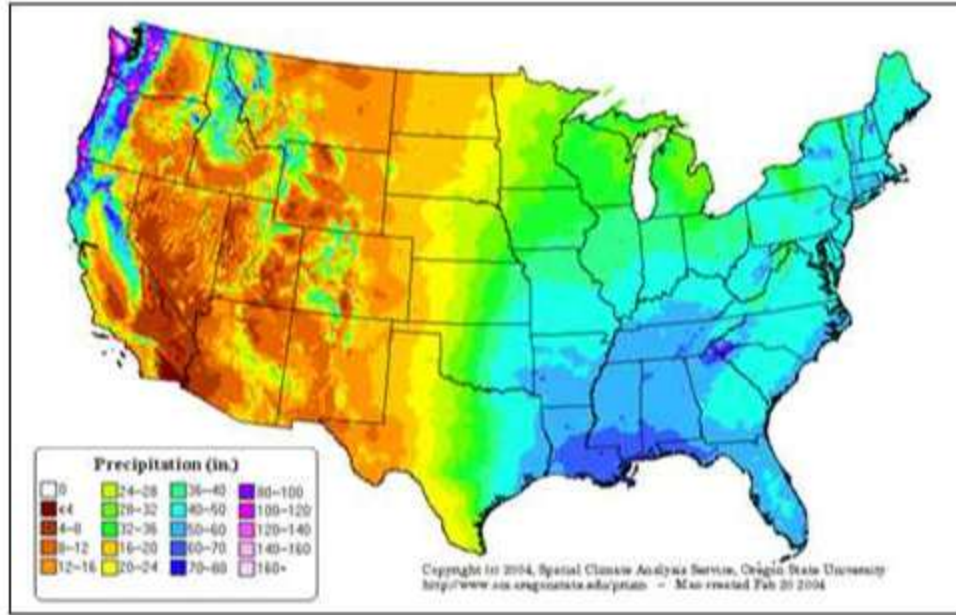


According to a NOAA Flood Risk Map (see map below), the majority of Tennessee was located in an "above average" risk of flooding zone during spring 2010. This proposed vulnerability is coupled with the fact that on average Tennessee usually acquires over 50-60 inches of rainfall a year (see following map).

U.S. Flood Risk (2010)



Average Annual Precipitation per Year (1971-2000)



Source: Spatial Climate Analysis Service, Oregon State University

Shelby County uses a ranking system to determine each jurisdiction's vulnerability to flooding events. This system is based off simple arithmetic which analyzes potential impacts to determine vulnerabilities and then analyzes the probability of a flood event occurring to calculate a flood risk ranking for each jurisdiction.

Flooding

Jurisdiction/Applicant	Human	Impacts Property	Business	Vulnerability $H+P+B=\#$; $\#/3=V$
Shelby County	2	4	3	3.0
Memphis	3	3	3	3.0
Arlington	2	4	2	2.7
Bartlett	2	4	2	2.7
Collierville	1	1	1	1.0
Germantown	1	5	2	2.7
Lakeland	3	4	1	2.7
Millington	4	5	2	3.7
Arlington Community Schools	1	2	1	1.3
Bartlett City Schools	1	2	1	1.3
Collierville Schools	1	1	1	1.0
Lakeland School System	3	4	1	2.7
Millington Municipal Schools	4	5	2	3.7
Shelby County Schools	4	5	4	4.3

Jurisdiction/ Applicant	Vulnerability	Probability		Risk <i>V+P=R</i>
Shelby County	3.0	3	6.0	Medium
Memphis	3.0	3	6.0	Medium
Arlington	2.7	3	5.7	Medium
Bartlett	2.7	2	4.7	Moderate
Collierville	1.0	3	4.0	Moderate
Germantown	2.7	2	4.7	Moderate
Lakeland	2.7	2	4.7	Moderate
Millington	3.7	2	5.7	Medium
Arlington Community Schools	1.3	2	3.3	Low
Bartlett City Schools	1.3	2	3.3	Low
Collierville Schools	1.0	1	2.0	Low
Lakeland School System	2.7	2	4.7	Moderate
Millington Municipal Schools	3.7	2	5.7	Medium
Shelby County Schools	4.3	4	8.3	High
			Risk	
			Low	2-3.6
			Moderate	3.7-5.2
			Medium	5.3-6.8
			High	6.9-8.4
			Severe	8.5-10

Human	
<i>Risk of Injuries and Death from the Hazard</i>	
1	Death very unlikely, injuries are unlikely
2	Death unlikely, injuries are minimal
3	Death unlikely, injuries may be substantial
4	Death possible, injuries may be substantial
5	Deaths probable, injuries will likely be substantial

Property	
<i>Amount of Residential Property Damage Associated from Hazard</i>	
1	Less than \$500 in damages
2	\$500-\$10,000 in damages
3	\$10,000-\$500,000 in damages
4	\$500,000-\$2,000,000 in damages
5	More than \$2,000,000 in damages

Business	
<i>Amount of Business Damage Associated from the Hazard</i>	
1	Less than 3 businesses closed for only a day
2	More than 3 businesses closed for a week
3	More than 3 businesses closed for a few months
4	More than 3 businesses closed indefinitely or relocated
5	A top-10 local employer closed indefinitely

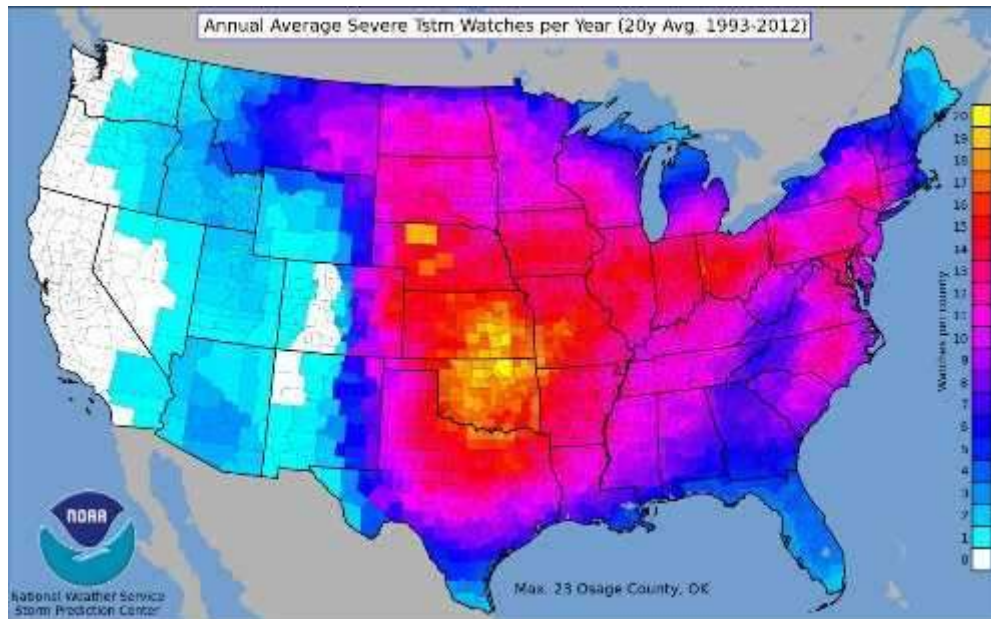
Probability	
<i>Amount of Residential Property Damage Associated from Hazard</i>	
1	Less than once every 10 years
2	About once every 5-10 years
3	About once every 2-5 years
4	About once a year
5	More than once a year

For further information about flooding hazards in Shelby County, see the HAZUS vulnerability study in [Appendix 5](#).

Severe Weather

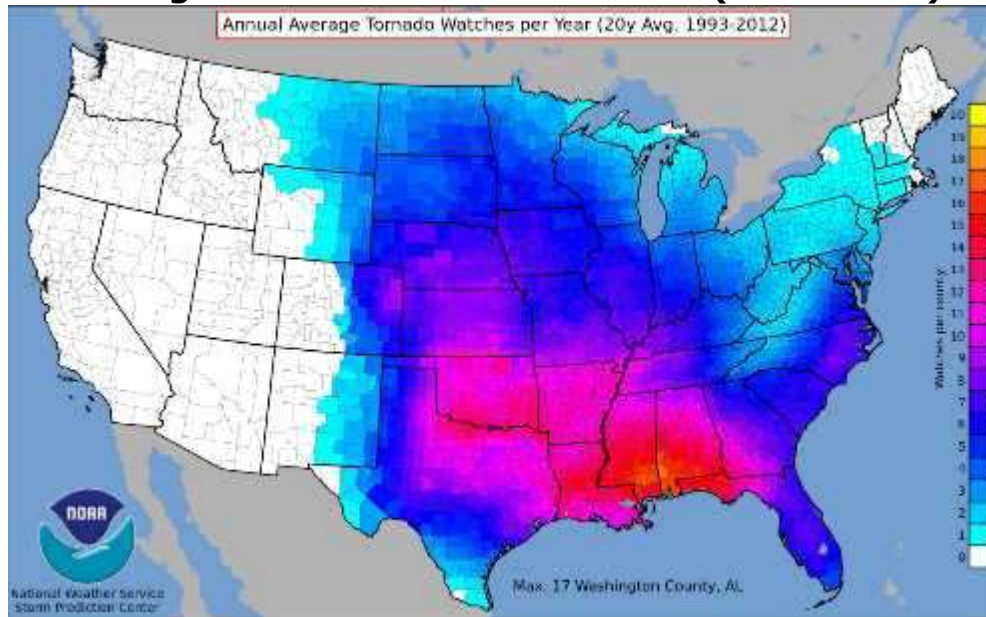
According to the National Weather Service, to consider a storm severe it must encompass one of three traits: produce winds greater than 58 miles per hour (50.4 knots), produce hail $\frac{3}{4}$ of an inch or greater in diameter, or produce tornadoes. On average, a typical county in Tennessee has about 10 severe storm watches per year (see map below).

Average Severe Storm Watches Per Year (1993-2012)



Source: NOAA/NWS Storm Prediction Center

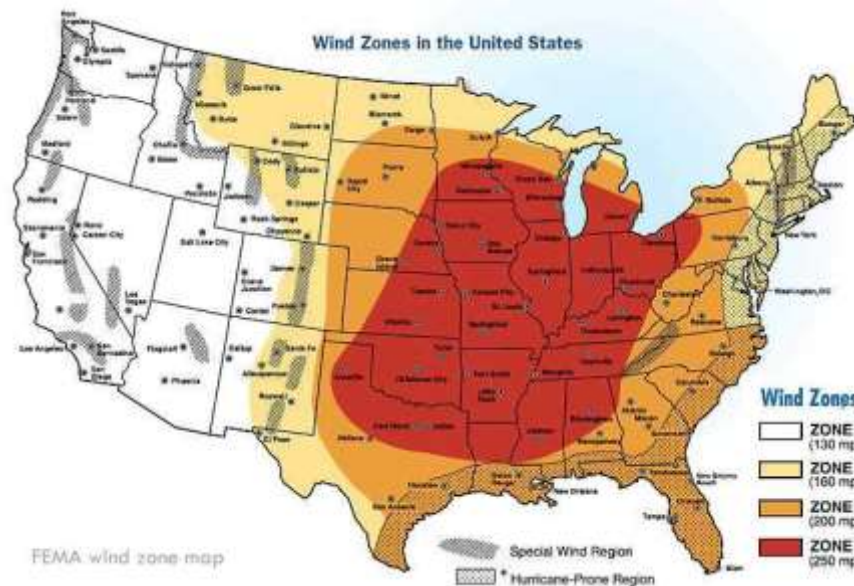
Average Tornado Watches Per Year (1993-2012)



Source: NOAA/NWS Storm Prediction Center

A tornado is a violently rotating column of air that extends from a thunderstorm, etc. down to the ground, and can reach wind speeds of 40 mph to 250 mph and higher. Tornadoes paths, lengths, and widths can vary greatly. In Shelby County, all jurisdictions are vulnerable to tornado threats. The following map places much of Tennessee in the highest wind zone (see following map).

Wind Zones in the United States



Source: FEMA

Shelby County historically has had several tornado events in the past. Based on NOAA NCDC data, the following chart provides a list of tornado events occurring in Shelby County from January 1950 to present.

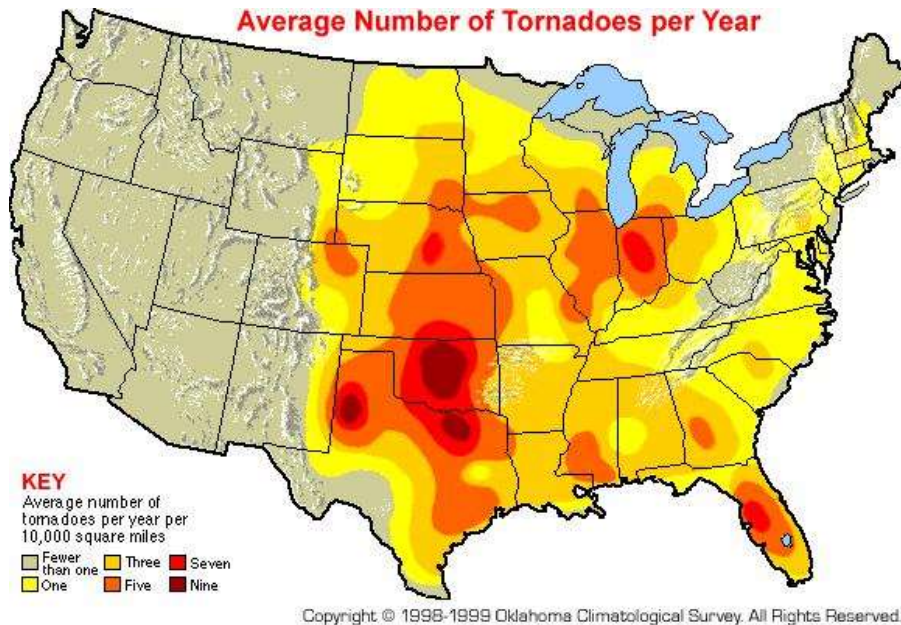
Tornado Events in Shelby County: January 1950–Present

Location	Date	Magnitude	Deaths	Injuries	Property Damage
SHELBY CO.	10/28/1955	F2	0	0	250.00K
SHELBY CO.	7/21/1956	F1	0	0	2.50K
SHELBY CO.	3/4/1964	F2	0	3	25.00K
SHELBY CO.	7/11/1964	F1	0	0	250.00K
SHELBY CO.	5/16/1966	F1	0	0	25.00K
SHELBY CO.	4/23/1967	F1	0	2	250.00K
SHELBY CO.	4/23/1967	F1	0	0	25.00K
SHELBY CO.	5/14/1967	F1	0	0	2.500M
SHELBY CO.	7/5/1967	F1	0	0	25.00K
SHELBY CO.	4/3/1968	F3	0	4	2.500M
SHELBY CO.	5/15/1968	F1	0	0	0.00K
SHELBY CO.	5/16/1968	F1	0	0	25.00K
SHELBY CO.	5/16/1968	F1	0	0	0.00K
SHELBY CO.	5/25/1968	F1	0	0	0.00K
SHELBY CO.	9/17/1968	F2	0	0	2.50K
SHELBY CO.	6/24/1969	F1	0	0	25.00K
SHELBY CO.	4/1/1970	F1	0	0	25.00K
SHELBY CO.	4/19/1970	F2	0	0	250.00K
SHELBY CO.	4/24/1970	F3	0	5	2.500M
SHELBY CO.	4/24/1970	F3	0	13	2.500M
SHELBY CO.	4/24/1970	F3	0	3	2.500M
SHELBY CO.	6/19/1970	F1	0	1	2.50K
SHELBY CO.	4/21/1972	F1	0	0	0.00K
SHELBY CO.	4/19/1973	F1	0	0	25.00K
SHELBY CO.	5/11/1973	F1	0	0	25.00K
SHELBY CO.	5/22/1973	F1	0	0	2.50K
SHELBY CO.	5/27/1973	F2	0	0	25.00K
SHELBY CO.	8/29/1978	F2	0	26	2.500M
SHELBY CO.	3/22/1979	F2	0	3	25.00K
SHELBY CO.	12/25/1982	F2	0	0	250.00K

SHELBY CO.	11/23/1983	F1	0	0	250.00K
SHELBY CO.	4/21/1984	F3	0	3	2.500M
SHELBY CO.	12/14/1987	F3	0	21	2.500M
SHELBY CO.	5/22/1988	F0	0	0	2.50K
SHELBY CO.	6/4/1989	F2	0	0	250.00K
SHELBY CO.	6/4/1989	F1	0	0	25.00K
SHELBY CO.	11/7/1989	F0	0	0	25.00K
SHELBY CO.	3/27/1991	F1	0	0	0.25K
SHELBY CO.	11/19/1991	F1	0	0	2.500M
SHELBY CO.	3/18/1992	F0	0	0	25.00K
Memphis	6/9/1994	F0	0	0	5.00K
Memphis	6/9/1994	F1	0	0	500.00K
SHELBY AND FAYETTE CO.	11/27/1994	F3	3	25	50.000M
SHELBY CO.	5/15/1995	F0	0	0	5.00K
CORDOVA	1/22/1999	F1	0	0	300.00K
FISHERVILLE	4/22/2004	F0	0	0	25.00K
CORDOVA	6/17/2006	F1	0	0	100.00K
BOLTON	2/5/2008	EF2	0	1	1.000M
WHITEHAVEN	2/5/2008	EF2	3	13	100.000M
EADS	2/5/2008	EF0	0	0	25.00K
BARTLETT	6/12/2009	EF1	0	0	25.00K
SHELBY CENTER	7/30/2009	EF1	0	0	250.00K
LUCY	5/1/2010	EF1	0	0	10.00K
ROSEMARK	4/28/2014	EF0	0	0	25.00K
(MEM)MEMPHIS INTL AR	10/21/2019	EF1	0	0	1.500M

The above list represents all listed incidents from the NCDC site for a given time period. If a jurisdiction or district is not listed, there is not a recorded incident of this nature.

Average Number of Tornadoes Per Year



Source: Oklahoma Climatological Survey

Tornadoes occur approximately once every six years in Shelby County over the time period of records being kept. The severity of tornadoes that may occur in the county is measured using the Fujita/Enhanced Fujita Scale for tornadoes (see chart below). Based on historical events, it is possible for the extent of a tornado to reach an F3 magnitude, as demonstrated on November 27th, 1994. This tornado resulted in 3 deaths, 25 injuries, and \$50 million (\$90.5 million when adjusted for inflation) in property damage.

Fujita Scale/Enhanced Fujita Scale for Tornadoes

Fujita / Enhanced Fujita Scale for Tornadoes				
F-Scale	Fastest Quarter Mile Wind Speed	Typical Impacts	Enhanced Scale: 3 Sec Wind Gust Speed	Enhanced F-Scale
F0	40-72 MPH	Some damage to chimney; breaks branches off trees; pushes over shallow-rooted trees; damages sign boards.	65-85 MPH	EF0
F1	73-112 MPH	Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.	86-110 MPH	EF1
F2	113-157 MPH	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.	111-135 MPH	EF2
F3	158-206 MPH	Roof and some walls torn off well-constructed homes; trains overturned; most trees in forest uprooted.	136-165 MPH	EF3

F4	207-260 MPH	Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.	166-200 MPH	EF4
F5	261-318 MPH	Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 meters; trees debarked; steel reinforced concrete structures badly damaged.	Over 200 MPH	EF5

Source: NOAA National Weather Service; The Tornado Project

Severe storm winds most commonly occur as straight-line winds; a downburst of wind created by an area of significantly rain-cooled air that spreads out in all directions after hitting the ground. All jurisdictions are vulnerable to receiving damage from these severe storm winds.

The following chart provides severe storm wind event information for Shelby County from January 2000 to present.

Wind Events in Shelby County: January 2000 – Present

Location	Date	Type	Extent	Deaths	Injuries	Property Damage
MEMPHIS	7/20/2000	Thunderstorm Wind	55 kts. M	0	0	0.00K
MILLINGTON	9/14/2000	Thunderstorm Wind		0	0	5.00K
SHELBY (ZONE)	11/24/2000	High Wind	34 kts. E	0	0	1.00K
MEMPHIS	2/24/2001	Thunderstorm Wind		0	0	5.00K
MEMPHIS	2/24/2001	Thunderstorm Wind		0	0	5.00K
MEMPHIS	4/15/2001	Thunderstorm Wind		0	0	10.00K
MILLINGTON	5/11/2001	Thunderstorm Wind		0	2	1.00K
MEMPHIS	5/20/2001	Thunderstorm Wind		0	0	5.00K
MEMPHIS	5/23/2001	Thunderstorm Wind	75 kts. E	0	0	50.00K
WHITEHAVEN	6/4/2001	Thunderstorm Wind		0	0	5.00K
MEMPHIS	7/5/2001	Thunderstorm Wind		0	0	10.00K
BARTLETT	7/10/2001	Thunderstorm Wind		0	0	5.00K
BARTLETT	7/21/2001	Thunderstorm Wind		0	0	10.00K

Section 3: Risk Assessment

MEMPHIS	7/30/2001	Thunderstorm Wind		0	0	1.00K
MEMPHIS	10/24/2001	Thunderstorm Wind		0	0	10.00K
COLLIERVILLE	11/24/2001	Thunderstorm Wind		0	0	100.00K
COLLIERVILLE	11/26/2001	Thunderstorm Wind		0	0	10.00K
MEMPHIS	11/29/2001	Thunderstorm Wind		0	0	5.00K
MEMPHIS	11/29/2001	Thunderstorm Wind		0	0	5.00K
COUNTYWIDE	1/31/2002	Thunderstorm Wind		0	0	10.00K
ARLINGTON	7/2/2002	Thunderstorm Wind		0	0	10.00K
MEMPHIS	7/10/2002	Thunderstorm Wind		0	0	10.00K
(MEM)MEMPHIS INTL AR	8/13/2002	Thunderstorm Wind	51 kts. M	0	0	1.00K
FRAYSER	8/24/2002	Thunderstorm Wind		0	0	5.00K
MEMPHIS	9/19/2002	Thunderstorm Wind		0	0	5.00K
SHELBY (ZONE)	9/26/2002	High Wind	35 kts. E	0	0	10.00K
SHELBY (ZONE)	10/4/2002	High Wind		0	0	5.00K
MEMPHIS	11/10/2002	Thunderstorm Wind	55 kts. E	0	0	10.00K
ARLINGTON	11/10/2002	Thunderstorm Wind		0	0	5.00K
MEMPHIS	12/18/2002	Thunderstorm Wind		0	0	5.00K
ARLINGTON	12/18/2002	Thunderstorm Wind		0	0	5.00K
MEMPHIS	4/20/2003	Thunderstorm Wind	65 kts. EG	0	0	75.00K
MEMPHIS	5/1/2003	Thunderstorm Wind	50 kts. EG	0	0	1.00K
MEMPHIS	5/6/2003	Thunderstorm Wind	55 kts. EG	0	0	1.00K
MEMPHIS	5/11/2003	Thunderstorm Wind	50 kts. EG	0	0	1.00K
MILLINGTON	5/16/2003	Thunderstorm Wind	65 kts. EG	0	0	15.00K
MILLINGTON	5/16/2003	Thunderstorm Wind	50 kts. EG	0	0	5.00K

Section 3: Risk Assessment

MILLINGTON	5/16/2003	Thunderstorm Wind	55 kts. EG	0	0	10.00K
COUNTYWIDE	7/22/2003	Thunderstorm Wind	95 kts. EG	1	3	40.000M
MEMPHIS	8/3/2003	Thunderstorm Wind	50 kts. EG	0	0	5.00K
ARLINGTON	8/22/2003	Thunderstorm Wind	50 kts. EG	0	0	5.00K
MEMPHIS	8/22/2003	Thunderstorm Wind	50 kts. EG	0	0	1.00K
MEMPHIS	4/22/2004	Thunderstorm Wind	60 kts. EG	0	0	15.00K
COUNTYWIDE	5/30/2004	Thunderstorm Wind	55 kts. EG	0	0	20.00K
MILLINGTON	7/4/2004	Thunderstorm Wind	60 kts. EG	0	0	5.00K
ARLINGTON	7/4/2004	Thunderstorm Wind	50 kts. EG	0	0	15.00K
MEMPHIS	7/16/2004	Thunderstorm Wind	50 kts. EG	0	0	5.00K
EADS	10/18/2004	Thunderstorm Wind	60 kts. EG	0	0	10.00K
BARTLETT	1/13/2005	Thunderstorm Wind	50 kts. EG	0	0	10.00K
MEMPHIS	4/22/2005	Thunderstorm Wind	60 kts. EG	0	0	900.00K
GERMANTOWN	4/22/2005	Thunderstorm Wind	50 kts. EG	0	0	15.00K
MEMPHIS	7/19/2005	Thunderstorm Wind	50 kts. EG	0	0	5.00K
ARLINGTON	8/6/2005	Thunderstorm Wind	50 kts. EG	0	0	5.00K
MEMPHIS	9/25/2005	Thunderstorm Wind	50 kts. EG	0	0	1.00K
MEMPHIS	11/15/2005	Thunderstorm Wind	55 kts. EG	0	0	10.00K
GERMANTOWN	4/7/2006	Thunderstorm Wind	50 kts. EG	0	0	5.00K
BARTLETT	5/31/2006	Thunderstorm Wind	50 kts. EG	0	0	3.00K
GERMANTOWN	6/17/2006	Thunderstorm Wind	50 kts. EG	0	0	2.00K
WHITEHAVEN	6/17/2006	Thunderstorm Wind	50 kts. EG	0	0	2.00K
CORDOVA	6/17/2006	Thunderstorm Wind	55 kts. MG	0	0	2.00K

Section 3: Risk Assessment

BARTLETT	4/3/2007	Thunderstorm Wind	50 kts. EG	0	0	2.00K
WEST JCT	5/3/2007	Thunderstorm Wind	50 kts. EG	0	0	2.00K
MEMPHIS	5/15/2007	Thunderstorm Wind	52 kts. EG	0	0	4.00K
COLLIERVILLE	6/25/2007	Thunderstorm Wind	50 kts. EG	0	0	2.00K
GERMANTOWN	6/25/2007	Thunderstorm Wind	50 kts. EG	0	0	2.00K
BARTLETT	6/30/2007	Thunderstorm Wind	50 kts. EG	0	0	2.00K
BARTLETT	6/30/2007	Thunderstorm Wind	50 kts. EG	0	0	2.00K
FRAYSER	7/26/2007	Thunderstorm Wind	50 kts. EG	0	0	3.00K
BARTLETT	8/18/2007	Thunderstorm Wind	50 kts. EG	0	0	2.00K
MEMPHIS	8/18/2007	Thunderstorm Wind	50 kts. EG	0	0	6.00K
BARTLETT	8/18/2007	Thunderstorm Wind	50 kts. EG	0	0	4.00K
ROSEMARK	11/14/2007	Thunderstorm Wind	50 kts. EG	0	0	20.00K
MEMPHIS	1/8/2008	Thunderstorm Wind	50 kts. EG	0	0	10.00K
BARTLETT	1/8/2008	Thunderstorm Wind	50 kts. EG	0	0	5.00K
SHELBY (ZONE)	1/29/2008	High Wind	51 kts. MG	0	0	40.00K
(MEM)MEMPHIS INTL AR	2/5/2008	Thunderstorm Wind	73 kts. MG	0	0	500.00K
CORDOVA	2/5/2008	Thunderstorm Wind	50 kts. EG	0	0	2.00K
RUGBY	4/10/2008	Thunderstorm Wind	50 kts. EG	0	0	2.00K
BARTLETT	4/25/2008	Thunderstorm Wind	50 kts. EG	0	0	2.00K
MILLINGTON	5/10/2008	Thunderstorm Wind	52 kts. EG	0	0	0.00K
WHITEHAVEN	5/10/2008	Thunderstorm Wind	52 kts. EG	0	1	15.00K
MEMPHIS	5/24/2008	Thunderstorm Wind	50 kts. EG	0	0	2.00K
SHELBY (ZONE)	6/1/2008	Strong Wind	40 kts. EG	0	0	10.00K

Section 3: Risk Assessment

SHELBY (ZONE)	2/11/2009	Strong Wind	44 kts. EG	0	0	10.00K
MEMPHIS	6/11/2009	Thunderstorm Wind	50 kts. EG	0	0	5.00K
NONCONNAH	6/12/2009	Thunderstorm Wind	50 kts. EG	0	0	0.00K
NORTH	6/12/2009	Thunderstorm Wind	52 kts. EG	0	1	0.00K
BINGHAMTON	6/12/2009	Thunderstorm Wind	50 kts. EG	0	0	0.00K
GERMANTOWN	6/12/2009	Thunderstorm Wind	61 kts. EG	0	0	0.00K
BARTLETT	6/12/2009	Thunderstorm Wind	61 kts. EG	0	0	0.00K
CORDOVA	6/12/2009	Thunderstorm Wind	50 kts. EG	0	0	0.00K
MILLINGTON	6/12/2009	Thunderstorm Wind	50 kts. EG	0	0	0.00K
ARLINGTON	6/12/2009	Thunderstorm Wind	61 kts. EG	0	0	0.00K
EAST JCT	6/14/2009	Thunderstorm Wind	39 kts. EG	0	1	0.00K
AULON	7/26/2009	Thunderstorm Wind	50 kts. EG	0	0	0.00K
PISGAH HGTS	7/30/2009	Thunderstorm Wind	50 kts. EG	0	0	10.00K
MEMPHIS	7/30/2009	Thunderstorm Wind	50 kts. EG	0	0	0.00K
CORDOVA	3/11/2010	Thunderstorm Wind	50 kts. EG	0	0	0.00K
ARLINGTON	4/7/2010	Thunderstorm Wind	50 kts. EG	0	0	0.00K
MEMPHIS	4/24/2010	Thunderstorm Wind	50 kts. EG	0	0	0.00K
RALEIGH	4/24/2010	Thunderstorm Wind	50 kts. EG	0	0	0.00K
ELLENDAL	4/24/2010	Thunderstorm Wind	50 kts. EG	0	0	2.00K
EADS	5/1/2010	Thunderstorm Wind	50 kts. EG	0	0	0.00K
RAINES	5/2/2010	Thunderstorm Wind	50 kts. EG	0	0	0.00K
CORDOVA	5/2/2010	Thunderstorm Wind	52 kts. EG	0	0	0.00K
FOREST HILL	6/16/2010	Thunderstorm Wind	50 kts. EG	0	0	0.00K

Section 3: Risk Assessment

LENOW	6/18/2010	Thunderstorm Wind	50 kts. EG	0	0	0.00K
PISGAH	6/18/2010	Thunderstorm Wind	50 kts. EG	0	0	0.00K
COLLIERVILLE ARPK	6/18/2010	Thunderstorm Wind	50 kts. EG	0	0	0.00K
OAKVILLE	7/26/2010	Thunderstorm Wind	50 kts. EG	0	0	0.00K
OAKVILLE	8/3/2010	Thunderstorm Wind	50 kts. EG	0	0	0.00K
EAST ACRES	8/21/2010	Thunderstorm Wind	50 kts. EG	0	0	0.00K
SHELBY (ZONE)	10/26/2010	Strong Wind	48 kts. EG	0	0	10.00K
SHELBY (ZONE)	2/1/2011	High Wind	50 kts. EG	0	0	3.00K
BENJESTOWN	2/24/2011	Thunderstorm Wind	83 kts. EG	0	0	0.00K
GERMANTOWN	2/24/2011	Thunderstorm Wind	50 kts. EG	0	0	0.00K
GERMANTOWN	4/4/2011	Thunderstorm Wind	50 kts. EG	0	0	0.00K
(MEM)MEMPHI S INTL AR	4/4/2011	Thunderstorm Wind	56 kts. MG	0	0	0.00K
FRAYSER	4/19/2011	Thunderstorm Wind	65 kts. EG	0	0	2.470M
GERMANTOWN	4/19/2011	Thunderstorm Wind	61 kts. EG	0	0	0.00K
SHELBY CENTER	4/25/2011	Thunderstorm Wind	50 kts. EG	0	0	0.00K
GERMANTOWN	4/25/2011	Thunderstorm Wind	52 kts. EG	0	0	1.00K
COLLIERVILLE	4/26/2011	Thunderstorm Wind	50 kts. EG	0	0	0.00K
SHELBY FARMS	5/25/2011	Thunderstorm Wind	50 kts. EG	0	0	0.00K
SHELBY CENTER	6/13/2011	Thunderstorm Wind	52 kts. MG	0	0	0.00K
GERMANTOWN	6/13/2011	Thunderstorm Wind	61 kts. EG	0	0	0.00K
(MEM)MEMPHI S INTL AR	6/16/2011	Thunderstorm Wind	63 kts. MG	0	0	0.00K
(NQA)NAS MEMPHIS MIL	6/16/2011	Thunderstorm Wind	50 kts. EG	0	0	0.00K
CORDOVA	6/16/2011	Thunderstorm Wind	52 kts. MG	0	0	0.00K

Section 3: Risk Assessment

ELLENDALE	6/16/2011	Thunderstorm Wind	56 kts. EG	0	0	0.00K
FRAYSER	6/28/2011	Thunderstorm Wind	50 kts. EG	0	0	0.00K
MEMPHIS	6/28/2011	Thunderstorm Wind	50 kts. EG	0	0	0.00K
BRUNSWICK	8/20/2011	Thunderstorm Wind	61 kts. EG	0	0	0.00K
WHITEHAVEN	1/22/2012	Thunderstorm Wind	91 kts. EG	0	0	75.00K
SHELBY FARMS	1/22/2012	Thunderstorm Wind	56 kts. EG	0	0	0.00K
RAMSEY	5/31/2012	Thunderstorm Wind	50 kts. EG	0	1	0.00K
ARLINGTON	6/3/2012	Thunderstorm Wind	50 kts. EG	0	0	0.00K
EGYPT	6/11/2012	Thunderstorm Wind	50 kts. EG	0	0	0.00K
MEMPHIS	8/13/2012	Thunderstorm Wind	50 kts. EG	0	0	0.00K
MEMPHIS	8/31/2012	Thunderstorm Wind	50 kts. EG	0	0	45.00K
MADGE	9/1/2012	Thunderstorm Wind	50 kts. EG	0	0	10.00K
COLLIERVILLE	9/5/2012	Thunderstorm Wind	50 kts. EG	0	0	0.00K
WOODSTOCK	9/7/2012	Thunderstorm Wind	50 kts. EG	0	0	0.00K
MEMPHIS	10/5/2012	Thunderstorm Wind	50 kts. EG	0	0	0.00K
MILLINGTON	10/17/2012	Thunderstorm Wind	70 kts. EG	0	0	25.00K
MEMPHIS	12/20/2012	Thunderstorm Wind	50 kts. EG	0	0	0.00K
FOREST HILL	12/20/2012	Thunderstorm Wind	50 kts. EG	0	0	0.00K
(MEM)MEMPHI S INTL AR	1/29/2013	Thunderstorm Wind	53 kts. MG	0	0	0.00K
CORDOVA	6/19/2013	Thunderstorm Wind	50 kts. EG	0	0	0.00K
EAST JCT	6/27/2013	Thunderstorm Wind	50 kts. EG	0	0	0.00K
RALEIGH	6/28/2013	Thunderstorm Wind	50 kts. EG	0	0	0.00K
CORDOVA	7/18/2013	Thunderstorm Wind	50 kts. EG	0	0	0.00K

Section 3: Risk Assessment

SHELBY CENTER	9/10/2013	Thunderstorm Wind	50 kts. EG	0	0	0.00K
MILLINGTON	6/5/2014	Thunderstorm Wind	61 kts. EG	0	0	0.00K
EAST JCT	7/14/2014	Thunderstorm Wind	50 kts. EG	0	0	5.00K
FOREST HILL	7/14/2014	Thunderstorm Wind	50 kts. EG	0	0	0.00K
BARTLETT	7/14/2014	Thunderstorm Wind	50 kts. EG	0	0	0.00K
(MEM)MEMPHI S INTL AR	10/2/2014	Thunderstorm Wind	53 kts. MG	0	0	0.00K
AULON	10/2/2014	Thunderstorm Wind	50 kts. EG	0	0	0.00K
MILLINGTON	4/19/2015	Thunderstorm Wind	50 kts. EG	0	0	10.00K
ARLINGTON	6/8/2015	Thunderstorm Wind	50 kts. EG	0	0	0.00K
BUNTYN	6/8/2015	Thunderstorm Wind	50 kts. EG	0	0	0.00K
ROSEMARK	6/26/2015	Thunderstorm Wind	50 kts. EG	0	0	0.00K
MILLINGTON	7/14/2015	Thunderstorm Wind	61 kts. EG	0	0	20.00K
BARTLETT	7/14/2015	Thunderstorm Wind	52 kts. EG	0	0	0.00K
FRAYSER	7/14/2015	Thunderstorm Wind	56 kts. EG	0	0	0.00K
GERMANTOWN	7/14/2015	Thunderstorm Wind	56 kts. MG	0	0	0.00K
SPRING LAKE	8/5/2015	Thunderstorm Wind	50 kts. EG	0	0	0.00K
WHITE STATION	8/5/2015	Thunderstorm Wind	61 kts. EG	0	0	0.00K
SHELBY (ZONE)	11/17/2015	Strong Wind	41 kts. MG	0	0	25.00K
SHELBY (ZONE)	12/13/2015	Strong Wind	39 kts. MG	0	0	1.00K
KERRVILLE	3/31/2016	Thunderstorm Wind	50 kts. EG	0	0	0.00K
SHELBY (ZONE)	4/30/2016	Strong Wind	47 kts. MG	0	0	50.00K
GERMANTOWN	6/15/2016	Thunderstorm Wind	50 kts. EG	0	0	0.00K
OAKVILLE	7/15/2016	Thunderstorm Wind	50 kts. EG	0	0	20.00K

Section 3: Risk Assessment

(MEM)MEMPHI S INTL AR	7/20/2016	Thunderstorm Wind	57 kts. MG	0	0	5.00K
BERCLAIR	7/20/2016	Thunderstorm Wind	50 kts. EG	0	0	5.00K
GOODMAN	7/29/2016	Thunderstorm Wind	50 kts. EG	0	0	20.00K
SHELBY (ZONE)	11/28/2016	Strong Wind	46 kts. EG	0	0	20.00K
MILLINGTON	12/17/2016	Thunderstorm Wind	50 kts. EG	0	0	0.00K
RALEIGH	3/9/2017	Thunderstorm Wind	75 kts. EG	0	0	30.00K
RALEIGH	3/9/2017	Thunderstorm Wind	78 kts. EG	0	0	150.00K
AULON	3/9/2017	Thunderstorm Wind	50 kts. EG	0	0	0.00K
SHELBY (ZONE)	3/29/2017	High Wind	51 kts. MG	0	0	0.00K
SHELBY (ZONE)	3/29/2017	High Wind	50 kts. EG	0	0	60.00K
SHELBY (ZONE)	4/2/2017	Strong Wind	43 kts. EG	0	0	20.00K
MEMPHIS	4/30/2017	Thunderstorm Wind	50 kts. EG	0	0	15.00K
WHITE STATION	4/30/2017	Thunderstorm Wind	50 kts. EG	0	0	0.00K
WHITE STATION	4/30/2017	Thunderstorm Wind	50 kts. EG	0	0	50.00K
ELLENDAL	4/30/2017	Thunderstorm Wind	50 kts. EG	0	0	100.00K
ELLENDAL	4/30/2017	Thunderstorm Wind	50 kts. EG	0	0	0.00K
ELLENDAL	4/30/2017	Thunderstorm Wind	50 kts. EG	0	0	20.00K
ELLENDAL	4/30/2017	Thunderstorm Wind	50 kts. EG	0	0	0.00K
BARTLETT	4/30/2017	Thunderstorm Wind	50 kts. EG	0	0	0.00K
SHELBY (ZONE)	5/5/2017	Strong Wind	40 kts. MG	0	0	2.00K
SHELBY (ZONE)	5/5/2017	Strong Wind	40 kts. MG	0	0	10.00K
SHELBY (ZONE)	5/5/2017	Strong Wind	40 kts. MG	0	0	2.00K
WEST UNION	5/27/2017	Thunderstorm Wind	70 kts. EG	0	0	50.00K

Section 3: Risk Assessment

MEMPHIS DEWITT SPAIN	5/27/2017	Thunderstorm Wind	70 kts. EG	0	0	20.00K
FRAYSER	5/27/2017	Thunderstorm Wind	70 kts. EG	0	0	100.00K
NORTH	5/27/2017	Thunderstorm Wind	65 kts. EG	0	0	5.00K
BERCLAIR	5/27/2017	Thunderstorm Wind	70 kts. EG	0	0	9.000M
BINGHAMTON	5/27/2017	Thunderstorm Wind	70 kts. EG	0	0	200.00K
MEMPHIS	5/27/2017	Thunderstorm Wind	60 kts. MG	0	0	0.00K
CORDOVA	5/27/2017	Thunderstorm Wind	65 kts. EG	0	0	100.00K
SHELBY FARMS	5/27/2017	Thunderstorm Wind	65 kts. EG	0	0	50.00K
(MEM)MEMPHI S INTL AR	5/27/2017	Thunderstorm Wind	53 kts. MG	0	0	0.00K
MEMPHIS	6/18/2017	Thunderstorm Wind	50 kts. EG	0	0	2.00K
MEMPHIS	6/18/2017	Thunderstorm Wind	50 kts. EG	0	0	80.00K
GERMANTOWN	6/18/2017	Thunderstorm Wind	50 kts. EG	0	0	10.00K
BARTLETT	6/23/2017	Thunderstorm Wind	50 kts. EG	0	0	2.00K
BENJESTOWN	7/8/2017	Thunderstorm Wind	50 kts. EG	0	0	1.00K
CORONA	8/11/2017	Thunderstorm Wind	50 kts. EG	0	0	0.00K
MALLORY	8/11/2017	Thunderstorm Wind	50 kts. EG	0	0	0.00K
ELLENDALE	8/11/2017	Thunderstorm Wind	50 kts. EG	0	0	0.00K
PIPER	8/11/2017	Thunderstorm Wind	50 kts. EG	0	0	50.00K
SHELBY (ZONE)	8/31/2017	Strong Wind	39 kts. EG	0	0	15.00K
LENOW	5/19/2018	Thunderstorm Wind	52 kts. EG	0	0	0.00K
LENOW	6/12/2018	Thunderstorm Wind	50 kts. EG	0	0	0.50K
ST PAUL	6/21/2018	Thunderstorm Wind	50 kts. EG	0	0	3.00K
SLOANVILLE	6/21/2018	Thunderstorm Wind	50 kts. EG	0	0	3.00K

Section 3: Risk Assessment

KERRVILLE	6/21/2018	Thunderstorm Wind	50 kts. EG	0	0	3.00K
ARLINGTON	6/21/2018	Thunderstorm Wind	50 kts. EG	0	0	3.00K
PERSEY	6/23/2018	Thunderstorm Wind	56 kts. EG	0	0	3.00K
(MEM)MEMPHIS INTL AR	6/23/2018	Thunderstorm Wind	56 kts. MG	0	0	0.00K
GERMANTOWN	6/23/2018	Thunderstorm Wind	55 kts. EG	0	0	5.00K
BAILEY	6/23/2018	Thunderstorm Wind	55 kts. EG	0	0	5.00K
RUGBY	6/24/2018	Thunderstorm Wind	50 kts. EG	0	0	3.00K
BERCLAIR	7/5/2018	Thunderstorm Wind	50 kts. EG	0	0	0.50K
AULON	7/5/2018	Thunderstorm Wind	50 kts. EG	0	0	10.00K
WHITE STATION	7/5/2018	Thunderstorm Wind	50 kts. EG	0	0	10.00K
MEMPHIS	7/5/2018	Thunderstorm Wind	50 kts. EG	0	0	20.00K
LEEWOOD	7/15/2018	Thunderstorm Wind	50 kts. EG	0	0	5.00K
SHELBY FARMS	7/15/2018	Thunderstorm Wind	50 kts. EG	0	0	2.00K
FRAYSER	7/15/2018	Thunderstorm Wind	55 kts. EG	0	0	15.00K
BINGHAMTON	7/15/2018	Thunderstorm Wind	55 kts. EG	0	0	30.00K
WHITE STATION	7/15/2018	Thunderstorm Wind	50 kts. EG	0	0	0.50K
SHELBY (ZONE)	3/9/2019	Strong Wind	45 kts. EG	0	0	25.00K
SHELBY (ZONE)	3/14/2019	Strong Wind	46 kts. EG	0	0	1.00K
SHELBY (ZONE)	3/14/2019	Strong Wind	40 kts. EG	0	0	50.00K
CORDOVA	4/6/2019	Thunderstorm Wind	50 kts. EG	0	0	2.00K
MALLORY	5/18/2019	Thunderstorm Wind	51 kts. MG	0	0	3.00K
AULON	5/18/2019	Thunderstorm Wind	45 kts. EG	0	0	1.00K
RALEIGH	5/18/2019	Thunderstorm Wind	50 kts. EG	0	0	5.00K

Section 3: Risk Assessment

NATIONAL CEMETERY	5/18/2019	Thunderstorm Wind	45 kts. EG	0	0	0.50K
RUGBY	5/18/2019	Thunderstorm Wind	50 kts. EG	0	0	0.50K
(MEM)MEMPHIS INTL AR	6/19/2019	Thunderstorm Wind	58 kts. EG	0	0	0.00K
GRIFFIN CORNER	6/19/2019	Thunderstorm Wind	50 kts. EG	0	0	0.50K
FOREST HILL	6/23/2019	Thunderstorm Wind	50 kts. EG	0	0	15.00K
WHITE STATION	7/15/2019	Thunderstorm Wind	50 kts. EG	0	0	1.00K
(MEM)MEMPHIS INTL AR	8/13/2019	Thunderstorm Wind	50 kts. EG	0	0	10.00K
(MEM)MEMPHIS INTL AR	8/13/2019	Thunderstorm Wind	50 kts. MG	0	0	0.00K
WEST JCT	8/13/2019	Thunderstorm Wind	50 kts. MG	0	0	0.00K
FELTS	10/21/2019	Thunderstorm Wind	50 kts. EG	0	0	0.00K
GERMANTOWN	10/21/2019	Thunderstorm Wind	50 kts. EG	0	0	50.00K
NEW SOUTH MEMPHIS	1/11/2020	Thunderstorm Wind	60 kts. EG	0	0	15.00K
MEMPHIS	1/11/2020	Thunderstorm Wind	50 kts. EG	0	0	2.00K
BINGHAMTON	1/11/2020	Thunderstorm Wind	60 kts. EG	0	0	50.00K
BINGHAMTON	1/11/2020	Thunderstorm Wind	60 kts. EG	0	0	50.00K
MILLINGTON	1/11/2020	Thunderstorm Wind	56 kts. EG	0	0	2.00K
SHELBY CENTER	3/28/2020	Thunderstorm Wind	50 kts. EG	0	0	10.00K
BERCLAIR	4/12/2020	Thunderstorm Wind	50 kts. EG	0	0	0.00K
BARTLETT	4/28/2020	Thunderstorm Wind	50 kts. EG	0	0	0.00K

Historically, severe storm wind events occur approximately 13 times per year in Shelby County. The severity of severe storm winds is commonly measured by wind speed (knots or mph). The strongest severe storm wind event within Shelby County in recent years was recorded July 22nd, 2003 (*DR-1482-TN*) . Dubbed "Hurricane Elvis" by locals, the event was a strong derecho that yielded winds up to 108 mph. Per the NCDC, impacts were as follows:

- Numerous trees, power lines and power poles were blown down.
- Some of the trees fell on houses producing some major damage.
- At least 20 buildings collapsed.
- Numerous homes and buildings were damaged and a few were destroyed. Among the damaged buildings was the Gibson Guitar Factory in downtown Memphis.
- One person was killed when a tree fell on his house crushing him.
- Over 300,000 homes in the county were without electricity. Most were without power for anywhere from 2 days to 2 weeks.
- Several people were killed due to post storm related issues such as carbon monoxide poisoning from improperly using generators.
- Property damage exceeded \$40 million.

The above list represents all listed incidents from the NCDC site for a given time period. If a jurisdiction or district is not listed, there is not a recorded incident of this nature.

Hail is the frozen form of precipitation, falling as small spheres of solid ice. Even though the risk from hail is relatively low, all jurisdictions have the possibility of hail causing some window and roof damage.

TORRO Hail Index

TORRO Hail Index			
Scale	Max Diameter	Comparisons	Typical Impacts
H0	5-9 MM	Pea	No damage.
H1	10-15 MM	Mothball	Slight general damage to plants, crops.
H2	16-20 MM	Marble	Significant damage to fruit, crops, vegetation.
H3	21-30 MM	Walnut	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored.
H4	31-40 MM	Pigeon's Egg	Widespread glass damage, vehicle bodywork damage.
H5	41-50 MM	Golf Ball	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries.
H6	51-60 MM	Hen's Egg	Bodywork of grounded aircraft dented, brick walls pitted.
H7	61-75 MM	Tennis Ball	Severe roof damage, risk of serious injuries.
H8	76-90 MM	Soft Ball	Severe damage to aircraft bodywork.
H9	91-100 MM	Grapefruit	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open.

Source: The Tornado & Storm Research Organization

The following chart provides hail event information for Shelby County.

Hail Events in Shelby County: January 2000 – Present

Location	Date	Extent	Deaths	Injuries	Property Damage
FRAYSER	2/13/2000	0.88 in.	0	0	0.05K
MEMPHIS	2/13/2000	0.75 in.	0	0	0.01K
WHITEHAVEN	2/18/2000	0.75 in.	0	0	0.01K
MEMPHIS	2/18/2000	0.88 in.	0	0	0.06K
CORDOVA	7/29/2000	0.75 in.	0	0	0.01K

CORDOVA	8/4/2000	0.75 in.	0	0	0.01K
MEMPHIS	2/24/2001	1.00 in.	0	0	0.10K
RALEIGH	3/3/2001	1.75 in.	0	0	0.75K
BARTLETT	3/29/2002	1.00 in.	0	0	0.22K
MILLINGTON	3/30/2002	0.88 in.	0	0	0.05K
MEMPHIS	4/24/2002	0.75 in.	0	0	0.01K
MILLINGTON	4/30/2002	0.75 in.	0	0	0.01K
MEMPHIS	4/30/2002	0.88 in.	0	0	0.10K
CORDOVA	5/25/2002	0.75 in.	0	0	0.01K
BARTLETT	5/28/2002	0.75 in.	0	0	0.50K
RALEIGH	5/28/2002	0.75 in.	0	0	0.01K
MEMPHIS	11/10/2002	0.75 in.	0	0	0.01K
BARTLETT	4/6/2003	0.75 in.	0	0	0.01K
GERMANTOWN	4/20/2003	1.00 in.	0	0	0.15K
COLLIERVILLE	4/20/2003	0.75 in.	0	0	0.01K
MEMPHIS	5/3/2003	0.75 in.	0	0	0.01K
MEMPHIS	5/16/2003	1.75 in.	0	0	1.15K
CORDOVA	5/16/2003	1.00 in.	0	0	0.11K
FRAYSER	8/27/2003	0.75 in.	0	0	0.01K
CORDOVA	10/7/2003	1.00 in.	0	0	0.15K
MILLINGTON	3/20/2004	1.00 in.	0	0	0.15K
MEMPHIS	4/23/2004	1.00 in.	0	0	0.20K
MEMPHIS	7/14/2004	1.00 in.	0	0	0.10K
GERMANTOWN	7/14/2004	0.75 in.	0	0	0.01K
CORDOVA	8/28/2004	0.75 in.	0	0	0.01K
ARLINGTON	9/12/2004	0.75 in.	0	0	0.01K
MEMPHIS	10/18/2004	1.50 in.	0	0	0.50K
MILLINGTON	2/21/2005	0.75 in.	0	0	0.01K
BARTLETT	2/21/2005	0.75 in.	0	0	0.01K
MEMPHIS	3/22/2005	1.00 in.	0	0	0.16K
MILLINGTON	4/6/2005	0.75 in.	0	0	0.01K
GERMANTOWN	7/19/2005	0.88 in.	0	0	0.05K
MEMPHIS	11/15/2005	1.75 in.	0	0	1.62K
MEMPHIS	11/15/2005	1.00 in.	0	0	0.11K
MEMPHIS	4/2/2006	1.75 in.	0	0	12.00K
MEMPHIS	4/2/2006	1.75 in.	0	0	15.00K
MEMPHIS	4/2/2006	1.00 in.	0	0	5.00K
WHITEHAVEN	4/7/2006	0.88 in.	0	0	4.00K
CORDOVA	4/7/2006	1.75 in.	0	0	15.00K
GERMANTOWN	4/7/2006	1.75 in.	0	0	11.00K
BARTLETT	4/7/2006	1.00 in.	0	0	7.50K
GERMANTOWN	4/7/2006	2.75 in.	0	0	75.00K
BARTLETT	4/20/2006	1.00 in.	0	0	6.00K
FRAYSER	4/25/2006	0.88 in.	0	0	2.50K
BARTLETT	4/25/2006	0.88 in.	0	0	2.50K
GERMANTOWN	5/4/2006	0.75 in.	0	0	1.00K

MEMPHIS	5/9/2006	0.88 in.	0	0	2.50K
ELLEDALE	5/31/2006	1.00 in.	0	0	5.00K
BARTLETT	6/17/2006	1.00 in.	0	0	5.00K
MILLINGTON	4/3/2007	1.75 in.	0	0	2.00K
GERMANTOWN	4/3/2007	0.75 in.	0	0	1.00K
COLLIERVILLE	4/13/2007	0.75 in.	0	0	1.00K
GERMANTOWN	4/13/2007	0.75 in.	0	0	1.00K
MEMPHIS	5/15/2007	0.75 in.	0	0	1.00K
MILLINGTON	6/26/2007	0.75 in.	0	0	1.00K
BARTLETT	6/30/2007	0.75 in.	0	0	1.00K
COLLIERVILLE	11/14/2007	0.75 in.	0	0	1.00K
MEMPHIS	1/8/2008	0.75 in.	0	0	1.00K
BARTLETT	1/8/2008	1.00 in.	0	0	2.00K
GILDFIELD	2/5/2008	0.75 in.	0	0	1.00K
SHELBY FARMS	3/14/2008	0.75 in.	0	0	1.00K
COLLIERVILLE	3/14/2008	1.75 in.	0	0	5.00K
BARTLETT	3/14/2008	1.00 in.	0	0	2.00K
ELLEDALE	3/14/2008	0.75 in.	0	0	1.50K
LENOW	3/14/2008	0.88 in.	0	0	1.50K
GILES TOWN	3/15/2008	0.88 in.	0	0	1.50K
SPRING LAKE	3/15/2008	0.88 in.	0	0	1.50K
WHITEHAVEN	4/4/2008	0.88 in.	0	0	1.50K
CAPLEVILLE	4/22/2008	0.88 in.	0	0	1.50K
GERMANTOWN	5/2/2008	1.00 in.	0	0	2.00K
CAPLEVILLE	5/10/2008	1.00 in.	0	0	2.00K
(MEM)MEMPHIS INTL AR	5/22/2008	0.88 in.	0	0	1.50K
COLLIERVILLE ARPK	5/22/2008	0.75 in.	0	0	1.00K
OAKVILLE	2/17/2009	0.75 in.	0	0	0.00K
OAKVILLE	2/17/2009	1.00 in.	0	0	0.00K
AULON	2/17/2009	1.00 in.	0	0	0.00K
OVERTON	6/12/2009	1.00 in.	0	0	0.00K
FOREST HILL	6/12/2009	0.88 in.	0	0	0.00K
ARLINGTON MUNI ARPT	6/12/2009	1.75 in.	0	0	0.00K
GRIFFIN CORNER	3/25/2010	0.88 in.	0	0	0.00K
CAPLEVILLE	3/25/2010	0.75 in.	0	0	0.00K
GERMANTOWN	4/24/2010	1.25 in.	0	0	0.00K
CORDOVA	4/24/2010	1.75 in.	0	0	0.00K
GERMANTOWN	4/24/2010	1.75 in.	0	0	0.00K
PIPER	4/24/2010	1.75 in.	0	0	0.00K
ARLINGTON	4/24/2010	1.75 in.	0	0	0.00K
MILLINGTON	5/1/2010	1.75 in.	0	0	0.00K
OAKVILLE	5/14/2010	0.88 in.	0	0	0.00K
OAKVILLE	5/14/2010	0.88 in.	0	0	0.00K
WHITE STATION	5/14/2010	1.75 in.	0	0	0.00K

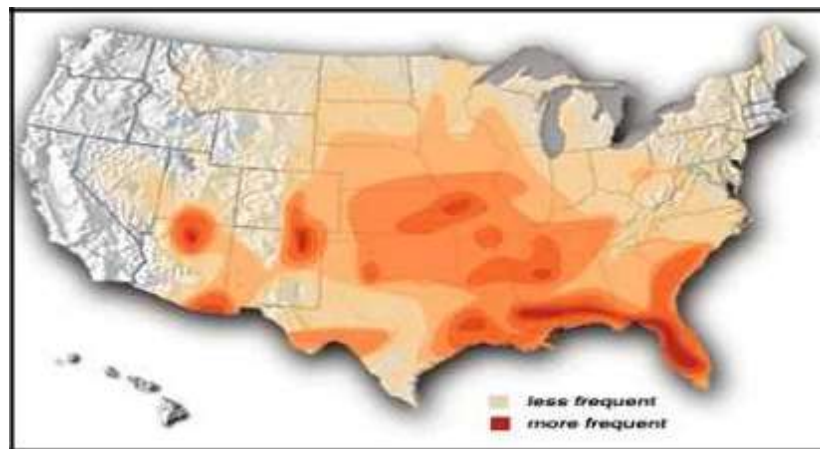
ARLINGTON MUNI ARPT	5/14/2010	1.00 in.	0	0	0.00K
ARLINGTON	5/14/2010	1.75 in.	0	0	0.00K
CORDOVA	5/14/2010	0.75 in.	0	0	0.00K
CORDOVA	5/14/2010	1.00 in.	0	0	0.00K
ARLINGTON MUNI ARPT	5/14/2010	1.25 in.	0	0	0.00K
CORDOVA	5/24/2010	1.75 in.	0	0	0.00K
CORDOVA	5/24/2010	1.00 in.	0	0	0.00K
SHELBY CENTER	5/24/2010	0.88 in.	0	0	0.00K
CORDOVA	5/24/2010	0.88 in.	0	0	0.00K
COLLIERVILLE ARPK	5/24/2010	0.75 in.	0	0	0.00K
COLLIERVILLE	5/24/2010	1.00 in.	0	0	0.00K
MILLINGTON	10/12/2010	0.88 in.	0	0	0.00K
LENOW	3/4/2011	0.75 in.	0	0	0.00K
(NQA)NAS MEMPHIS MIL	3/26/2011	0.75 in.	0	0	0.00K
ARLINGTON	4/20/2011	1.25 in.	0	0	0.00K
MILLINGTON	4/20/2011	0.75 in.	0	0	0.00K
PISGAH	4/25/2011	0.75 in.	0	0	0.00K
CAPLEVILLE	4/26/2011	1.00 in.	0	0	0.00K
BARTLETT	4/26/2011	1.00 in.	0	0	0.00K
ARLINGTON MUNI ARPT	4/26/2011	1.75 in.	0	0	0.00K
MILLINGTON	4/26/2011	1.00 in.	0	0	0.00K
MEMPHIS	4/27/2011	1.75 in.	0	0	0.00K
MILLINGTON	4/27/2011	0.75 in.	0	0	0.00K
MILLINGTON	5/1/2011	0.88 in.	0	0	0.00K
ARLINGTON MUNI ARPT	5/1/2011	1.75 in.	0	0	0.00K
CAPLEVILLE	5/22/2011	0.88 in.	0	0	0.00K
FOREST HILL	5/22/2011	1.00 in.	0	0	0.00K
COLLIERVILLE	5/22/2011	1.00 in.	0	0	0.00K
MADGE	5/25/2011	1.00 in.	0	0	0.00K
BRUNSWICK	5/25/2011	1.00 in.	0	0	0.00K
CORDOVA	6/16/2011	2.25 in.	0	0	0.00K
BARTLETT	6/16/2011	0.88 in.	0	0	0.00K
MEMPHIS	8/18/2011	1.00 in.	0	0	0.00K
COLLIERVILLE	8/20/2011	1.00 in.	0	0	0.00K
FRAYSER	9/25/2011	1.25 in.	0	0	0.00K
MILLINGTON	9/25/2011	1.75 in.	0	0	0.00K
BOLTON	9/25/2011	1.00 in.	0	0	0.00K
BOLTON	2/1/2012	0.88 in.	0	0	0.00K
MADGE	3/31/2012	1.00 in.	0	0	0.00K
BERCLAIR	4/5/2012	0.75 in.	0	0	0.00K
NATIONAL CEMETERY	5/6/2012	0.75 in.	0	0	0.00K

SHELBY CENTER	6/11/2012	1.75 in.	0	0	0.00K
WHITEHAVEN	7/7/2012	1.00 in.	0	0	0.00K
SHELBY FARMS	9/5/2012	1.00 in.	0	0	0.00K
MILLINGTON	10/17/2012	1.00 in.	0	0	0.00K
BARTLETT	11/3/2012	1.75 in.	0	0	0.00K
NEW SOUTH MEMPHIS	11/3/2012	1.00 in.	0	0	0.00K
COLLIERVILLE	5/21/2013	1.00 in.	0	0	0.00K
COLLIERVILLE ARPK	12/21/2013	1.00 in.	0	0	0.00K
MILLINGTON	4/28/2014	1.75 in.	0	0	0.00K
CORDOVA	4/28/2014	0.75 in.	0	0	0.00K
SHELBY FARMS	10/2/2014	1.75 in.	0	0	0.00K
FRAYSER	10/7/2014	1.00 in.	0	0	0.00K
BRUNSWICK	4/1/2015	1.00 in.	0	0	0.00K
ARLINGTON	4/1/2015	1.00 in.	0	0	0.00K
LENOW	6/29/2015	1.00 in.	0	0	0.00K
RAINES	6/29/2015	1.00 in.	0	0	0.00K
BARTLETT	12/23/2015	1.00 in.	0	0	0.00K
MILLINGTON	3/31/2016	0.88 in.	0	0	0.00K
BRUNSWICK	5/2/2016	0.75 in.	0	0	0.00K
GERMANTOWN	7/15/2016	0.88 in.	0	0	0.00K
ROSEMARK	7/15/2016	1.00 in.	0	0	0.00K
LENOW	12/28/2016	0.88 in.	0	0	0.00K
ARLINGTON MUNI ARPT	12/28/2016	1.00 in.	0	0	0.00K
BARTLETT	3/1/2017	1.00 in.	0	0	0.00K
SHELBY CENTER	3/1/2017	0.88 in.	0	0	0.00K
MEMPHIS	6/1/2017	0.88 in.	0	0	0.00K
FISHERVILLE	7/4/2017	1.00 in.	0	0	0.00K
BRUNSWICK	5/19/2018	1.00 in.	0	0	0.00K
HOLLADAY	5/19/2018	1.00 in.	0	0	0.00K
BARTLETT	5/20/2018	1.00 in.	0	0	0.00K
CORDOVA	7/19/2018	1.00 in.	0	0	0.00K
BRUNSWICK	5/15/2019	1.00 in.	0	0	0.00K
SHELBY CENTER	5/15/2019	0.75 in.	0	0	0.00K
LENOW	5/15/2019	1.00 in.	0	0	0.00K

Shelby County experiences 8 to 9 hail events annually. As illustrated on April 7th, 2006, hail can be as large as 2.75" (H7), or roughly the size of a tennis ball. Per the NCDC, this incident resulted in extensive damage to several vehicles. The above list represents all listed incidents from the NCDC site for a given time period. If a jurisdiction or district is not listed, there is not a recorded incident of this nature.

Lightning is an enormous electrical discharge that is caused by an imbalance between positive and negative charges. During a storm, colliding particles of rain, ice, or snow increase this imbalance and often negatively charge the lower reaches of storm clouds. Objects on the ground, like steeples, trees, and the Earth itself, become positively charged—creating an imbalance that nature seeks to remedy by passing current between the two charges. Lightning events may affect the entire area of Shelby County any time of the year, though they are more numerous in spring and summer.

**Lightning Probability Incidence Map:
Annual Frequency of Cloud-to-Ground Lightning**



The following chart provides lightning event information for Shelby County. Per the NCDC, lightning strikes occur approximately once every six to seven years in Shelby County, yet are often not captured in NCDC data. During the first meeting, several participants indicated that number is much higher. The severity of damages depends on what the lightning strikes, as illustrated on March 31st, 2007. In this incident, a lightning strike caused a fire at a house on Shea Road. The fire caused substantial damage to the home. Four firefighters were treated for heat exhaustion and two other firefighters were treated for other injuries. The fire took 4 to 5 hours to put out.

**Recorded Lightning Impacts in Shelby County:
January 2000 – Present**

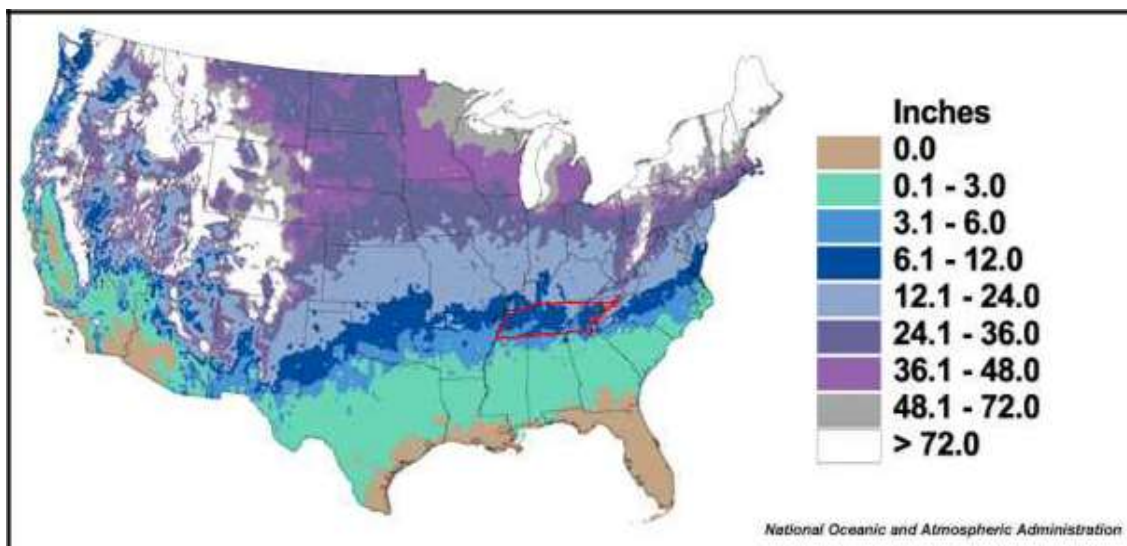
Location	Date	Deaths	Injuries	Property Damage
MEMPHIS	11/10/2002	0	1	0.00K
ARLINGTON	5/30/2004	0	0	1.00K
ARLINGTON	9/12/2004	1	0	0.00K
BARTLETT	4/25/2006	0	0	150.00K
COLLIERVILLE	3/31/2007	0	0	500.00K

BARTLETT	6/28/2007	0	0	145.00K
GERMANTOWN	7/26/2009	0	0	50.00K
WHITE STATION	7/26/2009	0	0	25.00K
SHELBY CENTER	7/26/2009	0	0	25.00K
NORTH	8/5/2009	0	0	50.00K
SHELBY FARMS	4/24/2010	0	0	5.00K
FOREST HILL	8/9/2010	0	1	0.00K
MILLINGTON	10/12/2010	0	0	30.00K
OAKVILLE	4/6/2016	0	2	0.00K
BRUNSWICK	6/30/2017	0	0	0.00K
LENOW	6/1/2018	0	0	200.00K
FOREST HILL	4/12/2020	0	0	35.00K
OAKVILLE	4/28/2020	0	0	10.00K

The above list represents all listed incidents from the NCDC site for a given time period. If a jurisdiction or district is not listed, there is not a recorded incident of this nature.

A freeze occurs when temperatures are below 32 degrees Fahrenheit for a period of time. These temperatures can damage agricultural crops, burst water pipes, and create layers of "black ice." Winter storms are events that can range from a few hours of moderate snow to blizzard-like circumstances that can affect driving conditions and impact communications, electricity, and other services. In Shelby County, all jurisdictions are vulnerable to freezes and moderate winter storms in varying degrees, but not to the severity level seen in much of the northern U.S. Mean snowfall per year is from 3-6" annually

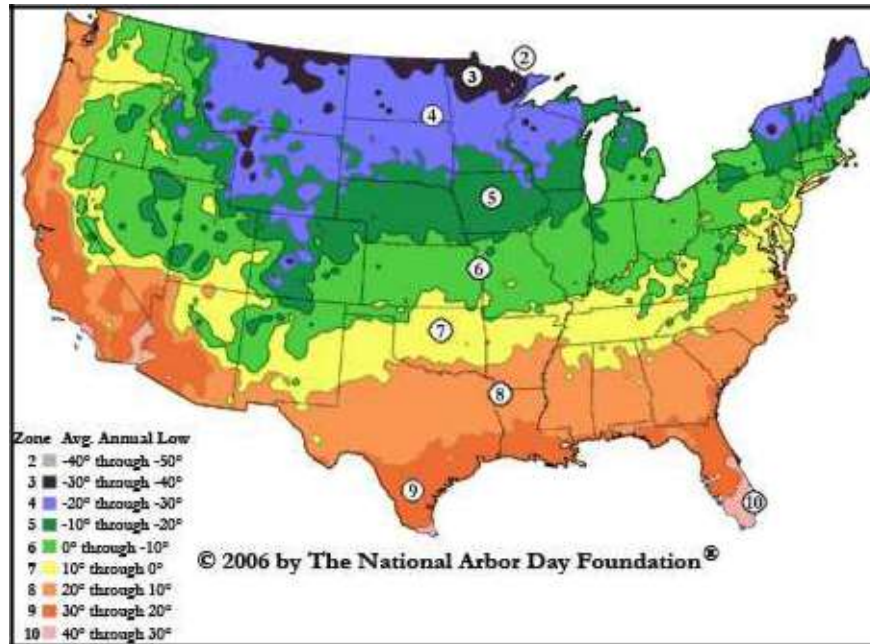
Average Mean Snowfall Per Year



Source: NOAA

Shelby County can experience temperatures between 15 to 5 degrees Fahrenheit, thus causing multiple freeze conditions during the winter months (see the following map for other average lows).

Average Annual Low Temperatures



Source: NOAA

The following chart provides winter storm event information for Shelby County. Based on previous occurrences, Shelby County experiences winter weather one to two times per year. Winter weather can occasionally be severe, as illustrated in the ice storm on February 11th, 1994. Per multiple members of the hazard mitigation committee, up to 2" of ice fell over Shelby County. Nearly the entire county was impassable for two days. Power outages lasted in some areas for up to two weeks.

Winter Events in Shelby County: January 2000 – Present

Jurisdiction	Date	Type	Deaths	Injuries	Property Damage
SHELBY (ZONE)	1/27/2000	Heavy Snow	0	0	0.00K
SHELBY (ZONE)	12/13/2000	Winter Storm	0	0	20.00K
SHELBY (ZONE)	2/5/2002	Winter Storm	0	0	0.00K
SHELBY (ZONE)	2/6/2003	Heavy Snow	0	0	1.00K
SHELBY (ZONE)	2/25/2003	Heavy Snow	0	0	1.00K
SHELBY (ZONE)	12/22/2004	Winter Storm	0	0	1.00K
SHELBY (ZONE)	2/10/2006	Winter Storm	0	0	1.00K
SHELBY (ZONE)	2/18/2006	Winter Storm	0	0	1.00K
SHELBY (ZONE)	2/1/2007	Winter Weather	0	0	0.00K
SHELBY (ZONE)	1/25/2008	Winter Weather	0	0	0.00K

SHELBY (ZONE)	3/7/2008	Winter Storm	0	0	0.00K
SHELBY (ZONE)	1/5/2009	Winter Weather	0	0	0.00K
SHELBY (ZONE)	2/28/2009	Winter Storm	0	0	0.00K
SHELBY (ZONE)	3/1/2009	Winter Storm	0	0	0.00K
SHELBY (ZONE)	1/29/2010	Winter Storm	0	0	0.00K
SHELBY (ZONE)	2/8/2010	Winter Storm	0	0	0.00K
SHELBY (ZONE)	2/15/2010	Winter Weather	0	0	0.00K
SHELBY (ZONE)	12/15/2010	Winter Weather	0	0	0.00K
SHELBY (ZONE)	1/9/2011	Winter Storm	0	0	0.00K
SHELBY (ZONE)	1/20/2011	Winter Weather	0	0	0.00K
SHELBY (ZONE)	1/25/2011	Winter Weather	0	0	0.00K
SHELBY (ZONE)	2/7/2011	Winter Weather	0	0	0.00K
SHELBY (ZONE)	2/9/2011	Winter Storm	0	0	0.00K
SHELBY (ZONE)	11/28/2011	Winter Weather	0	0	0.00K
SHELBY (ZONE)	12/7/2011	Winter Weather	0	0	0.00K
SHELBY (ZONE)	12/25/2012	Winter Weather	0	0	0.00K
SHELBY (ZONE)	1/15/2013	Winter Weather	0	0	0.00K
SHELBY (ZONE)	12/5/2013	Winter Storm	0	0	0.00K
SHELBY (ZONE)	12/7/2013	Winter Weather	0	0	0.00K
SHELBY (ZONE)	2/2/2014	Winter Storm	0	0	0.00K
SHELBY (ZONE)	2/4/2014	Winter Storm	0	0	0.00K
SHELBY (ZONE)	3/2/2014	Winter Storm	0	0	0.00K
SHELBY (ZONE)	11/13/2014	Winter Weather	0	0	0.00K
SHELBY (ZONE)	2/16/2015	Winter Storm	0	0	0.00K
SHELBY (ZONE)	2/20/2015	Winter Storm	0	0	0.00K
SHELBY (ZONE)	2/25/2015	Winter Weather	0	0	0.00K
SHELBY (ZONE)	3/4/2015	Winter Storm	0	0	0.00K
SHELBY (ZONE)	1/20/2016	Winter Weather	0	0	0.00K
SHELBY (ZONE)	1/22/2016	Winter Storm	0	0	0.00K
SHELBY (ZONE)	1/6/2017	Winter Weather	0	0	0.00K
SHELBY (ZONE)	1/12/2018	Winter Storm	0	0	0.00K
SHELBY (ZONE)	1/15/2018	Winter Storm	0	0	0.00K
SHELBY (ZONE)	11/14/2018	Winter Weather	0	0	0.00K
SHELBY (ZONE)	12/8/2018	Winter Weather	0	0	0.00K

The above list represents all listed incidents from the NCDC site for a given time period. If a jurisdiction or district is not listed, there is not a recorded incident of this nature.

Throughout the county all buildings and infrastructure are vulnerable to tornadoes and severe storm impacts. Shelby County's building stock can be broken down into the following percentage categories: 74% residential, 18% commercial, 4% industrial, <1% agricultural, 2% religious, <1% governmental, and 1% educational. In the county, manufactured homes, electrical lines, and older barns are some of the most vulnerable features. Many of these structures wouldn't receive

direct impacts from winter storms but they could receive indirect impacts such as downed electrical lines that cut off electricity to the structures, frozen pipelines that crack, destroyed agriculture crops, and customers not being able to access travels to the structures due to ice covered roads. In the county, road traveling conditions, electrical lines, and agricultural functions are some of the most vulnerable features.

Shelby County uses a ranking system to determine each jurisdiction's vulnerability to freezes/winter storm events. This system is based off simple arithmetic which analyzes potential impacts to determine vulnerabilities and then analyzes the probability of a freeze/winter storm event occurring to calculate a risk ranking for each jurisdiction.

In evaluating the risk of winter storms, jurisdictions viewed incidents that impacted day-to-day business as opposed to all incidents indicated by the NCDC. Additionally, Shelby County Schools views the threat as impacting the ability to transport school children as opposed to a direct threat to infrastructure.

Severe Weather

Jurisdiction/Applicant	<i>Human</i>	<i>Impacts Property</i>	<i>Business</i>	<i>Vulnerability H+P+B=#; #/3=V</i>
Shelby County	3	3	2	2.7
Memphis	4	4	4	4.0
Arlington	3	2	3	2.7
Bartlett	4	5	3	4.0
Collierville	4	4	3	3.7
Germantown	1	5	2	2.7
Lakeland	4	4	3	3.7
Millington	4	4	2	3.3
Arlington Community Schools	2	3	2	2.3
Bartlett City Schools	4	4	3	3.7
Collierville Schools	3	4	4	3.7
Lakeland School System	4	4	3	3.7
Millington Municipal Schools	4	4	2	3.3
Shelby County Schools	4	5	4	4.3

Jurisdiction/ Applicant	Vulnerability	Probability		Risk <i>V+P=R</i>
Shelby County	2.7	5	7.7	High
Memphis	4.0	4	8.0	High
Arlington	2.7	2	4.7	Moderate
Bartlett	4.0	3	7.0	High
Collierville	3.7	2	5.7	Medium
Germantown	2.7	2	4.7	Moderate
Lakeland	3.7	2	5.7	Medium
Millington	3.3	5	8.3	High
Arlington Community Schools	2.3	4	6.3	Medium
Bartlett City Schools	3.7	3	6.7	Medium
Collierville Schools	3.7	5	8.7	Severe
Lakeland School System	3.7	2	5.7	Medium
Millington Municipal Schools	3.3	5	8.3	High
Shelby County Schools	4.3	4	8.3	High
			Risk	
			Low	2-3.6
			Moderate	3.7-5.2
			Medium	5.3-6.8
			High	6.9-8.4
			Severe	8.5-10

Human	
<i>Risk of Injuries and Death from the Hazard</i>	
1	Death very unlikely, injuries are unlikely
2	Death unlikely, injuries are minimal
3	Death unlikely, injuries may be substantial
4	Death possible, injuries may be substantial
5	Deaths probable, injuries will likely be substantial

Property	
<i>Amount of Residential Property Damage Associated from Hazard</i>	
1	Less than \$500 in damages
2	\$500-\$10,000 in damages
3	\$10,000-\$500,000 in damages
4	\$500,000-\$2,000,000 in damages
5	More than \$2,000,000 in damages

Business	
<i>Amount of Business Damage Associated from the Hazard</i>	
1	Less than 3 businesses closed for only a day
2	More than 3 businesses closed for a week
3	More than 3 businesses closed for a few months
4	More than 3 businesses closed indefinitely or relocated
5	A top-10 local employer closed indefinitely

Probability	
<i>Amount of Residential Property Damage Associated from Hazard</i>	
1	Less than once every 10 years
2	About once every 5-10 years
3	About once every 2-5 years
4	About once a year
5	More than once a year

Extreme Temperatures

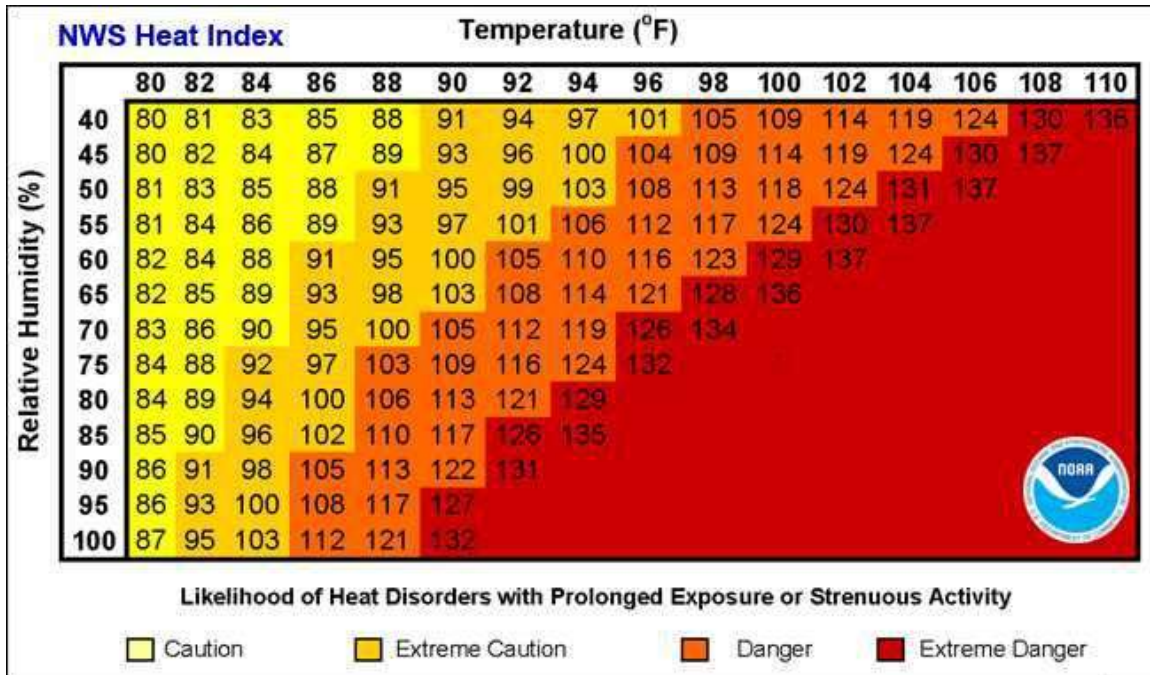
An extreme temperature event occurs when the temperature is exceptionally hotter or colder than the geographic norm and persists long enough to affect the life of the community.

Extreme heat is defined as temperatures which hover 10 degrees or more above the average high temperature for a region and last for several weeks, and though the event may not be as notable as other hazards, its effects can have devastating consequences. While it is hard to quantify the exact total number of deaths that are advanced by heat wave weather, in a normal year, about 175 Americans succumb to the demands of summer heat.

The term "Heat Index" was created by the NWS to measure apparent temperature of the air as it increases with the relative humidity. This was done to help the public understand that a lower temperature with a high relative humidity can be just as dangerous as a hotter, dryer day. The Heat Index can be used to determine what effects the temperature and humidity can have on the population. It is important to know that the Heat Index (HI) values are devised for shady, light wind conditions. Exposure to full sunshine can increase HI values by up to 15 degrees. Also, strong winds, particularly with very hot, dry, air can be extremely hazardous to individuals.

Extreme heat is not a hazard that responds to the traditional mitigation measures of building codes or land use restrictions. Heat is the number 1 weather related killer in the United States, resulting in roughly 175 fatalities each year. In fact, on average, excessive heat claims more lives each year than floods, lightning, tornadoes and hurricanes combined.

National Weather Service Heat Index Chart



Source: National Weather Service

While not as clearly defined as extreme heat, extreme cold can be just as problematic and deadly for a jurisdiction that encounters this hazard. Extreme cold conditions typically accompany winter storm events but may occur on beautiful, sunny days as well. Exposure to cold can cause frostbite or hypothermia and become life-threatening. Infants and elderly people are most susceptible.

The term wind chill, much like the term heat index is not the actual temperature but rather how wind and cold feel on exposed skin. As the wind increases, heat is carried away from the body at an accelerated rate, driving down the body temperature.

What constitutes extreme cold varies in different parts of the country. In the southern United States, near freezing temperatures are considered extreme cold. Freezing temperatures can cause severe damage to citrus fruit crops and other vegetation. Pipes may freeze and burst in homes that are poorly insulated or without heat. Most people judge extreme cold by the problems it causes rather than just by a temperature or a wind chill factor. In the northern areas of the country, extreme cold means temperatures well below zero.

Extreme cold events are typically associated with the winter months while extreme heat is associated with the summer months. Please see the chart below depicting the seasonal differences in extreme heat and extreme cold.

Extreme Temperatures In Tennessee By Month: 1996-2017



Source: NOAA

The speed of onset of extreme temperatures, both hot and cold, is fairly slow and predictable from short and long term weather forecasts. The scale of measurement for this hazard is temperature and departure from normal temperature.

Public information campaigns are designed to remind citizens to hydrate and avoid direct exposure to the elements during the time of temperature extremes. Typical medical problems caused by extreme temperatures include the following:

- Heatstroke is a life threatening condition that requires immediate medical attention. It exists when the body's core temperature rises above 105 degrees F as a result of environmental temperatures. Patients may be delirious, stuporous, or comatose. The death-to-care ratio in reported cases in the U.S. averages about 15%.
- Heat exhaustion is much less severe than heatstroke. The body temperature may be normal or slightly elevated. A person suffering from heat exhaustion may complain of dizziness, weakness, or fatigue. The primary cause of heat exhaustion is fluid and electrolyte imbalance. The normalization of fluids will typically alleviate the situation.
- Heat syncope is typically associated with exercise by people who are not acclimated to exercise. The symptom is a sudden loss of consciousness. Consciousness returns promptly when the person lies down. The cause is primarily associated with circulatory instability because of heat. The condition typically causes little or no harm to the individual.
- Heat cramps are typically a problem for individuals who exercise outdoors but are unaccustomed to heat. Similar to heat exhaustion,

it is thought to be a result of a mild imbalance of fluids and electrolytes.

- Frostbite is one of the many problems caused by exposure to extreme cold. It is damage to body tissue caused by extreme cold. A wind chill of -20 degrees Fahrenheit (F) will cause frostbite in just 30 minutes. Frostbite causes a loss of feeling and a white or pale appearance in extremities, such as fingers, toes, ear lobes or the tip of the nose.
- Hypothermia is a condition brought on when the body temperature drops to less than 95 degrees Fahrenheit (F). Hypothermia is deadly and for those who survive, there are likely to be lasting kidney, liver and pancreas problems. Warning signs include uncontrollable shivering, memory loss, disorientation, incoherence, slurred speech, drowsiness and apparent exhaustion. Immediate critical care is essential to save the victim's life.

Shelby County typically experiences 2 to 3 extreme temperature events per year (2010 to present) . As illustrated on August 1st, 2010, heat index measurements can exceed 115 degrees, which led to 7 deaths and 1 injury. By it's nature, extreme temperatures occur regionally throughout the planning area and is not jurisdictionally specific.

Extreme Temperature in Shelby County: January 2000–Present

Jurisdiction	Date	Type	Deaths	Injuries	Property Damage
SHELBY (ZONE)	12/16/2000	Extreme Cold/wind Chill	1	0	0.00K
SHELBY (ZONE)	1/2/2010	Cold/wind Chill	3	0	0.00K
SHELBY (ZONE)	8/1/2010	Excessive Heat	7	1	0.00K
SHELBY (ZONE)	8/10/2010	Excessive Heat	4	0	0.00K
SHELBY (ZONE)	8/21/2010	Excessive Heat	0	0	0.00K
SHELBY (ZONE)	12/13/2010	Cold/wind Chill	0	0	0.00K
SHELBY (ZONE)	7/10/2011	Excessive Heat	1	0	0.00K
SHELBY (ZONE)	8/3/2011	Excessive Heat	1	0	0.00K
SHELBY (ZONE)	8/7/2011	Excessive Heat	2	0	0.00K
SHELBY (ZONE)	7/19/2012	Excessive Heat	0	0	0.00K
SHELBY (ZONE)	2/17/2015	Cold/wind Chill	3	0	0.00K
SHELBY (ZONE)	7/28/2015	Excessive Heat	2	0	0.00K
SHELBY (ZONE)	6/16/2016	Excessive Heat	0	0	0.00K
SHELBY (ZONE)	7/22/2016	Excessive Heat	0	0	0.00K
SHELBY (ZONE)	8/4/2016	Excessive Heat	0	0	0.00K
SHELBY (ZONE)	8/5/2016	Excessive Heat	1	0	0.00K
SHELBY (ZONE)	7/21/2017	Excessive Heat	0	0	0.00K
SHELBY (ZONE)	7/26/2017	Excessive Heat	0	0	0.00K
SHELBY (ZONE)	7/20/2018	Excessive Heat	0	0	0.00K
SHELBY (ZONE)	7/17/2019	Excessive Heat	0	0	0.00K

SHELBY (ZONE)	8/12/2019	Excessive Heat	0	0	0.00K
---------------	-----------	----------------	---	---	-------

Extreme Temperatures

Jurisdiction/Applicant	Human	Impacts Property	Business	Vulnerability <i>H+P+B=#; #/3=V</i>
Shelby County	4	2	2	2.7
Memphis	4	3	1	2.7
Arlington	2	1	1	1.3
Bartlett	4	1	1	2.0
Collierville	4	3	2	3.0
Germantown	1	5	2	2.7
Lakeland	3	3	1	2.3
Millington	2	1	1	1.3
Arlington Community Schools	1	1	1	1.0
Bartlett City Schools	1	2	1	1.3
Collierville Schools	2	2	1	1.7
Lakeland School System	3	3	1	2.3
Millington Municipal Schools	2	1	1	1.3
Shelby County Schools	4	4	2	3.3

Jurisdiction/ Applicant	Vulnerability	Probability		Risk <i>V+P=R</i>	
Shelby County	2.7	5	7.7	High	
Memphis	2.7	5	7.7	High	
Arlington	2.3	1	3.3	Low	
Bartlett	2.0	5	7.0	High	
Collierville	3.0	4	7.0	High	
Germantown	2.7	2	4.7	Moderate	
Lakeland	2.3	4	6.3	Medium	
Millington	1.3	5	6.3	Medium	
Arlington Community Schools	1.0	1	2.0	Low	
Bartlett City Schools	1.3	1	2.3	Low	
Collierville Schools	1.7	4	5.7	Medium	
Lakeland School System	2.3	4	6.3	Medium	
Millington Municipal Schools	1.3	5	6.3	Medium	
Shelby County Schools	3.3	3	6.3	Medium	
				Risk	
				Low	2-3.6
				Moderate	3.7-5.2
				Medium	5.3-6.8
				High	6.9-8.4
				Severe	8.5-10

Human	
<i>Risk of Injuries and Death from the Hazard</i>	
1	Death very unlikely, injuries are unlikely
2	Death unlikely, injuries are minimal
3	Death unlikely, injuries may be substantial
4	Death possible, injuries may be substantial
5	Deaths probable, injuries will likely be substantial

Property	
<i>Amount of Residential Property Damage Associated from Hazard</i>	
1	Less than \$500 in damages
2	\$500-\$10,000 in damages
3	\$10,000-\$500,000 in damages
4	\$500,000-\$2,000,000 in damages
5	More than \$2,000,000 in damages

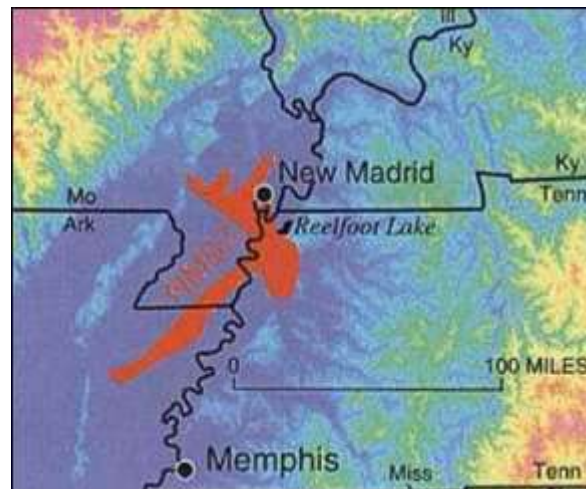
Business	
<i>Amount of Business Damage Associated from the Hazard</i>	
1	Less than 3 businesses closed for only a day
2	More than 3 businesses closed for a week
3	More than 3 businesses closed for a few months
4	More than 3 businesses closed indefinitely or relocated
5	A top-10 local employer closed indefinitely

Probability	
<i>Amount of Residential Property Damage Associated from Hazard</i>	
1	Less than once every 10 years
2	About once every 5-10 years
3	About once every 2-5 years
4	About once a year
5	More than once a year

Earthquakes

Shelby County is in close proximity to the major intraplate (within a tectonic plate) seismic zone known as the New Madrid Seismic Zone. The New Madrid Seismic Zone (NMSZ) is an approximately 120-mile long fault system that stretches across five states including Western Tennessee. While Shelby County has experienced no significant earthquakes since 1812, the historical seismic activity in the NMSZ, as well as the population of Shelby County, makes the potential for catastrophic effects from severe earthquakes highly likely.

New Madrid Seismic Zone



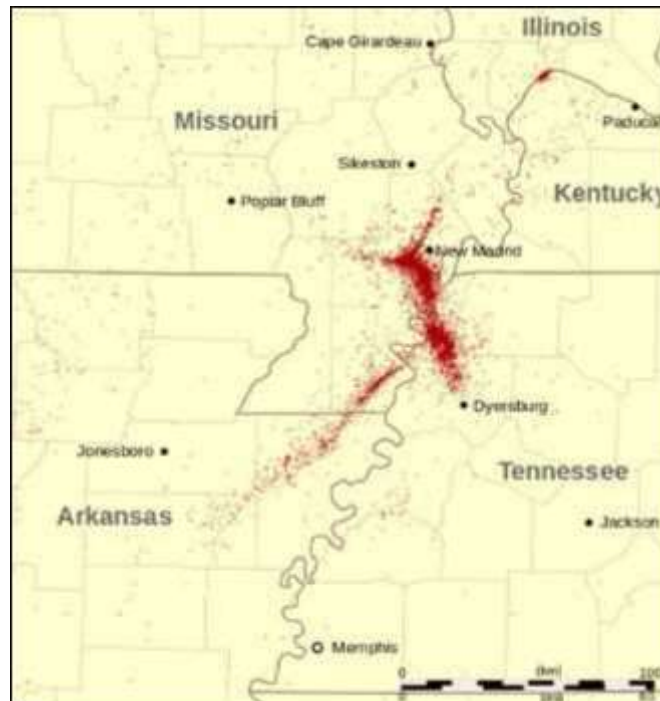
Historically, the zone is known for producing four of the largest North American earthquakes in recorded history, all in which would have had been felt in Shelby County. This includes the noted three-month period between December 1811 and February 1812 that had quakes reaching Richter Scale magnitudes into the 7.0 through 7.6 ranges, which created Reelfoot Lake in Lake County, Tennessee.

Richter Scale for Earthquakes		
Magnitudes	Description	Typical Impacts
< 2.0	Micro	Not felt.
2.0-2.9	Slight	Generally not felt, but recorded.
3.0-3.9	Minor	Often felt, but rarely causes damage.
4.0-4.9	Light	Noticeable shaking of indoor items, rattling noises. Significant damage likely.
5.0-5.9	Moderate	Can cause major damage to poorly constructed building over small regions. At most slight damage to well-designed buildings.
6.0-6.9	Strong	Can be destructive in areas up to about 100 miles across populated areas.
7.0-7.9	Major	Can cause serious damage over larger areas.
8.0-8.9	Great	Can cause serious damage in areas several hundred miles across.
9.0-9.9	Epic	Devastating in areas several thousand miles across.

Source: USGS

Since the 1812 earthquakes, the largest recorded quakes from this zone were the October 1895, 6.6 magnitude quake (epicenter Charleston, MO) and the November 1968, 5.5 magnitude quake (epicenter in Dale, IL). From the time when seismic measurement instruments were installed in and around the zone in the 1970's, more than 4,000 small earthquakes have been recorded, with the vast majority being too small to be felt.

NMSZ Earthquakes Recorded Since 1974

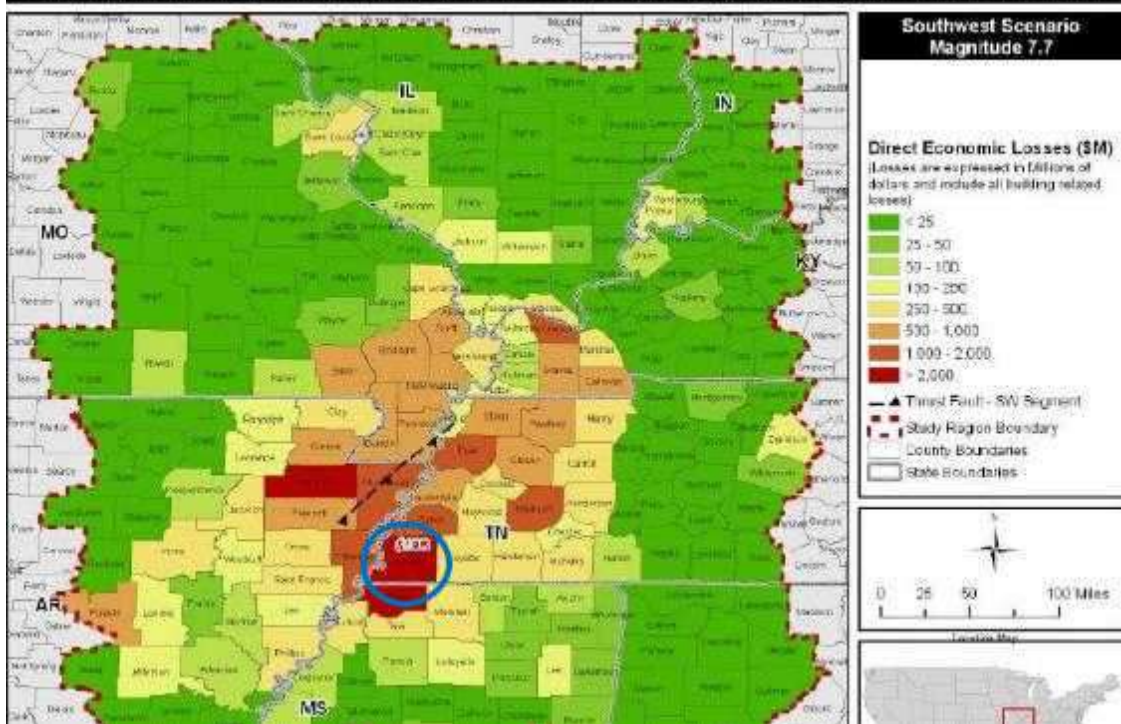


Source: USGS

According to a FEMA report filed in 2008, a serious earthquake in the NMSZ could result in the highest economic loss due to a natural disaster in U.S. history, causing widespread and catastrophic damage across a seven-state radius with most of the worst impacts taking place in Western Tennessee (includes Shelby County). Based on this report, a 7.7 magnitude quake in the NMSZ would result in thousands of fatalities, hundreds- of- millions of dollars in damages to structures, and total disruption of vital infrastructure in Western Tennessee.

Estimated Building Losses – Catastrophic Earthquake Scenario

Estimated Total County Building Loss - Earthquake Scenario: New Madrid Region



Source: USGS

Shelby County sits in what FEMA/TEMA considers the 20-county New Madrid Impact Zone. Statistical earthquake vulnerability studies from FEMA show that out of these 20 counties that Shelby County will receive moderate to severe impacts because of its close proximity to the NMSZ. As indicated in the above map, building damage will exceed \$2 billion in a catastrophic earthquake event.

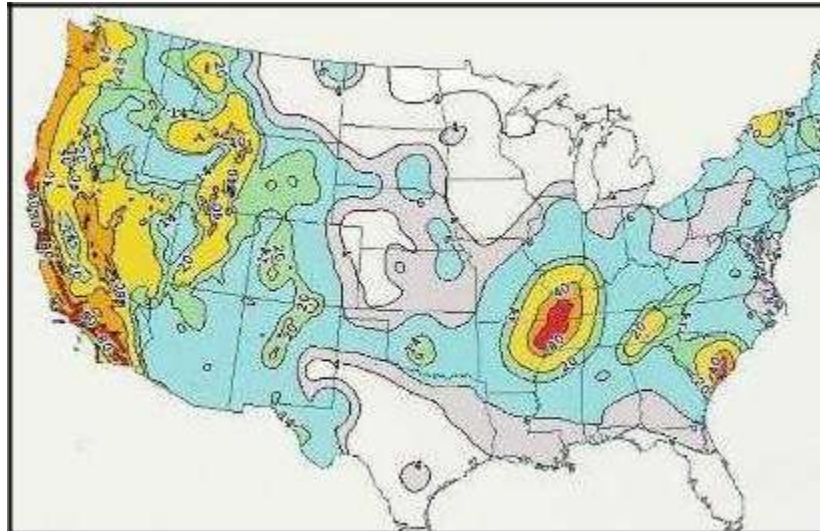
Furthermore, according to the 2007 Mid-American Earthquake (MAE) Center Study, Shelby County will experience the following in a catastrophic earthquake scenario:

- 2,225 fatalities

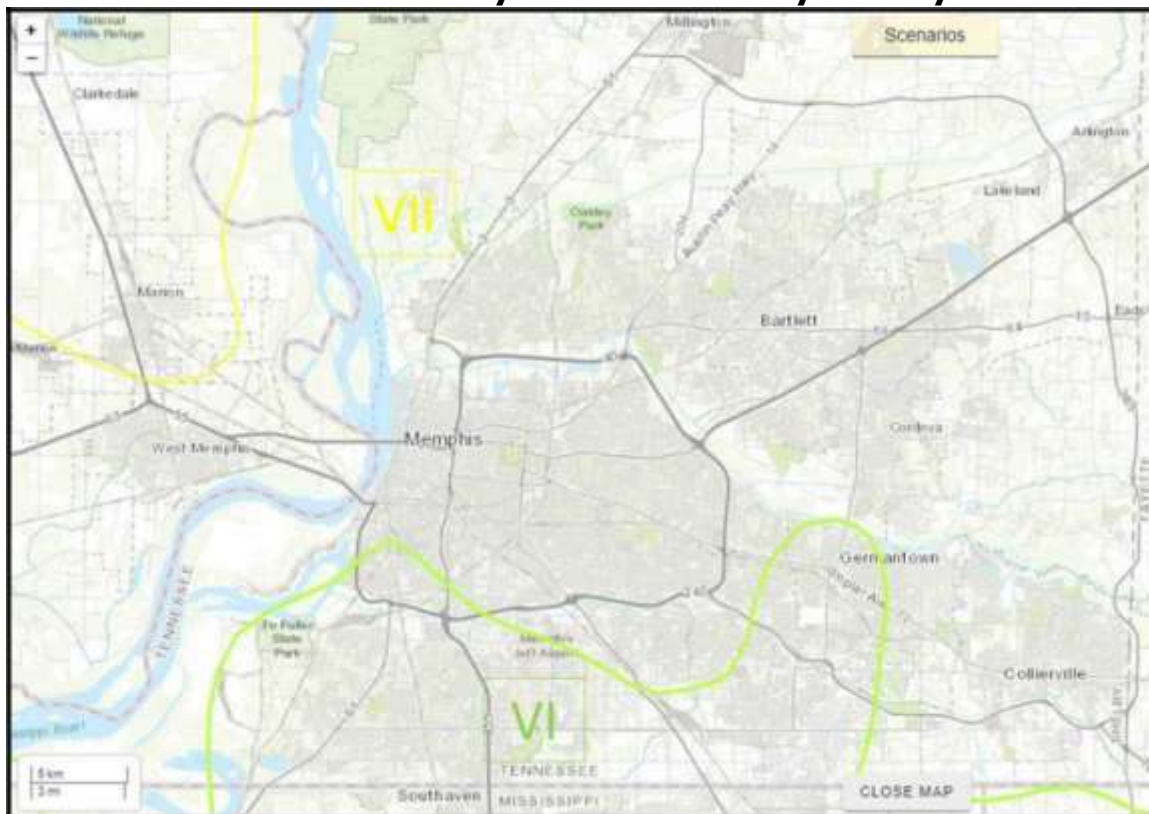
- 34,605 casualties
- 161,189 displaced residents, of which 45,466 will require shelter
- >14,310 thousand tons of debris
- >84% of households without power on day 1
- >131,000 residences with moderate or greater damage
- >42,900 residences completely destroyed
- <1% police station functionality on day 1
- <1% fire station functionality on day 1
- 4.4% hospital functionality on day 1
- <1% school functionality on day 1
- >94% of households without potable water
- 45% communications functionality on day 1
- >24% of bridges with moderate or greater damage

Throughout the county many buildings and the majority of infrastructure networks could be vulnerable to earthquake impacts. Shelby County's building stock can be broken down into the following percentage categories: 74% residential, 18% commercial, 4% industrial, <1% agricultural, 2% religious, <1% governmental, and 1% educational. Throughout the county all buildings and infrastructure are vulnerable to earthquake impacts.

National Seismic Hazard Map Ground Motions with a 2% Chance of Occurring in 50 Years



Mercali Intensity Zones In Shelby County



Source: USGS

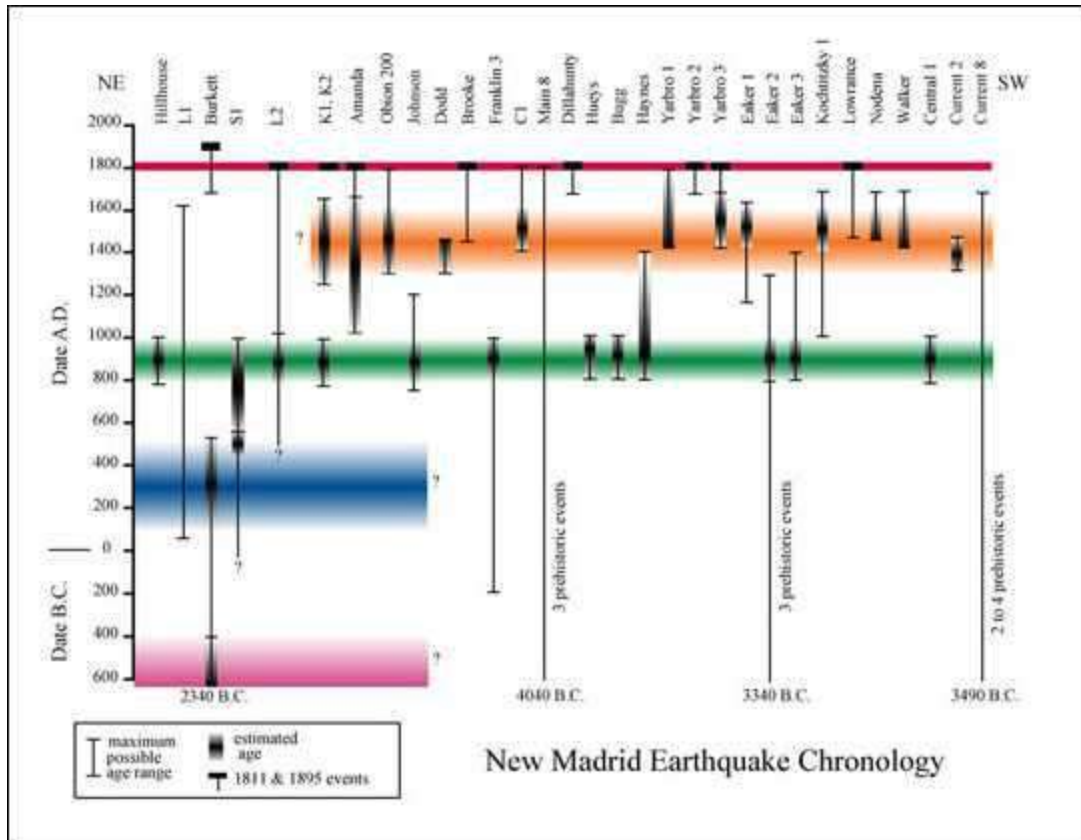
As indicated in the above maps, all of Shelby County's jurisdictions and districts sit within intensity zones VII (very strong) to VI (strong) of the Modified Mercali Intensity Scale due to its proximity to the New Madrid Seismic Zone.

The following is an abbreviated description of the levels of Modified Mercalli intensity.

Intensity	Shaking	Description/Damage
I	Not felt	Not felt except by a very few under especially favorable conditions.
II	Weak	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Strong	Felt by all; many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Very strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built, or badly designed structures; some chimneys broken.
VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Felt of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.

The current lack of apparent land movement along the NMSZ has long puzzled scientists. Currently, GPS measurements show that the NMSZ faults are moving no more than 0.0079 inches a year. In contrast the San Andreas Fault in California moves up to 1.5 inches a year. This has led some researchers to believe that the fault may be “shutting down” while others say it is a “sleeping giant.” These differing views have made it difficult for public policy makers to decide on if, how, and how much to prepare for and spend on mitigating a potential large-scale earthquake.

New Madrid Seismic Zone Earthquake Liquefaction Chronology



Source: USGS

Over the past decade, paleoseismic studies have begun to unravel the earthquake history of the New Madrid seismic zone. Studies focusing on earthquake-induced liquefaction features utilized archaeology and radiocarbon dating to estimate the ages of liquefaction features, and thus, the timing of the earthquakes that caused them. In this way, sand blows across the New Madrid region were found to have formed during earthquakes about 1450 A.D., 900 A.D., 300 A.D., and 2350 B.C.

In addition, the size and spatial distributions of historic and sand blows that formed about 1450 A.D. and 900 A.D. were determined to be strikingly similar to each other, suggesting that the prehistoric earthquakes had similar locations and magnitudes to the 1811-1812 earthquakes. Furthermore, sand blows attributed to the 1450 A.D., 900 A.D., and 2350 B.C. earthquakes are composed of multiple, fining upward layers similar in thickness to those that formed in 1811-1812. These observations support the interpretation that the prehistoric events were similar in location and magnitude to the 1811-1812 earthquakes, and also suggest that they too were earthquake sequences. Paleoseismic studies

concluded that the New Madrid seismic zone generated magnitude 7 to 8 earthquakes about every 500 years during the past 1,200 years.

Shelby County uses a ranking system to determine each jurisdiction's vulnerability to a large NMSZ earthquake. This system is based off simple arithmetic which analyzes potential impacts to determine vulnerabilities and then analyzes the probability of an earthquake event occurring to calculate a risk ranking for each jurisdiction.

Earthquake

Jurisdiction/Applicant	<i>Human</i>	<i>Impacts Property</i>	<i>Business</i>	<i>Vulnerability H+P+B=#; #/3=V</i>
Shelby County	5	4	4	4.3
Memphis	5	5	3	4.3
Arlington	3	3	3	3.0
Bartlett	5	5	3	4.3
Collierville	5	5	4	4.7
Germantown	5	5	4	4.7
Lakeland	4	5	2	3.7
Millington	5	3	3	3.7
Arlington Community Schools	4	4	4	4.0
Bartlett City Schools	4	4	3	3.7
Collierville Schools	2	2	1	1.7
Lakeland School System	4	5	2	3.7
Millington Municipal Schools	5	5	3	4.3
Shelby County Schools	4	5	4	4.3

Jurisdiction/ Applicant	Vulnerability	Probability		Risk <i>V+P=R</i>
Shelby County	4.3	1	5.3	Medium
Memphis	4.3	2	6.3	Medium
Arlington	3.0	1	4.0	Moderate
Bartlett	4.3	1	5.3	Medium
Collierville	4.7	1	5.7	Medium
Germantown	4.7	1	5.7	Medium
Lakeland	3.7	1	4.7	Moderate
Millington	3.7	1	4.7	Moderate
Arlington Community Schools	4.0	1	5.0	Moderate
Bartlett City Schools	3.7	1	4.7	Moderate
Collierville Schools	1.7	2	3.7	Moderate
Lakeland School System	3.7	1	4.7	Moderate
Millington Municipal Schools	4.3	1	5.3	Medium
Shelby County Schools	4.3	2	6.3	Medium
			Risk	
			Low	2-3.6
			Moderate	3.7-5.2
			Medium	5.3-6.8
			High	6.9-8.4
			Severe	8.5-10

Human	
<i>Risk of Injuries and Death from the Hazard</i>	
1	Death very unlikely, injuries are unlikely
2	Death unlikely, injuries are minimal
3	Death unlikely, injuries may be substantial
4	Death possible, injuries may be substantial
5	Deaths probable, injuries will likely be substantial

Property	
<i>Amount of Residential Property Damage Associated from Hazard</i>	
1	Less than \$500 in damages
2	\$500-\$10,000 in damages
3	\$10,000-\$500,000 in damages
4	\$500,000-\$2,000,000 in damages
5	More than \$2,000,000 in damages

Business	
<i>Amount of Business Damage Associated from the Hazard</i>	
1	Less than 3 businesses closed for only a day
2	More than 3 businesses closed for a week
3	More than 3 businesses closed for a few months
4	More than 3 businesses closed indefinitely or relocated
5	A top-10 local employer closed indefinitely

Probability	
<i>Amount of Residential Property Damage Associated from Hazard</i>	
1	Less than once every 10 years
2	About once every 5-10 years
3	About once every 2-5 years
4	About once a year
5	More than once a year

Shelby County Declared Disasters 2011 – 2020

Year	Disaster Recovery Number(s)	Hazard(s)
2011	DR-1974-TN	Tennessee Severe Storms, Tornadoes, Straight-line Winds, And Associated Flooding
	DR-1978-TN	Tennessee Severe Storms, Flooding, Tornadoes, And Straight-line Winds
	DR-1979-TN	Tennessee Severe Storms, Tornadoes, Straight-line Winds, And Flooding
	EM-3321-TN	Tennessee Flooding
2012		
2013		
2014	DR-4171-TN	Severe Winter Storm
2015		
2016		
2017	DR-4320-TN	Tennessee Severe Storms, Straight-line Winds, And Flooding
2018		
2019		
2020	DR-4514-TN	Pandemic

Section 4: Mitigation Strategy

Mitigation Goals

The purpose for developing a set of goals is to clearly state the community's overall vision for hazard mitigation and to provide a path towards building a safer, more resilient community. The Shelby County Hazard Mitigation Committee identified the following goals to be the forefront in the overall development of this plan update. All actions/projects recommended as mitigation efforts for the Hazard Mitigation Plan must first meet or further at least one of these goals. The goals are provided in a ranked order where the first goal is paramount. There have been no changes to the goals and priorities from the previous plan.

Mitigation Goals

Goal 1: Protect the lives and health of citizens from the effects of natural and man-made hazards.

Goal 2: Minimize future loss from all hazardous incidents by reducing the vulnerability of public and private property.

Goal 3: Encourage public and commitment to hazard mitigation, by communication mitigation benefits.

Goal 4: Strive to protect business and industry by reducing their economic vulnerability.

Goal 5: Acquire vulnerable properties to prevent future losses.

Identification and Prioritization of Mitigation Projects

Shelby County has developed a comprehensive range of mitigation projects. These projects were solicited and identified by the different entities that make up the Shelby County Hazard Mitigation Committee. Once the proposed projects attained a sponsoring agency and the details of the projects were discussed by the committee, the committee then proceeded to prioritize the mitigation projects.

The prioritization process was important since most mitigation projects represent a large investment of financial and personal resources. By evaluating each project's degree of feasibility and the level of costs versus

benefits, Shelby County was able to determine when and which projects should be implemented based on available funding and time.

For the plan update, the Shelby County Hazard Mitigation Committee used the SAFE-T method to prioritize these projects. This approach was adopted from the successful methodology used by other counties in FEMA Region 4. This rating system uses five variables to evaluate the overall feasibility and appropriateness: Societal, Addministrative, Financial, Environmental, and Technical. A focus on this methodology emphasizes the use of a cost-benefit review to maximize benefits.

Project Prioritization Method: SAFE-T			
Variable		Value	Description
S	Societal: The public must support the overall implementation strategy and specified mitigation actions. The projects will be evaluated in terms of community acceptance and societal	1	Low community priority, few societal benefits
		2	Moderate community acceptance / priority
		3	High community acceptance / priority
A	Administrative: The projects will be evaluated for anticipated staffing and maintenance requirements to determine if the jurisdiction has the personnel and administrative capabilities necessary to implement the project or whether outside help will be needed.	1	High staffing, outside needed
		2	Some staffing, help may be needed
		3	Low staffing, no outside help needed
F	Financial: The projects will be evaluated on their general cost-effectiveness and whether additional outside funding will be required	1	Somewhat cost-effective
		2	Moderately cost-effective
		3	Very cost-effective
E	Environmental: The projects will be evaluated for any immediate or long-term environmental impacts caused by their construction or operation	1	Many environmental impacts, possibly long term
		2	Some environmental impacts, some possibly long term
		3	Few, if any, environmental impacts
T	Technical: the projects will be evaluated on their ability to reduce losses in the long-term, whether there are secondary impacts, and whether the proposed project solves the associated problem or if additional components are necessary.	1	Other actions are needed or short-term fix
		2	Other actions may be needed for long-term fix
		3	Other actions not needed, long-term fix

Committee members ranked the projects as a group by determining the value for each variable and then by adding the variables rates up for a project sum value. All the project rankings can be seen on the Shelby County Hazard Mitigation Project List.

Shelby County Project List

The following Project List provides an overview of all projects decided on by the Shelby County Hazard Mitigation Committee. This includes potential funding sources, implementation timeframes, the project's responsible agency, and other information. This list is to remain active

and updated. Additionally, any hazard determined to be “low” by a jurisdiction was determined by the committee to not necessitate a corresponding project.

Shelby County Project List

Shelby County																
Project Number	Priority Score	Jurisdiction Priority Rank (High, Medium, Low)	Action/Project	Hazard Mitigated				Addresses New or Existing Buildings/ Infrastructure	Estimated Cost	Responsible Agency	Funding Sources				Population Affected	Timeframe
				Flood	Severe Storm	Extreme Temperature	Earthquake				HMGP	BRIC	FMA	Local		
SC1	15	H	Automate Circuits to modernize the grid and reduce outage time	X	X	X	X	Both	\$15,000,000	MLGW		X	X	X	50,000	1-4 Years
SC2	15	H	Leak Mitigation due to Seismic Shifts- Cast Iron				X	Existing	\$3,000,000	MLGW		X		X	24,300	1 Years
SC3	15	H	Increased monitoring and reaction time using Supervisory Control and Data Acquisition (SCADA) Communication of Gas System & Regulator Stations	X	X	X	X	Existing	\$1,125,000	MLGW		X	X	X	937,200	5 Years

SC4	15	L	Seismic Hazard Mitigation to Regulator & Gate Stations				X	Existing	\$300,000	MLGW		X		X	937,200	5 Years
SC5	15	H	Seismic Mitigation of Transmission Line				X	New & Existing	\$13,500,000	MLGW		X		X	937,200	10 Years
SC6	15	H	Seismic Mitigation of Service Taps				X	Existing	\$21,500,000	MLGW		X		X	937,200	5 Years
SC7	15	H	Convert all External Sirens to Solar Power Source	X	X			Existing	\$100,000	Shelby County EMHS	X	X	X	X	900,000	2 years
SC8	15	H	Property Protection Regulation - Perform comprehensive review of subdivision regulations and developer fee structure to discourage/provide incentive for development that increases/decreases storm water runoff and flooding potential	x				New	\$300,000	Shelby County Division of Planning and Development	x	x			10,000	3 years
SC9	15	H	Education and Training - Develop and distribute educational materials to high risk residents, as well as, conduct informational meetings	x	x	x	x	Both	\$15,000	Shelby County EMHS	x	x			100,000	1 year

Section 4: Mitigation Strategy

SC10	14	M	Flood Mitigation for Below grade Regulator stations	X				Existing	\$3,000,000	MLGW		X	X	X	937,200	10 Years
SC11	14	L	Seismic Mitigation of Pipe on Bridges				X	Existing	\$5,000,000	MLGW		X		X	937,200	10 Years
SC12	14	H	Hardening of Distribution System in High Risk Neighborhoods - Glenview	X	X	X	X	Existing	\$8,333,333	MLGW		X	X	X	2,929	4 Years
SC13	14	H	Hardening of Distribution System in High Risk Neighborhoods - Orange Mound	X	X	X	X	Existing	\$8,333,333	MLGW		X	X	X	14,586	4 Years
SC14	14	H	Hardening of Distribution System in High Risk Neighborhoods - Whitehaven	X	X	X	X	Existing	\$8,333,333	MLGW		X	X	X	36,998	4 Years
SC15	14	H	Community Safe Rooms	X	X	X		New	\$2,000,000	Shelby EMHS					200,000	2 years
SC16	14	H	Raise and Seal Sewer Manholes - Elevate and flood proof sewer manholes that are located in low lying flood plains and ditches	x				Existing	\$250,000	Shelby County Public Works	x	x			100,000	1 year
SC17	14	H	Advance Acquisition and Land Banking - Purchase and reserve properties within the	x				Both	\$1,000,000	Shelby County Division of Planning	x	x			100,000	2 years

			Floodway and other developable land that would impact downstream development							and Development						
SC18	14	H	Flood Protection - Flood proof high-risk and repeat structures	x				Existing	\$1,000,000	Shelby County Division of Planning and Development	x	x			100,000	2 years
SC19	13	H	Interstate Streetlight Retrofit	x	x	x	x	Both	\$3,500,000	MLGW		x	x	x	1,000,000	5 Years
SC20	13	H	Dams and Reservoirs - Purchase agricultural and vacant properties in flood zones and construct levees to store flood waters	x				Existing	\$300,000	Shelby County Division of Planning and Development	x	x	x		10,000	2-3 Years
SC21	12	M	Backup Emergency Power Generation Projects (New and Upgrades) for Water Pumping/Treatment Facilities		x		x	Existing	\$5,000,000	MLGW		x		x	775,000	2-5 Years
SC22	12	M	Improve Reliability and Capacity of Water Supply in North Shelby County		x		x	New	\$75,000,000	MLGW		x		x	125,750	5-10 Years
SC23	12	H	Install New Water Wells to Increase Raw Water Availability to Pumping Stations		x		x	Existing	\$50,000,000	MLGW		x		x	775,000	2-10 Years

SC24	12	H	Water Station Control System Upgrades		X		X	Existing	\$10,000,000	MLGW		X		X	775,000	2-10 Years
SC25	12	H	Upgraded Seismic performance level for new building to replace the current Transformer, Fabrication Shops and the Heavy Equipment Repair Facility				X	New	\$1,350,000	MLGW, Facilities Dept.		X		X	450,000	1-5 Years
SC26	12	M	Seismic Retrofit of non-structural components for an existing building to house the Builder Services Department and all existing Electric, Gas and Water Meter Shops.				X	Existing	\$150,000	MLGW, Facilities Dept.		X		X	200,000	1-5 Years
SC27	12	H	Seismic Retrofit of Non-structural elements - South Service Center				X	Existing	\$150,000	MLGW, Facilities Dept.		X		X	200,000	1-5 Years
SC28	12	H	Seismic Retrofit of Non-structural elements - Brunswick Service Centers				X	Existing	\$150,000	MLGW, Facilities Dept.		X		X	200,000	1-5 Years
SC29	12	H	Seismic Retrofit of Non-structural elements - Hickory Hill Service Center				X	Existing	\$150,000	MLGW, Facilities Dept.		X		X	200,000	1-5 Years
SC30	12	H	Seismic Retrofit of Non-structural elements - North Services Center				X	Existing	\$150,000	MLGW, Facilities Dept.		X		X	500,000	1-5 Years

SC31	12	H	Seismic Retrofit of Non-structural elements - Electric & System operations				X	Existing	\$150,000	MLGW, Facilities Dept.		X		X	200,000	1-5 Years
SC32	12	H	Seismic Retrofit of Non-structural elements - Administration Building				X	Existing	\$150,000	MLGW, Facilities Dept.		X		X	200,000	1-5 Years
SC33	12	H	Seismic Mitigation at LNG Plant				X	Existing	\$120,000	MLGW		X		X	937,200	10 Years
SC34	12	H	Earthquake vulnerability assessment for Shelby County buildings and critical elements of infrastructure				x	Both	\$275,000	University of Memphis Center for Earthquake Research and Information (CERI)	x	x			900,000	2-3 Years
SC35	12	H	Raise Roadbed Elevations - Elevate roadways that frequently are crossed by flood waters.	x				Existing	\$4,000,000	Shelby County Roads and Bridges	x	x			100,000	3 year
SC36	12	H	Stream Restoration - Purchase property and redirect channelized streams to restore them with USCOE projects meandering and flood stage protection	x				Both	\$1,000,000	Shelby County Division of Planning and Development	x	x			100,000	2 years
SC37	12	H	Storm Drain System Management - Clean culverts and remove debris from the storm	x				Existing	\$300,000	Shelby County Public Works	x	x			100,000	3 years

			water collection system													
SC38	12	H	Streambank Protection - Install weirs inside channels to prevent future bank erosion and scour from head-cutting	x				Both	\$1,000,000	Shelby County Division of Planning and Development	x	x			100,000	2 years
SC39	12	H	Porous Pavement - Design and install porous pavement systems for County buildings and projects	x				Existing	\$1,000,000	Shelby County Roads and Bridges	x	x			100,000	2 years
SC40	12	H	Storm Water Basin - Design and install a regional storm water detention basin	x				Both	\$1,000,000	Shelby County Roads and Bridges	x	x			100,000	2 years
SC41	12	H	Mapping Hazards - Produce highly accurate storm drainage system information	x				Both	\$500,000	Shelby County Roads and Bridges	x	x			100,000	2 years
SC42	12	H	Mapping Hazards - Identify and graph areas with high liquefaction/damage potential				x	Both	\$500,000	Shelby County Roads and Bridges	x	x			100,000	2 years
SC43	12	M	Small Business Audits - Perform structural inspections of heavy impact/high risk businesses in Shelby County	x	x		x	New	\$20,000	University Of Memphis Center for Earthquake Research Institute	x	x			100,000	1 year

SC44	12	New	Big Creek Basin Stabilization	x				Existing		Shelby County Planning and Development	x	x				2 years
SC45	12	M	Traffic Lights/Traffic Control	x	x	x	x	Both	\$300,000	Shelby County Roads and Bridges	x	x			500,000	2 years
SC46	12	M	Community Awareness Program	x	x	x	x	Both	\$100,000	Shelby County EMHS	x	x			1,000,000	1 year
SC47	12	New	Stationary Generators	x	x	x	x	Existing		Shelby County EMHS	x	x				
SC48	12	H	Tree Limb Removal Program		x			Existing	\$300,000	Shelby County Public Works	x	x			50,000	1 year
SC49	12	H	Seismic Retrofit Bridges - Upgrade at-risk structures				x	Both	\$2,500,000	Shelby County Roads and Bridges	x	x			800,000	2 years
SC50	12	H	Seismic Retrofit Fire station - Upgrade at-risk buildings and install emergency generators				x	Both	\$2,000,000	Shelby County Fire	x	x			100,000	2 years
SC51	12	H	Emergency Portable Generator - Purchase an emergency portable generator to operate sewer lift stations during	x	x			Both	\$20,000	Shelby County Public Works	x	x			100,000	1 year

			extended power outages													
SC52	12	H	Bonus and Incentive Zoning - Install a system allowing developers to exceed limitations of current regulations, such as density or building height, in return for specific concessions	x				New	\$20,000	Shelby County Division of Planning and Development	x	x			100,000	1 year
SC53	12	H	Education and Training - Train code enforcement, law enforcement, disaster responders and citizens in earthquake response. Develop a community awareness program	x	x		x	Both	\$15,000	Shelby County EMHS	x	x			100,000	1 year
SC54	12	H	Home Inspection Program - Complete hazard susceptibility checklists to offer personalized vulnerability assessments	x	x		x	Existing	\$100,000	Shelby County Code Enforcement	x	x			1,000,000	1 year
SC55	12	H	Community Awareness Program - Develop real estate disclosure information and educate homebuyers and the general public of hazard risks	x		x	x	Both	\$100,000	Shelby County Assessors Office	x	x			1,000,000	1 year

SC56	12	H	Education and Training - Generate awareness of hazards, mitigation steps and disaster response for Shelby County employees	x	x	x	x	Both	\$100,000	Shelby County EMHS	x	x			1,000,000	1 year
SC57	12	H	Traffic Lights and other Traffic Controls - Protect traffic lights and other traffic controls. Install resilient street signs for navigation in an emergency	x	x	x	x	Both	\$300,000	Shelby County Roads and Bridges	x	x			500,000	2 years
SC58	12	H	Vegetation - Identify locations for and install dense vegetative strips or buffers or reestablishment of removed vegetation	x				Existing	\$100,000	Shelby County Division of Planning and Development	x	x			1,000,000	1 year
SC59	12	H	Wind Proofing - Modify at-risk structures to be able to withstand high winds and tornados		x			Existing	\$300,000	Shelby County Public Works	x	x			500,000	2 years
SC60	12	H	Tie-Down Program - Mandate and retrofit propane tank tie-downs and mobile homes		x			Both	\$100,000	Shelby County Code Enforcement	x	x			1,000	2 years
SC61	12	H	Protect water supply - Install shut-off valves and emergency connector hoses where water meters connect		x		x	Existing	\$100,000	Shelby County Public Works	x	x			1,000,000	1 year

SC62	12	H	Utility Line Relocation - Bury electric, telephone and cable lines and/or reinforce the connections on existing utility lines		x			Both	\$3,000,000	MLGW	x	x			50,000	3 years
SC63	12	H	Tree Limb Removal Program - Develop and enact project to clear tree limbs in the right-of-way and threatening utility lines	x	x			Existing	\$300,000	MLGW	x	x			50,000	1 year
SC64	11	H	Variable Frequency Drive Motor & Transformer Upgrades. Include backup motor control and environmentally stable enclosures.		X	X	X	Existing	\$20,000,000	MLGW		X		X	775,000	2-5 Years
SC65	11	H	Sheahan Wash Water Recovery Basin Upgrade				X	Existing	\$8,000,000	MLGW		X		X	650,000	4-7 Years
SC66	11	M	Seismic Upgrades to Water Facilities		X		X	Existing	\$30,000,000	MLGW		X		X	775,000	5-10 Years
SC67	11	H	Add/Upgrade Water Distribution Facilities for better seismic and storm resilience		X		X	Both	\$50,000,000	MLGW		X		X	775,000	2-15 Years
SC68	11	H	Add/Upgrade Water Production Facilities for better seismic and storm resilience		X		X	Both	\$70,000,000	MLGW		X		X	775,000	2-15 Years

Section 4: Mitigation Strategy

SC69	11	M	Upgrade/Repair Network Vaults	X	X	X	X	Both	\$2,500,000	MLGW		X	X	X	3,000	5 Years
SC70	11	M	Update/Replace Network Protectors	X	X	X	X	Both	\$6,500,000	MLGW		X	X	X	3,000	5 Years
SC71	11	H	Seismic retrofits distribution transformers and switch gear.				X	Existing	\$60,000,000	MLGW		X		X	937,200	Annual
SC72	11	H	Generator- Location 3- 6235 Haley Road	x	x	x		Existing	\$100,000	Shelby County Roads and Bridges	x	x	x	x	900,000	2 years
SC73	11	H	Generator- Location 4Election Commission 980 Nixon Drive	x	X	x	X	Existing	\$100,000	Shelby County Roads and Bridges	x	x	x	x	900,000	2 years
SC74	11	H	Big Creek CN Bridge Damn Blowout Mitigation	x			X	Existing	\$7,000,000	Shelby County Division of Planning and Development		X	X	X	100,000	2 years
SC75	11	H	Damage Assessment Software	X	X	X	X	Existing	\$60,000	Shelby County EMHS	X	X	X	X	900,000	1 year
SC76	11	H	Mass Communication/ Notification System	X	X	X	X	New	\$1,000,000	Shelby County EMHS	X		X	X	900,000	2 years

SC77	11	H	Stream Restoration	x				Existing	\$1,000,000	Shelby County Division of Planning and Development	x	x			100,000	2 years
SC78	11	H	Purchase Streambank Easements - Purchase easements on high flow at risk streambeds to allow the County the rights to clear and maintain debris which causes flooding	x				Both	\$1,000,000	Shelby County Roads and Bridges	x	x			100,000	2 years
SC79	11	H	Drainage system upgrade - Design and install larger or parallel drainage pipe in locations that bottleneck and cause upstream flooding	x				Both	\$150,000	Shelby County Division of Planning and Development	x	x			100,000	5 years
SC80	11	H	Green Infrastructure - Install regional green infrastructure projects in locations with large flow generators or conveyances			x		Both	\$1,000,000	Shelby County Division of Planning and Development	x	x			100,000	2 years
SC81	11	H	Community Safe Rooms - Build shelter areas at key locations throughout Shelby County to allow residents a place to go in freezing, high-heat and high-wind situations			x	x	Existing	\$3,000,000	Shelby County EMHS	x	x			50,000	2 years

SC82	11	H	Dredge Behind Levee of Dam #5 - Remove siltation deposits to increase capacity and clear wooded area to improve flow	x				Both	\$500,000	Shelby County Division of Planning and Development	x	x			50,000	1 year
SC83	10	H	Seismic retrofits of highly vulnerable electrical substation equipment and control buildings.				X	Existing	\$9,700,000	MLGW		X		X	937,166	Annual
SC84	10	H	Seismic retrofits of highly vulnerable electrical substation equipment and control buildings.				X	Existing	\$9,700,000	MLGW		X		X	937,200	Annual
SC85	10	M	Generator- Location 2-140 Adams Ave #106, Memphis, TN 38103	x	x	x		Existing	\$100,000	Shelby County Public Works	x	x	x	x	900,000	2 years
SC86	10	H	Widening of Big Creek Floodplain - Design and construct overflow floodplain areas for the Big Creek Drainage canal between Singleton Parkway and Highway 51	x				Both	\$50,000,000	Shelby County Division of Planning and Development	x	x			50,000	3 years
SC87	9	M	Stationary Generators at critical infrastructure locations, tasked with performing essential functions	X	X	X	X	Existing	\$100,000	Shelby County Public Works	X	X	X	X	900,000	2 years

SC88	9	M	Location 1- Generator 584 Adams Ave, Memphis, TN 38103	x	x	x		Existing	\$100,000	Shelby County Public Works	x	x	x	x	900,000	2 years
SC89	9	M	Stationary Generators at critical infrastructure locations, tasked with performing essential functions Location 1- Generator 584 Adams Ave, Memphis, TN 38103	x	x	x		Existing	\$100,000.00	Shelby County Public Works	x	x	x	x	900,000	2 years
SC90	10	M	Stationary Generators at critical infrastructure locations, tasked with performing essential functions Location 2- 140 Adams Ave #106, Memphis, TN 38103	x	x	x		Existing	\$100,000.00	Shelby County Public Works	x	x	x	x	900,000	2 years
SC91	11	H	Stationary Generators at critical infrastructure locations, tasked with performing essential functions Location 3- 6235 Haley Road	x	x	x		Existing	100,000.00	Shelby County Public Works	x	x	x	x	900,000	2 years
SC92	11	H	Stationary Generators at critical infrastructure locations, tasked with performing essential functions Location 4 Election Commission 980 Nixon Drive	x	X	x	X	Existing	100,000.00	Shelby County Public Works	x	x	x	x	900,000	2 years

SC93	11	H	Big Creek CN Bridge Damn Blowout Mitigation	x			X	Existing	7,000,000.0 0	Shelby County Roads and Bridges		X	X	X	100,000	2 years
SC94	13	H	Basin study of Long Creek area from East Holmes Road to Nonconnah Creek	X				Exisiting	250,000	Shelby County Planning and Developmen t	X	X	X	X	5000	1-2 years
SC95	13	H	North Shelby County- Loosehatchie River Basin	X				Existing	450,000	Shelby County Planning and Developmen t	X	X	X	X	50,000	1 year

Memphis																
Project Number	Priority Score	Jurisdiction Priority Rank (High, Medium, Low)	Action/Project	Hazard Mitigated				Addresses New or Existing Buildings/ Infrastructure	Estimated Cost	Responsible Agency	Funding Sources				Population Affected	Timeframe
				Flood	Severe Storm	Extreme Temperature	Earthquake				HMGP	BRIC	FMA	Local		
ME1	15	H	Stormwater Program Manager	x				New	\$20,000,000	Public Works	x	x	x	x	685,000	1-5 Years
ME2	15	H	Memphis Fire Stations Uninterruptible Power Supply		x		x	Existing	\$2,300,000	Memphis Fire	x	x	x	x	685,000	1-5 Years
ME3	15	H	Revise emergency response routes incorporating bridges which have been replaced or retrofitted since the previous routes established in 1991	x	x		x	Both	\$5,000	Memphis OEM	x	x			600,000	1-5 Years
Me4	14	H	Implementation of Stormwater Program Manager/Drainage Master Plan(s) Recommendation(s)	x				Both	\$20,000,000	Public Works	x	x	x	x	1,000,000	1-5 Years

Section 4: Mitigation Strategy

ME5	14	H	Acquisition and Demolition or Relocation of Flood Prone Structures	x				Existing	\$2,000,000	Planning and Development	x	x	x	x	2,000	1-5 Years
ME6	14	H	Outdoor Warning Siren Upgrade	x	x	x		Both	\$650,000	Memphis OEM	x	x	x	x	1,000,000	3-5 Years
ME7	14	H	Designated shelter/warming/ cooling center	x	x	x	x	Both	\$650,000	Memphis OEM	x	x	x	x	685,000	2-4 Years
ME8	14	H	Mitigation Planning	x	x	x	x	Existing	\$650,000	Memphis OEM	x	x	x	x	300,000	1-2 Years
ME9	14	H	Scour/Flood Prevention of Existing Bridges/Structures	x				Existing	\$10,000,000	Engineering	x	x	x	x	685,000	1-3 Years
ME10	14	H	Create New Hazmat Plan Reviewing All Projects For Cost/Benefit Analysis And Update Hazmat Plan		x		x	Existing	\$2,000,000	Memphis Fire	x	x		x	1,200,000	1-5 Years
ME11	13	H	Develop Multijurisdictional Comprehensive Earthquake Hazard Management Plan				x	Existing	\$1,700,000	Memphis OEM	x			x	1,000,000	1-3 Years
ME12	13	H	Flood Control Improvements utilizing local detention systems	x				Existing	\$2,000,000	Public Works	x	x	x	x	685,000	<1-3 Years

Section 4: Mitigation Strategy

ME13	13	H	Reduce or eliminate erosion due to flooding	x				Existing	\$750,00.00	Public Works	x	x	x	x	685,000	1-4 Years
ME14	13	M	Reflective Warning System(s)	x	x	x	x	New	\$2,000,000	Memphis OEM	x	x	x	x	685,000	1-5 Years
ME15	13	L	Memphis Fire Stations 30 and 36 Structural Retrofits		x		x	Existing	\$1,500,000	Memphis Fire	x	x	x	x	685,000	1-5 Years
ME16	13	H	Buyouts 2 Property Buyouts 2 Houses Contracted To Buyout (Honeybrook, Princeton)	x				Existing	\$500,000	Planning and Development	x	x	x		20	2 years
ME17	13	H	Bartlett Road and Shelby Oaks over Fletcher Creek, Construction Only	x				Existing	\$1,800,000	Engineering	x	x			90,000	1-5 Years
ME18	13	H	Apply For Buyout Program For 7 Units Along Barr Av. Nonconnaah Floodplain	x				Existing	\$500,000	Planning and Development	x	x			50	1-5 Years
ME19	13	H	N Watkins Over N. Cypress Creek Scheduled To Be Replaced In Next 5-10 Years	x				Existing	\$1,000,000	Engineering	x	x			120,000	1-5 Years
ME20	12	H	Flood Control Rehabilitation and Improvements for local drainageway conveyance systems	x				Existing	\$2,500,000	Public Works	x	x	x	x	685,000	2-4 Years

Section 4: Mitigation Strategy

ME21	12	L	Increase Drain Maintenance Inspections	x	x			Existing	\$1,000,000	Public Works	x	x	x	x	685,000	1-5 Years
ME22	12	M	Major Flood Control Pumping Station(s) upgrade	x				Existing	\$500,000	Public Works	x	x	x	x	685,000	1-5 Years
ME23	12	L	Mississippi River Floodgate Upgrade	x			x	Existing	\$1,000,000	Engineering	x	x	x	x	1,000,000	1-5 Years
ME24	12	M	McKellar Lake Facilities	x				Existing	\$5,500,000	Public Works	x	x	x	x	685,000	1-5 Years
ME25	12	H	MFD- Public Safety (PS) Communications Center Resiliency Project		x		x	New	\$2,500,000	Memphis Fire	x	x	x	x	685,000	1-5 Years
ME26	12	L	MFD- PS Maritime Division Operations Center Flood & Storm Precautions	x	x		x	Existing	\$1,900,000	Memphis Fire	x	x	x	x	685,000	1-5 Years
ME27	12	M	Audubon Park basin	x				Existing	\$100,000	Public Works	x	x	x	x	20,000	2-4 Years
ME28	12	M	South Cypress Creek flood control	x				Existing	\$500,000	Public Works	x	x	x		25,000	2-4 Years
ME29	12	M	Black Bayou flood control	x				Existing	\$750,000	Public Works	x	x	x		35,000	2-4 Years

ME30	12	M	Huling Basin flood control	x				Existing	\$5,000,000	Public Works	x	x	x		40,000	1-3 years
ME31	12	M	Fontaine Basin flood control	x				Existing	\$2,500,000	Public Works	x	x	x		45,000	1-3 years
ME32	12	M	Fletcher Creek Basin flood control	x				Existing	\$5,000,000	Public Works	x	x	x		90,000	0-2 years
ME33	12	M	Massey Basin flood control	x				Existing	\$1,500,000	Public Works	x	x			30,000	1-5 Years
ME34	12	M	Sophia Bayou flood control	x				Existing	\$1,000,000	Public Works	x	x			30,000	1-5 Years
ME35	12	M	Gayoso Bayou Basin flood control	x				Existing	\$300,000	Public Works	x	x			70,000	1-5 Years
ME36	12	M	White Station Basin flood control	x				Existing	\$5,000,000	Public Works	x	x			45,000	1-5 Years
ME37	12	H	Promote Public Awareness And Education Programs Focusing On The Ability To Plan And Respond To A Catastrophic Earthquake.				x	Both	\$7,500,000	Memphis OEM	x	x			1,200,000	1-5 Years

ME38	12	M	Royster Bayou Basin flood control	x				Existing	\$100,000	Public Works	x	x			20,000	1-5 Years
ME39	12	M	Quince Road flood control	x				Existing	\$120,000	Public Works	x	x			30,000	1-5 Years
ME40	12	M	Harrison Creek flood control	x				Existing	\$5,000,000	Public Works	x	x			45,000	1-5 Years
ME41	11	H	Seismic retro fit of City owned or operated buildings/structures/b ridges				x	Existing	\$20,000,000	Engineering	x	x	x	x	6,000	2-5 Years
ME42	11	L	Bellevue Solid Waste Transfer Facility				x	Existing	\$9,000,000	Public Works	x	x	x	x	325,000	1-5 Years
ME43	11	M	Memphis Fire Training Center and USAR Warehouse Flood Mitigation	x				Existing	\$3,000,000	Memphis Fire	x	x	x	x	685,000	1-5 Years
ME44	11	H	Sam Cooper Bridges from Holmes Road to I-40, Design & Construction				x	Existing	\$800,000	Engineering	x	x			150,000	1-5 Years
ME45	11	H	Seismically Retrofit 3 Water Treatment Plants				x	Existing	\$2,000,000	Engineering	x	x			300,000	1-5 Years
ME46	11	L	Drainage Manual Revisions					Existing		Public Works	x	x			900,000	1-5 Years

Section 4: Mitigation Strategy

ME47	10	L	Drainage Manual Revisions	x				Existing	\$1,000,000	Public Works	x	x	x	x	685,000	1-5 Years
ME48	10	L	Re-establish Roadway surface for proper drainage conveyance	x				Existing	\$5,000,000	Public Works	x	x	x	x	685,000	1-5 Years
ME49	10	H	Memphis Area Transit Authority (MATA)				x	New	\$65,022,899	MATA	x	x	x	x	1,000,000	1-5 Years
ME50	8	M	Multi-Purpose Facility (Coliseum)	x	x	x	x	Existing	\$500,000	Engineering	x	x	x	x	1,000,000	1-5 Years

Arlington																
Project Number	Priority Score	Jurisdiction Priority Rank (High, Medium, Low)	Action/Project	Hazard Mitigated				Addresses New or Existing Buildings/ Infrastructure	Estimated Cost	Responsible Agency	Funding Sources				Population Affected	Timeframe
				Flood	Severe Storm	Extreme Temperature	Earthquake				HMGP	BRIC	FMA	Local		
AR1	12	Low	Develop CERT Program	x	x	x	x	Both	\$2,500	Fire Chief				x	13,000	Annual
AR2	11	High	Drainage Improvements Quintard Street to Depot Square	x	x			Existing	\$80,000	Dir. Of Public Works	x	x	x	x	250 homes	2 yr
AR3	11	High	Drainage Improvements Walker Street to Depot Square	x	x			Existing	\$50,000	Dir. Of Public Works	x	x	x	x	250 homes	2 yr
AR4	11	High	Drainage Improvements Chester Street to Walker Street	x				Existing	\$45,000	Dir. Of Public Works	x	x	x	x	250 homes	2 yr
AR5	11	High	Drainage Improvements Campbell Street to Brown Street	x	x			Existing	\$100,000	Dir. Of Public Works	x	x	x	x	250 homes	2 yr

AR6	11	Moderate	Equipment for Right of Way cleaning; Gradall	x	x		x	Both	\$265,000	Dir. Of Public Works	x	x		x	13,000	10 yr
AR7	11	High	Increase culvert Size on Highway 70. Possible State project	x				Existing	\$240,000	Dir. Of Public Works	x	x	x	x	250 homes	2 yr
AR8	11	High	Drainage Improvement on Airline Road near Otto Lane. Provide regional draining structure	x	x			Existing	\$30,000	Dir. Of Public Works	x	x	x	x	250 homes	2 yr
AR9	11	High	Drainage Improvements west of Airline Road in the Industrial Park	x	x			Existing	\$3,000,000	Dir. Of Public Works	x	x	x	x	250 homes	2 yr
AR10	10	Moderate	Provide increase in water service to Mary Alice subdivision		x		x	Existing	\$180,000	Dir. Of Public Works	x	x	x	x	25 homes	2 yr
AR11	9	High	Retrofit Town Hall for Earthquake					Existing	\$75,000	Town Administrator	x	x		x	50	5 yr
AR12	9	High	Retrofit Fire Station 1 for Earthquake				x	Existing	\$75,000	Fire Chief	x	x		x	50	5 yr
AR13	9	Moderate	Removal of unsafe buildings		x		x	Existing	\$350,000	Town Administrator	x	x		x	150	Annual

Bartlett																
Project Number	Priority Score	Jurisdiction Priority Rank (High, Medium, Low)	Action/Project	Hazard Mitigated				Addresses New or Existing Buildings/ Infrastructure	Estimated Cost	Responsible Agency	Funding Sources				Population Affected	Timeframe
				Flood	Severe Storm	Extreme Temperature	Earthquake				HMGP	BRIC	FMA	Local		
BA1	15	H	Backup generator for water plants	X	X		X	Existing	\$300,000	Public Works	x	x			60,000	3 years
BA2	15	H	Backup generator for High Service Pumps	X	X		X	Existing	\$100,000	Public Works	x	x			10,000	3 years
BA3	15	H	Backup generator for Solid Waste Complex and Fuel Pumps 5250 Shelter Run Lane	X	X		X	Existing	\$150,000	Public Works	x	x			60,000	3 years
BA4	15	M	Repetitive Loss Home Buyout	X				Existing	\$500,000	Planning and Economic Development	X		X		20	5 years

BA5	15	L	Clear Row to prevent down trees in ice storm		X	X		Existing	\$500,000	Public Works				X	5,000	5 years
BA6	13	M	Backup generator for City Hall Annex 6382 Stage Rd.	X	X		X	Existing	\$100,000	Engineering	x	x			60,000	3 years
BA7	13	M	Backup generator for Public Works General Maintenance Building 3587 Altruria Road	X	X		X	Existing	\$150,000	Public Works	x	x			60,000	3 years
BA8	13	M	Mobile Command Center	X	X	X	X	New	\$400,000	Bartlett Fire	x	x			60,000	2 years
BA9	13	M	Bartlett Boulevard Detention Basin construction	X				New	\$500,000	Engineering	X		x		20,000	5 years
BA10	12	M	Civil Defense Sirens: upgrade, replace or new install		X			Both	\$100,000	Bartlett Fire	x	x			30,000	3 years
BA11	12	H	Retrofit Wells and Water Plant				X	Existing	\$100,000	Public Works	X	x			60,000	5 years
BA12	12	H	Training/Storage Building at Fire Training Facility for Training and safe storage of Disaster Preparedness equipment	X	X		X	Existing	\$500,000	Bartlett Fire	X	x			60,000	3 years

BA13	12	H	Mitigate Flooding of Sub Bus etc.	X				Existing	\$1,000,000	Public Works	X		x		10,000	5 years
BA14	12	M	Fiske Detention Basin	X				Existing	\$250,000	Engineering	X		x		500	5 years
BA15	12	L	Yale Road and Bypass Channel construction	X				New	\$250,000	Engineering	X		x		25,000	5 years
BA16	11	M	Backup generator for Animal Shelter, 5220 Shelter Run Lane	X	X		X	Existing	\$125,000	Public Works	x	x			15,000	3 years
BA17	11	M	Easthill Detention Basin	X				New	\$400,000	Engineering	x		x		2,000	2 years
BA18	10	M	Prosperity Point Drainage Project	X				New	\$500,000	Engineering	x		x		20	2 years
BA19	10	H	Public Building Seismic Study				X	Existing	\$100,000	Engineering	x	x			60,000	5 years
BA20	10	M	Seismic Retrofit of Fire Stations				X	Existing	\$300,000 Each @ 5 Stations	Bartlett Fire	X	x			60,000	5 years
BA21	10	L	Reduce Heat Island Effect/Green Roof			X		Existing	\$500,000	Planning	X				5,000	5 years

Collierville																
Project Number	Priority Score	Jurisdiction Priority Rank (High, Medium, Low)	Action/Project	Hazard Mitigated				Addresses New or Existing Buildings/ Infrastructure	Estimated Cost	Responsible Agency	Funding Sources			Population Affected	Timeframe	
				Flood	Severe Storm	Extreme Temperature	Earthquake				HMGP	BRIC	FMA			Local
CO1	14	H	Downtown Drainage Basin	x				New	\$550,000	Collierville Division of Engineering	x	x	x		Over 450 Homes and businesses	1-2 years
CO2	13	M	Replacement emergency generator for Fire House #2	x	x	x	x	Existing	\$75,000	Collierville Fire Department	x	x			1 fire house continuation of services	3-5 Years
CO3	11	M	Review The Options To Raise Finished Floor Elevations In The Flood Plain	x				Existing	\$500,000	Collierville Division of Engineering	x			x	200	3-5 Years

CO4	11	M	Review Ways To Retrofit Existing Structures/Infrastructure For Greater Resistance		x		x	Both	\$1,000,000	Collierville Division of Engineering	x	x		x	5,000	3-5 Years
CO5	11	H	Public outreach all hazards	X	X	X	X	Both	\$500	Collierville Fire Department				X	45,000	Annually

Germantown																
Project Number	Priority Score	Jurisdiction Priority Rank (High, Medium, Low)	Action/Project	Hazard Mitigated				Addresses New or Existing Buildings/ Infrastructure	Estimated Cost	Responsible Agency	Funding Sources				Population Affected	Timeframe
				Flood	Severe Storm	Extreme Temperature	Earthquake				HMGP	BRIC	FMA	Local		
GE1	15	H	English Meadows drainage improvement (phase 1)	x	x			Existing	\$900,000	Public Works	x			x	87	2 Years
GE2	15	H	Miller Farms Area drainage improvements (phase 1)	x	x			Existing	\$3,000,000	Public Works	x			x	200	2 Years
GE3	15	H	Wildwood Farms detention basin	x	x			Existing	\$1,000,000	Public Works	x		x	x	100	3 years
GE4	15	H	Stout road drainage and widening improvments	x	x			Existing	\$700,000	Public Works	x		x	x	41,000	4 Years
GE5	15	H	Miller Farms Area drainage improvements (phase 2)	x	x			Existing	\$3,000,000	Public Works	x		x	x	200	4 Years

GE6	15	H	Miller Farms Area drainage improvements (phase 3)	x	x			Existing	\$3,000,000	Public Works	x		x	x	200	4 Years
GE7	15	H	McVay Bridge update				x	Both	\$3,000,000	Engineering	x			x	100,000	4 Years
GE8	14	M	Fire station 2 & 3 retrofits				x	Both	\$1,000,000	Germantown Fire	x				41,000	4 Years
GE9	14	M	Crestwyn area drainage improvements	x	x			Both	\$750,000	Public Works	x				15	3 years
GE10	11	L	Community safe room (Riverdale elementary)		x	x		New	\$900,000	Germantown City Schools	x				41,000	2 Years
GE11	10	L	Add more green space and tree space to existing parking lots			x		Existing	\$600,000	Public Works	x				41,000	4 Years
GE12	9	L	Add green roof to public building			x		New	\$1,000,000	Public Works	x				41,000	2 Years

Lakeland																
Project Number	Priority Score	Jurisdiction Priority Rank (High, Medium, Low)	Action/Project	Hazard Mitigated				Addresses New or Existing Buildings/ Infrastructure	Estimated Cost	Responsible Agency	Funding Sources				Population Affected	Timeframe
				Flood	Severe Storm	Extreme Temperature	Earthquake				HMGP	BRIC	FMA	Local		
LA1	13	H	Backup generator at city hall	X	X	X	X	Both	\$23,000	Engineering	X	X			12,605	1-3 years
LA2	13	H	Install backup generator for one lift station	X	X		X	Both	\$23,000	Engineering	X	X			12,605	1-3 years
LA3	13	H	Seismic evaluation and earthquake retrofit of city hall, if required				X	Both	\$300,000	Engineering	X	X			12,605	1-3 years
LA4	13	H	Seismic evaluation and earthquake retrofit of fire station, if required				X	Both	\$300,000	Engineering	X	X			12,605	1-3 years
LA5	13	H	Backup generator at fire station	X	X	X	X	Both	\$23,000	Engineering	X	X			12,605	1-3 years

LA6	13	H	Install backup generator for Monroe LS#3	X	X		X	Both	\$23,000	Engineering	X	X			12,605	1-3 years
LA7	13	H	Rocky Branch Creek Regional Detention Facility, 9599 Blue Spruce Drive	X				Both	\$600,000	Engineering			X		12,605	1-3 years
LA8	13	H	Tornado Siren Upgrades and Additions		X			Both	\$10,000	Shelby County EMHS			X	X	12,606	1-3 years
LA9	12	H	Maintain sewer right of way and access road	X	X	X		Both	\$10,000	Water, Sewer, & Trash				X	12,605	Annually
LA10	12	H	Provide reinforced hallways in public buildings for tornados		X		X	Both	\$100,000	Engineering	X	X			12,605	1-3 years
LA11	12	H	Anchor bookcases and filing cabinets to walls in public buildings for earthquake mitigation				X	Both	\$5,000	Engineering	X	X			12,605	1-3 years
LA12	11	H	Clear stream crossing of tress/debris	X	X			Both	\$25,000	Engineering				X	12,605	Annually
LA13	11	M	Channel improvements	x				Existing	\$100,000	Engineering	x	x	x		12,605	2-3 Years

Millington																
Project Number	Priority Score	Jurisdiction Priority Rank (High, Medium, Low)	Action/Project	Hazard Mitigated				Addresses New or Existing Buildings/ Infrastructure	Estimated Cost	Responsible Agency	Funding Sources				Population Affected	Timeframe
				Flood	Severe Storm	Extreme Temperature	Earthquake				HMGP	BRIC	FMA	Local		
MI1	15	H	Stabilization of Big Creek to prevent failure of CN Railroad and Raleigh-Millington bridges. Stabilization to prevent failure of levee control system	x				Existing	\$8,500,000	Engineering	x	x	x		47,000	24 months
MI2	15	H	Big Creek Resiliency Project	x				Existing	\$40,000,000	Engineering	x		x	x	47,000	36 months
MI3	13	H	Royster Creek bank and Shelby Rd. bridge stabilization	x				Existing	\$8,000,000	Engineering	x		x	x	47,000	24 months
MI4	12	M	Generator for Emergency Operations Center	x	x	x	x	Existing	\$70,000	Millington Fire	x		x	x	12,000	2 months

MI5	13	H	Community Safe Room	x	x	x	x	New	\$1,000,000	Millington Fire	x		x	x	12,000	12 months
MI6	13	H	Navy Rd. drainage improvements	x				Existing	\$750,000	Engineering	x		x	x	47,000	24-36 months
MI7	14	H	Newport Channel improvements	x				Existing	\$250,000	Engineering	x		x	x	1,500	12-18 months
MI8	12	H	Sanitary System Repairs	x				Existing	\$50,000	Public Works	x		x	x	12,000	12-18 months
MI9	10	H	Public Works facility relocation	x	x	x	x	Existing	\$2,500,000	Public Works	x		x	x	12,000	24 months
MI10	12	H	Emergency Flood Relief Pumping Station	x				Existing	\$500,000	Public Works	x		x	x	10,200	2-3 Years
MI11	11	L	Local Underground Detention	x				Existing	\$225,000	Public Works	x		x	x	500	2-3 Years
MI12	13	H	Emergency Operations Center (EOC)	x	x	x	x	Existing	\$75,000	Millington Fire	x			x	10,200	2-3 Years
MI13	10	M	Emergency Warning Devices	x	x	x	x	Existing	\$50,000	Shelby County EMHS	x			x	3,000	2-3 Years

MI14	10	L	Water Plant Seismic Retrofit				x	New	\$200,000	Engineering	x			x	10,200	2-3 Years
MI15	11	H	Regional Detention Pond	x				New	\$500,000	Public Works	x		x	x	3,500	2-3 Years

Arlington Community Schools																
Project Number	Priority Score	Jurisdiction Priority Rank (High, Medium, Low)	Action/Project	Hazard Mitigated				Addresses New or Existing Buildings/ Infrastructure	Estimated Cost	Responsible Agency	Funding Sources				Population Affected	Timeframe
				Flood	Severe Storm	Extreme Temperature	Earthquake				HMGP	BRIC	FMA	Local		
AS1	10	H	Safe Space with generator near Arlington Middle		x	x		Existing	\$1,600,000	School Superintendent	x	x		x	1,500	5 yr
AS2	10	H	Safe Space with generator near Donelson Elementary		x	x		Existing	\$1,600,000	School Superintendent	x	x		x	1,500	5 yr
AS3	10	H	Bi-Directional Amplifier for Arlington Elementary School	x	x	x	x	New	\$125,000	School Superintendent	x			x	1,000	4 yr
AS4	10	H	Bi-Directional Amplifier for Arlington Middle School	x	x	x	x	New	\$125,000	School Superintendent	x			x	1,000	4 yr
AS5	10	H	Bi-Directional Amplifier for Donelson Elementary School	x	x	x	x	New	\$125,000	School Superintendent	x			x	1,000	4 yr

AS6	10	H	Bi-Directional Amplifier for Arlington Highy School	x	x	x	x	New	\$125,000	School Superintendent	x			x	1,500	4 yr
-----	----	---	---	---	---	---	---	-----	-----------	-----------------------	---	--	--	---	-------	------

Bartlett City Schools																
Project Number	Priority Score	Jurisdiction Priority Rank (High, Medium, Low)	Action/Project	Hazard Mitigated				Addresses New or Existing Buildings/ Infrastructure	Estimated Cost	Responsible Agency	Funding Sources				Population Affected	Timeframe
				Flood	Severe Storm	Extreme Temperature	Earthquake				HMGP	BRIC	FMA	Local		
BS1	12	M	Generator @ Oak Elementary and Update Sprinkler System		x	x	x	E	\$130,000	Operations Department		x			1,000	1-3yrs
BS2	12	M	Generator @ Bartlett Elementary		x	x	x	E	\$50,000	Operations Department		x			1,000	1-3 yrs
BS3	12	M	Generator @ Ellendale Elementary and Update Sprinkler System		x	x	x	E	\$130,000	Operations Department		x			850	3-5 yrs
BS4	12	M	Update sprinkler system @ Altruria Elementary		x	x	x	E	\$80,000	Operations Department		x			1,000	3-5 yrs

Collierville Schools																
Project Number	Priority Score	Jurisdiction Priority Rank (High, Medium, Low)	Action/Project	Hazard Mitigated				Addresses New or Existing Buildings/ Infrastructure	Estimated Cost	Responsible Agency	Funding Sources				Population Affected	Timeframe
				Flood	Severe Storm	Extreme Temperature	Earthquake				HMGP	BRIC	FMA	Local		
CS1	15	High	Communication for staff, students, and stakeholders in emergency situations in all buildings through 2 way radio systems.	X	X	X	X	Both	\$65,000	Operations				x	10,000	2 years
CS2	15	High	Upgrade emergency notification system for external communication	X	X	X	X	Both	\$50,000	Operations				X	10,000	2 Years

Lakeland School System																
Project Number	Priority Score	Jurisdiction Priority Rank (High, Medium, Low)	Action/Project	Hazard Mitigated				Addresses New or Existing Buildings/ Infrastructure	Estimated Cost	Responsible Agency	Funding Sources				Population Affected	Timeframe
				Flood	Severe Storm	Extreme Temperature	Earthquake				HMGP	BRIC	FMA	Local		
LS1	13	High	Backup generatory at Lakeland Elementary School	X	X	X	X	Both	\$23,000	School Superintend ent	X	X			1,900	1-3 years
LS2	13	High	Backup generator at Lakeland Preparatory School	X	X	X	X	Both	\$23,000	School Superintend ent	X	X			1,900	1-3 years
LS3	12	High	Tornado proof safe room at Lakeland Elementary School		X			Both	\$5,000,000	School Superintend ent	x	x			1,900	1-3 years
LS4	12	High	Tornado proof safe room at Lakeland Preparatory School		X			Both	\$5,000,000	School Superintend ent	x	x			1,900	1-3 years

**Millington Municipal Schools rated flooding as a medium threat due to the drainage problems at EA Harrold Elementary, as well as the threat to bus route interruptions. There is no other direct threat to school-owned infrastructure from flooding.

Millington Municipal Schools																
Project Number	Priority Score	Jurisdiction Priority Rank (High, Medium, Low)	Action/Project	Hazard Mitigated				Addresses New or Existing Buildings/ Infrastructure	Estimated Cost	Responsible Agency	Funding Sources				Population Affected	Timeframe
				Flood	Severe Storm	Extreme Temperature	Earthquake				HMGP	BRIC	FMA	Local		
MS1	14	High	E.A. Harrold Elementary School drainage project to prevent building from flooding in heavy rains	x				Existing	\$850,000	Operations	x		x	x	1,500	24-36 months
MS2	12	High	Millington Central High School Stadium Press Box Project, structural upgrade project				x	Existing	\$250,000	Operations	x		x	x	2,600	24-36 months
MS3	13	High	Millington Elementary School severe storm tornado shelter project		x	x		Existing	\$700,000	Operations	x		x	x	1,000	24-36 months

MS4	13	High	Millington middle school severe storm tornado project		x	x		Existing	\$700,000	Operations	x		x	x	1,000	24-36 months
MS5	12	Medium	Structural upgrades for seismic and severe storm at Millington High School, Performing Arts Center, Gymnasium, and Athletic Facilities		x		X	Existing	\$7,500	Operations				X	1,000	24-36 Months

Shelby County Schools																
Project Number	Priority Score (High, Medium, Low)	Action/Project	Hazard Mitigated				Addresses New or Existing Buildings/ Infrastructure	Estimated Cost	Responsible Agency	Funding Sources				Population Affected	Timeframe	
			Flood	Severe Storm	Extreme Temperature	Earthquake				HMGP	BRIC	FMA	Local			
SS1	13	Low	Cummings K-8 Gym/ Safe Building		X	X	X	Existing	\$3.5 Million	Director of Construction		X		X	627	2 years
SS2	13	Low	Kingsbury HS Gym/ Safe Building		X	X	X	Existing	\$4.5 Million	Director of Construction		X		X	1,457	5 years
SS3	13	Low	Grahamwood ES Gym/ Safe Building		X	X	X	Existing	\$3.5 Million	Director of Construction		X		X	1,095	5 years
SS4	13	Low	Downtown ES Classroom Addition		X	X	X	Existing	\$3.3 Million	Director of Construction		X		X	665	5 years

SS5	13	Low	Richland ES Gym/ Safe Building		X	X	X	Existing	\$3.5 Million	Director of Constructio n		X		X	906	5 years
SS6	13	Low	Delano ES Gym/ Safe Building		X	X	X	Existing	\$3.5 Million	Director of Constructio n		X		X	341	5 years
SS7	12	Low	Germantown ES Classroom Addition		X	X	X	Existing	\$4.0 Million	Director of Constructio n		X		X	748	2 years
SS8	12	Low	Willow Oaks ES Classroom Addition		X	X	X	Existing	\$3.5 Million	Director of Constructio n		X		X	799	5 years
SS9	12	Low	Brownsville Road ES Classroom Addition		X	X	X	Existing	\$3.3 Million	Director of Constructio n		X		X	653	5 years
SS10	12	Low	La Rose ES Classroom Addition		X	X	X	Existing	\$3.3 Million	Director of Constructio n		X		X	412	5 years
SS11	12	Low	Grandview Heights MS Classroom Addition		X	X	X	Existing	\$3.3 Million	Director of Constructio n		X		X	547	5 years
SS12	12	Low	Lucie Campbell ES Classroom Addition		X	X	X	Existing	\$3.3 Million	Director of Constructio n		X		X	675	5 years
SS13	12	Low	Snowden K-8 Classroom Addition		X	X	X	Existing	\$3.3 Million	Director of Constructio n		X		X	1,482	5 years

SS14	12	Low	White Station HS Classroom Addition		X	X	X	Existing	\$3.3 Million	Director of Construction		X		X	2,305	5 years
SS15	12	Low	Whitehaven ES Classroom Addition		X	X	X	Existing	\$3.3 Million	Director of Construction		X		X	559	5 years
SS16	12	Low	Ross ES Classroom Addition		X	X	X	Existing	\$3.3 Million	Director of Construction		X		X	869	5 years
SS17	12	Low	Shelby Oaks ES Classroom Addition		X	X	X	Existing	\$3.3 Million	Director of Construction		X		X	1,024	5 Years
SS18	12	Low	Macon Hall ES Classroom Addition		X	X	X	Existing	\$3.3 Million	Director of Construction		X		X	1,269	5 Years

Project List Update

The following chart shows the status of each approach/project from the previous plan:

Action/Project	Project Status
Dispatch Relocation	Complete
Public Works Emergency Response Building	Complete
Emergency Operations Center (EOC)	Carried Forward
Replace Generators	Carried Forward
800 Mgz Radio System	Complete - system upgraded county wide
Emergency Warning Devices	Carried Forward
Public Works Relocation	Carried Forward
Safe Rooms	Carried Forward
Update EOP	Complete
"Create New EOP RFP for Basic Plan"	Complete
"Create New Hazmat Plan	Ongoing
Reviewing All Projects For Cost/Benefit Analysis And Update Hazmat Plan By Mid-2014	Ongoing
"	Ongoing
Update Crisis Mgmt Plan	Complete
Purchase Substantial Damage Estimator & Command Pro Incident Mgmt Software	Complete
Update Hazmat Plan	Carried Forward
Sam Cooper Bridges from Holmes Road to I-40, Design & Construction	Carried Forward
Fire Station retrofit	Carried Forward
Bridge Upgrade	Carried Forward-remove
Develop Multijurisdictional Comprehensive Earthquake Hazard Management Plan	Carried Forward
Fire Station Retrofits	Complete
Bridge Upgrade	Delete
Water Plant Seismic Retrofit	Carried Forward
75,000 and 500,000 Gallon Water Tank Upgrades	Complete
Consider adopting IBC 2003 Code with more strict seismic criteria. All public buildings would be designed accordingly.	Complete
Revise emergency response routes incorporating bridges which have been replaced or retrofitted since the previous routes established in 1991	Carried Forward
Promote Public Awareness And Education Programs Focusing On The Ability To Plan And Respond To A Catastrophic Earthquake.	Carried Forward
Seismically Retrofit 3 Water Treatment Plants	Carried Forward
Amend Zoning Ordinance To Reflect High Levels Of Seismic Standards	Complete
Seismic Retrofit Bridges - Upgrade at-risk structures	Carried Forward
Seismic Retrofit Fire station - Upgrade at-risk buildings and install emergency generators	Carried Forward
Emergency Portable Generator - Purchase an emergency portable generator to operate sewer lift stations during extended power outages	Carried Forward

Bonus and Incentive Zoning - Install a system allowing developers to exceed limitations of current regulations, such as density or building height, in return for specific concessions	Carried Forward
Small Business Audits - Perform structural inspections of heavy impact/high risk businesses in Shelby County	Carried Forward
Mapping Hazards - Identify and graph areas with high liquefaction/damage potential	Pending
Dams and Reservoirs - Retrofit dam and levee structures on Mary's creek	Complete
Education and Training - Train code enforcement, law enforcement, disaster responders and citizens in earthquake response. Develop a community awareness program	Carried Forward
"Earthquake Vulnerability Assessment for Shelby County Buildings and Critical Elements of Infrastructure"	Carried Forward
Review Ways To Retrofit Existing Structures/Infrastructure For Greater Resistance	Carried Forward
Emergency Flood Relief Pumping Station	Ongoing
Stream Restoration	Ongoing
English Meadows Drainage Improvements (Phase II)	Complete
Lateral J (Queen Oaks Ditch)	Complete
Channel Improvements - Hayes Road	Complete
Dams and Reservoirs	Complete
Miller Farms Area Drainage Improvements (Phase II)	Delete
Alcorn Village (Concrete Channel)	Complete
Channel Improvements	Carried Forward
Culvert Replacement - Highway 70	Complete
Regional Detention Pond	Carried Forward
Downtown Drainage Basin	Ongoing
Shady Creek Weir	Complete
Crestwyn Area Drainage Improvements	Carried Forward
Wildwood Farms Detention Basin	Complete
Alcorn Village (Detention Area)	Complete
Massey Basin	Carried Forward
Detention Ponds (Davies area/Harrington Creek)	Complete
Royster Bayou Basin	Carried Forward
Sanitary Sewer System Repairs	Carried Forward
South Rex Road	Complete
Massey Basin	Ongoing
Bank Stabilization and Channel Improvements	Carried Forward
Audubon Park Basin	Ongoing
Quince Road	Carried Forward
South Cypress Creek	Ongoing
Sophia Bayou	Ongoing
Newport Channel Improvements	Complete
Gayoso Bayou Basin	Ongoing
Black Bayou	Ongoing
Huling Basin	Ongoing
Fontaine Basin	Ongoing
Harrison Creek	Carried Forward
White Station Basin	Ongoing
Re-establish Roadway Surface Drainage	Carried Forward
Fletcher Creek Basin	Ongoing
Increase Drain Maintenance Inspections	Carried Forward
Navy Road Drainage Improvements	Ongoing
Local Underground Detention	Ongoing
Upper Newport Channel Improvements	Ongoing
Drainage Manual Revisions	Carried Forward

Section 4: Mitigation Strategy

Bartlett Blvd Rd Slope Failure	Complete
Alleviate Yard & Road Flooding On Cedar Rd.	Complete
Prevent Outbuilding Flooding On Elmore Park @ 2600 Block.	Complete
Prevent Garage Flooding Oak Forrest Dr	Scrap
Prevent Yard Flooding Broadway @ 3200 Block	Complete
Prevent House Flooding On Coral Hill Cove	Ongoing
Replacement Of Shady Creek Weir	Complete
2 Property Buyouts, 2 Houses Contracted To buyout (Honeybrook, Princeton)	Ongoing
Apply For Buyout Program For 7 Units Along Barr Av.	Carried Forward
Nonconnah Floodplain	Carried Forward
Big Creek Basin Stabilization	Carried Forward
"Buyout & Demo Kerrville-Rosemark Property"	
"	Complete
Build Regional Detention Basin @ Woodland Hills	Complete
Review The Options To Raise Finished Floor Elevations In The Flood Plain	Ongoing
Widening of Big Creek Floodplain - Design and construct overflow floodplain areas for the Big Creek Drainage canal between Singleton Parkway and Highway 51	Ongoing
Dredge Behind Levee of Dam #5 - Remove siltation deposits to increase capacity and clear wooded area to improve flow	Ongoing
Dams and Reservoirs - Purchase agricultural and vacant properties in flood zones and construct levees to store flood waters	Ongoing
Raise and Seal Sewer Manholes - Elevate and flood proof sewer manholes that are located in low lying flood plains and ditches	Ongoing
Raise Roadbed Elevations - Elevate roadways that frequently are crossed by flood waters.	Ongoing
Stream Restoration - Purchase property and redirect channelized streams to restore them with USCOE projects meandering and flood stage protection	Ongoing
Purchase Streambank Easements - Purchase easements on high flow at risk streambeds to allow the County the rights to clear and maintain debris which causes flooding	Ongoing
Storm Drain System Management - Clean culverts and remove debris from the storm water collection system	Ongoing
Streambank Protection - Install weirs inside channels to prevent future bank erosion and scour from head-cutting	Ongoing
Drainage system upgrade - Design and install larger or parallel drainage pipe in locations that bottleneck and cause upstream flooding	Ongoing
Advance Acquisition and Land Banking - Purchase and reserve properties within the Floodway and other developable land that would impact downstream development	Ongoing
Flood Protection - Flood proof high-risk and repeat structures	Ongoing
Property Protection Regulation - Perform comprehensive review of subdivision regulations and developer fee structure to discourage/provide incentive for development that increases/decreases storm water runoff and flooding potential	Ongoing
Green Infrastructure - Install regional green infrastructure projects in locations with large flow generators or conveyances	Ongoing
Porous Pavement - Design and install porous pavement systems for County buildings and projects	Ongoing
Storm Water Basin - Design and install a regional storm water detention basin	Ongoing

Section 4: Mitigation Strategy

Mapping Hazards - Produce highly accurate storm drainage system information	Ongoing
Education and Training - Develop and distribute educational materials to high risk residents, as well as, conduct informational meetings	Ongoing
Airways Bridge over Nonconnah Creek, Construction Only	Completed
Bartlett Road and Shelby Oaks over Fletcher Creek, Construction Only	Ongoing
Raleigh-Millington Bridge over Loosahatchie, Construction Only	Complete
N Watkins Over N. Cypress Creek Scheduled To Be Replaced In Next 5-10 Years	Carried Forward
Home Inspection Program - Complete hazard susceptibility checklists to offer personalized vulnerability assessments	Carried Forward
Community Awareness Program - Develop real estate disclosure information and educate homebuyers and the general public of hazard risks	Carried Forward
Education and Training - Generate awareness of hazards, mitigation steps and disaster response for Shelby County employee	Carried Forward
Traffic Lights and other Traffic Controls - Protect traffic lights and other traffic controls. Install resilient street signs for navigation in an emergency	Carried Forward
Vegetation - Identify locations for and install dense vegetative strips or buffers or reestablishment of removed vegetation	Carried Forward
Wind Proofing - Modify at-risk structures to be able to withstand high winds and tornados	Carried Forward
Tie-Down Program - Mandate and retrofit propane tank tie-downs and mobile homes	Carried Forward
Protect water supply - Install shut-off valves and emergency connector hoses where water meters connect	Carried Forward
Utility Line Relocation - Bury electric, telephone and cable lines and/or reinforce the connections on existing utility lines	Carried Forward
Tree Limb Removal Program - Develop and enact project to clear tree limbs in the right-of-way and threatening utility lines	Carried Forward
Additional Sirens (Davies/Wolfchase Farms)	Complete
3 Community Safe Rooms	1 Complete-
Traffic Lights/Traffic Control	Carried Forward
Community Awareness Program	Carried Forward
Stationary Generators	Carried Forward
Convert All Sirens To Solar Power	Complete
New Sirens Lambuth Campus	Complete
Community Safe Rooms - Build shelter areas at key locations throughout Shelby County to allow residents a place to go in freezing, high-heat and high-wind situations	Carried Forward
Electrical Backup Generator @ City Hall	Carried Forward
Sewage Lift Station Backup Generator	Carried Forward
Community Safe Room (Riverdale Elementary-7931 Miller Farms Road)	Carried Forward
Community Safe Room	Complete
Tree Limb Removal Program	Carried Forward
Community Safe Room	Ongoing
E.A. Harrold Elementary School drainage project to prevent building from flooding in heavy rains	Carried Forward

The following definitions apply to the status as listed in the above chart:

- Completed-All work on the project complete
- Carried Forward-Project was not funded from the previous plan, and has been added to the new project list
- Deleted-Project has been deemed unqualified, unnecessary, or infeasible

National Flood Insurance Program Compliance

The National Flood Insurance Program (NFIP) is a pre-disaster flood hazard mitigation and insurance protection program which has reduced the increasing cost of disasters. The intent of the program is to: require new and substantially improved structures be designed and constructed to minimize or eliminate future flood damage; provide floodplain residents and business owners with financial insurance assistance in the form of insurance after floods; and it transfers most of the cost of private property flood losses from the taxpayers to floodplain property owners through flood insurance premiums. Participation in the NFIP is based on an agreement between communities and FEMA.

Currently, all jurisdictions are NFIP participants. None of the school systems are NFIP participants as it is not required. FEMA has listed these jurisdictions to have a current effective map date as of 2/2013. Below are three charts that give an overview of NFIP policy and loss data for Shelby County. This data represents the most recent data available to the State of Tennessee regarding NFIP policy and loss data.

NFIP Policy Data for Shelby County			
Jurisdiction	Policies In-Force	Insurance In-Force Whole \$	Written Premium In-Force
Shelby County	508	\$148,04,000	\$310,607
Memphis	1,264	\$386,061,600	\$910,260
Arlington	81	\$26,907,400	\$48,466
Bartlett	234	\$67,168,300	\$132,784
Collierville	387	\$126,568,000	\$212,142
Germantown	654	\$209,588,000	\$357,539
Lakeland	56	\$17,321,000	\$30,452
Millington	129	\$31,729,600	\$81,783

Policies In-force: number of NFIP flood insurance policies

Insurance In-force whole \$: value of building and contents insured by the NFIP

Written Premium In-force: total premiums paid for NFIP insurance policies

NFIP Loss Data for Shelby County		
Jurisdiction	Total Claims	Total Payments
Shelby County	166	\$5,001,589
Memphis	515	\$9,513,520
Arlington	9	\$367,060
Bartlett	75	\$1,446,234
Collierville	33	\$766,347
Germantown	62	\$1,836,103
Lakeland	10	\$320,553
Millington	79	\$3,401,255

Total Losses: number of flood insurance claims filled by policyholders

Closed Losses: number of flood insurance claims paid to policyholders

CWOP Losses: claims that were "closed without payment"

Total Payments: total dollars paid to policyholders

Repetitive Loss/Severe Repetitive Loss Properties				
Location	Dwelling Type	Flood Zone	Total Losses	Total Payout
ARLINGTON	OTHR-NONRES	X	2	\$106,455
BARTLETT	SINGLE FMLY	AE	2	\$78,917
MEMPHIS	SINGLE FMLY	EMG	3	\$18,191
BARTLETT	2-4 FAMILY	EMG	2	\$7,439
BARTLETT	SINGLE FMLY	X	2	\$22,031
BARTLETT	SINGLE FMLY	X	2	\$22,350
MEMPHIS	2-4 FAMILY	X	3	\$92,230
BARTLETT	SINGLE FMLY	AE	2	\$69,096
BARTLETT	SINGLE FMLY	X	2	\$137,813
BARTLETT	SINGLE FMLY	A	3	\$12,133
BARTLETT	SINGLE FMLY	AE	3	\$72,266
COLLIERVILLE	SINGLE FMLY	AE	3	\$23,746
COLLIERVILLE	2-4 FAMILY	A02	2	\$11,921
COLLIERVILLE	2-4 FAMILY	A02	2	\$12,012
GERMANTOWN	SINGLE FMLY	A04	3	\$10,433
GERMANTOWN	SINGLE FMLY	X	2	\$56,997
GERMANTOWN	SINGLE FMLY	X	2	\$23,933
GERMANTOWN	SINGLE FMLY	B	4	\$140,203
BARTLETT	SINGLE FMLY	EMG	2	\$7,174
MEMPHIS	SINGLE FMLY	X	2	\$27,684
MEMPHIS	SINGLE FMLY	AE	3	\$33,485
MEMPHIS	SINGLE FMLY	X	5	\$104,262
MEMPHIS	SINGLE FMLY	EMG	3	\$44,764
MEMPHIS	SINGLE FMLY	X	3	\$96,007
MEMPHIS	SINGLE FMLY	EMG	2	\$12,335
MEMPHIS	OTHER RESID	X	2	\$239,716
MEMPHIS	OTHER RESID	X	2	\$223,723
MEMPHIS	OTHER RESID	X	2	\$336,638
MILLINGTON	SINGLE FMLY	A	3	\$135,883
MEMPHIS	OTHR-NONRES	X	2	\$358,947
MEMPHIS	SINGLE FMLY	EMG	2	\$2,974

MEMPHIS	SINGLE FMLY	EMG	3	\$14,519
MEMPHIS	SINGLE FMLY	X	3	\$27,391
MEMPHIS	SINGLE FMLY	X	3	\$137,743
MEMPHIS	OTHR-NONRES	X	2	\$92,144
MEMPHIS	2-4 FAMILY	A	2	\$10,094
MEMPHIS	OTHR-NONRES	A	4	\$6,227
MEMPHIS	SINGLE FMLY	EMG	2	\$4,852
MEMPHIS	SINGLE FMLY	EMG	3	\$13,872
MEMPHIS	OTHR-NONRES	EMG	3	\$10,622
MEMPHIS	SINGLE FMLY	X	6	\$105,083
MEMPHIS	SINGLE FMLY	X	2	\$142,111
MEMPHIS	SINGLE FMLY	AE	3	\$10,515
MEMPHIS	SINGLE FMLY	EMG	3	\$7,120
MEMPHIS	SINGLE FMLY	X	4	\$68,154
MEMPHIS	SINGLE FMLY	EMG	2	\$8,769
MEMPHIS	SINGLE FMLY	X	2	\$35,994
MEMPHIS	SINGLE FMLY	X	2	\$11,041
MEMPHIS	SINGLE FMLY	X	2	\$27,283
MEMPHIS	OTHER RESID	X	2	\$203,706
MEMPHIS	SINGLE FMLY	X	3	\$11,780
MEMPHIS	SINGLE FMLY	X	2	\$57,852
MEMPHIS	OTHR-NONRES	AE	3	\$590,359
MEMPHIS	SINGLE FMLY	X	2	\$88,432
MEMPHIS	SINGLE FMLY	X	2	\$103,420
MEMPHIS	SINGLE FMLY	X	2	\$12,358
MEMPHIS	2-4 FAMILY	A	2	\$8,221
MEMPHIS	2-4 FAMILY	A	3	\$10,160
MEMPHIS	2-4 FAMILY	A	3	\$10,452
MEMPHIS	2-4 FAMILY	A	3	\$10,245
MEMPHIS	2-4 FAMILY	A	4	\$12,584
MEMPHIS	2-4 FAMILY	A	4	\$12,049
MEMPHIS	2-4 FAMILY	A	6	\$14,662
MEMPHIS	2-4 FAMILY	A	4	\$12,754
MEMPHIS	2-4 FAMILY	A	4	\$12,408
MEMPHIS	2-4 FAMILY	A	3	\$11,036
MEMPHIS	SINGLE FMLY	EMG	3	\$24,328
MEMPHIS	SINGLE FMLY	C	2	\$64,074
MEMPHIS	SINGLE FMLY	EMG	5	\$18,162
MEMPHIS	SINGLE FMLY	X	2	\$23,564
CORDOVA	OTHR-NONRES	X	2	\$634,551
MEMPHIS	SINGLE FMLY	X	2	\$5,057
MEMPHIS	OTHR-NONRES	X	2	\$32,853
MEMPHIS	SINGLE FMLY	A	3	\$9,873
MEMPHIS	2-4 FAMILY	A	5	\$13,476
NASHVILLE	SINGLE FMLY	A	2	\$4,861
MILLINGTON	SINGLE FMLY	X	2	\$11,065
MILLINGTON	SINGLE FMLY	X	2	\$18,499
MILLINGTON	SINGLE FMLY	X	3	\$66,566
MEMPHIS	ASSMD CONDO	C	6	\$237,453
MEMPHIS	SINGLE FMLY	X	2	\$6,112
MEMPHIS	SINGLE FMLY	X	2	\$29,185

GERMANTOWN	SINGLE FMLY	X	2	\$9,818
MEMPHIS	SINGLE FMLY	X	5	\$62,955
MILLINGTON	SINGLE FMLY	X	5	\$302,482
MILLINGTON	SINGLE FMLY	X	2	\$247,630
ARLINGTON	SINGLE FMLY	C	3	\$155,442
MILLINGTON	SINGLE FMLY	AE	2	\$54,678
MILLINGTON	SINGLE FMLY	AE	3	\$9,908
MILLINGTON	SINGLE FMLY	X	5	\$175,937
MILLINGTON	SINGLE FMLY	B	4	\$104,767

To continue compliance with the NFIP, the jurisdictions have identified, analyzed, and prioritized three mitigation strategies to stay active with the program.

1. Continue to evaluate improved standards that are proven to reduce flood damage.
2. Maintaining supplies of FEMA/NFIP materials to help homeowners evaluate measures to reduce damage.
3. Maintaining a map of areas that flood frequently and prioritizing those areas for inspection immediately following heavy rains or flooding event.
4. Develop GIS system that will assist in flooding preparedness.

Section 5: Plan Maintenance

Monitoring, Evaluating, and Updating

The Shelby County Hazard Mitigation Committee is designated to monitor and evaluate the mitigation plan. This committee is chaired by Shelby County Emergency Management Agency who leads the monitoring, evaluating, and updating process.

Monitoring of the previous mitigation plan, progress and projects occurred informally over the life-cycle of the previous plan.

Monitoring activities will involve Shelby County Emergency Management Agency setting up a committee meeting to be held on a quarterly basis in conjunction with the Local Emergency Planning Committee meetings. Shelby County Emergency Management Agency will prepare a brief annual report of the meeting's findings by addressing mitigation progress and shortfalls within the county.

The plan is to be evaluated annually and after any significant disaster causing human, infrastructure, and property losses. Following each annual informal evaluation of the plan by emergency management staff, any proposed revisions or recommendations will be brought before the Mitigation Committee to be incorporated into the plan. Potential updates to the plan will address changes to the hazard assessment, the repetitive loss list, the committee membership list, and the project priority list.

The plan will be formally updated every five-years in accordance to 44 CFR 201.6(d)3, which states that the plan shall be reviewed, revised, and resubmitted for approval within five-years to continue eligibility for hazard mitigation grant funding. For the five-year update, Shelby County Emergency Management Agency will notify the jurisdictional governments and the Shelby County Hazard Mitigation Committee approximately one year prior to the plan's expiration date. The review of the plan will include updating the planning process, the County profile, the hazard profiles, the risk assessment, the vulnerability assessment, the mitigation strategies, and the plan maintenance descriptions.

The five-year plan update will also include soliciting other interested persons/agencies to join the Mitigation Committee and a review of what has been accomplished in the past 5 years. The Shelby County Hazard Mitigation Committee's goal is to have at least 5 meetings within this time span; dates, public notices, and objectives for these meetings will be determined by Shelby County Emergency Management Agency.

Five months prior to the plan's expiration date, Shelby County Emergency Management Agency will submit the revised plan to the Tennessee Emergency Management Agency for preliminary review. Upon approval by the state, TEMA will submit the updated plan to FEMA for review.

Once Shelby County has attained the designation of the plan's approval pending adoption, each jurisdiction will adopt the plan through a resolution within a year.

Incorporation into Planning Cycle

In the previous planning cycle, Shelby County and its jurisdictions/school districts did not have a systematic process for incorporating mitigation into other planning mechanisms, and instead left it up to individual entities and agencies to review and incorporate as necessary.

By incorporating the Shelby County Hazard Mitigation Plan into the planning cycle, information contained in the mitigation plan can help fill-in missing gaps in existing documents, can contribute to already existing mitigation -based projects, and can create a strengthen stance of mitigation implementation and awareness within the county and its jurisdictions.

Some of the mechanisms that the Shelby County Hazard Mitigation Plan could be incorporated into include:

- Shelby County BEOP
- Shelby County Schools Emergency Plans
- Shelby County Highway Department Plan
- County & Jurisdictional Public Works Development Plans
- County & Jurisdictional Fire Department 5 Year Plans
- Jurisdictional Plans, SOP's, & SOG's

The process of incorporating the hazard mitigation plan into other plans will begin during the other plan's update cycles. All jurisdictions will first review the plans side-by-side to make applicable notes on how mitigation concepts and actions can be incorporated into the other plans. These recommendations will be submitted to the lead agencies of the other planning mechanisms for them to place relevant information within the documents.

Continued Public Participation

The Shelby County Mitigation Committee will strive to involve the public in future mitigation activities. This will be accomplished by continuing to post Mitigation Committee Meeting dates in the local newspaper, by attempting to have a public mitigation meeting once a year, by providing public access to copies of the Shelby County Hazard Mitigation Plan in the local emergency management office, and by soliciting other interested persons to participate in the mitigation planning process. By implementing these methods, the public will have an opportunity to comment on the plan during the update drafting stage and prior to plan approval.

Appendix 1

Attendance Sheet – Committee Meeting #1

August 26, 2020	from Shannon Towery to everyone:	9:33 AM testing chat- hello
August 26, 2020	from Shannon Towery to everyone:	9:44 AM are you angry at the keyboard?
August 26, 2020	from Brandon Carpenter to everyone:	9:55 AM Brandon Carpenter
August 26, 2020	from Greg Waymon to everyone:	9:56 AM Greg Waymon, Planning, Memphis Fire Office of Emergency Management
August 26, 2020	from Shannon Towery to everyone:	9:56 AM Shannon Towery- Shelby County Emergency Management and Homeland Sec,, Planning Coordinator
August 26, 2020	from Brandon Carpenter to everyone:	9:56 AM Brandon Carpenter, Planning, Memphis Office of Emergency Management
August 26, 2020	from Brent Phillips to everyone:	9:56 AM When you type in your name, please also include your official title and department/jurisdiction/district. Thank you!
August 26, 2020 Fire Deputy Chief	from Glen F. Kneeland to everyone:	9:56 AM Glen Kneeland-Shelby County
August 26, 2020 Director	from Jane Waldrop to everyone:	9:57 AM Jane Waldrop TEMA West Regional
August 26, 2020 Emergency Management	from LaTonya McGowan to everyone:	9:58 AM LaTonya McGowan , Specialist, Shelby County Schools
August 26, 2020 Special Project Assistant	from Quentin Reed to everyone:	9:59 AM SCS Emergency Management -
August 26, 2020 memphis	from Robert Rehkopf to everyone:	9:59 AM Robert Rehkopf consultant City of
August 26, 2020 Consultant, Lakeland	from Dennis Wolf to everyone:	10:01 AM Dennis Wolf, Fire Management
August 26, 2020 Works Director	from Cliff Norville to everyone:	10:01 AM Cliff Norville, Shelby County Public
August 26, 2020	from Gary Graves (privately):	10:01 AM Gary Graves; City of Millington
August 26, 2020 of Germantown	from tbierdz to everyone:	10:01 AM Tim Bierdz - Stormwater Engineer City
August 26, 2020 City of Millington	from Gary Graves to everyone:	10:02 AM Gary Graves; Public Safety Director;
August 26, 2020	from Nancy Kelley (privately):	10:02 AM Nancy Kelley, Collierville Schools
August 26, 2020 Schools Emergency Management	from Jimmy Tuggers to everyone:	10:05 AM Jimmy Tuggers- Shelby County
August 26, 2020 ask questions	from Cliff Norville to everyone:	10:09 AM I am unable to unmute my mic to
August 26, 2020	from Robert Rehkopf to everyone:	10:15 AM I lost audio.

file:///C:/Users/da04p51/Desktop/AWS%20COVID%20Folder/Shelby%20County/Shelby%20County%20Meeting%201%20Chat.txt[2/12/2021 9:20:32 AM]

August 26, 2020 from laTonya McGowan to everyone: 10:16 AM Will this powerpoint be emailed to participants

August 26, 2020 from Brent Phillips to everyone: 10:16 AM Yes.

August 26, 2020 from Gary Rikard to everyone: 10:16 AM Gary Rikard/Security Manager/Bartlett City Schools

August 26, 2020 from Cliff Norville to everyone: 10:17 AM FYI...the slides are approximately 30 seconds behind your speech.

August 26, 2020 from Robert Rehkopf to everyone: 10:22 AM How much allowed to TN, audio was off

August 26, 2020 from chris.masin to everyone: 10:24 AM Is the decicson of what projects get funded for a BRIC done by the state or national?

August 26, 2020 from Robert Rehkopf to everyone: 10:28 AM no audio again

August 26, 2020 from Shelby County - EOC to everyone: 10:31 AM Misty Haley Emergency Operations Manager Shelby County EMHS

August 26, 2020 from James Harvill to everyone: 10:40 AM James Harvill-Fire Chief Arlington Fire Department

August 26, 2020 from Robert Rehkopf to everyone: 10:42 AM Freeboard requirement for essential structures and land protected by levees?

August 26, 2020 from tkelley (privately): 10:47 AM Chief of Operations Collierville Fire Department / Emergency Mgt. Coordinator

August 26, 2020 from Jared.Darby to everyone: 10:48 AM Shannon, I would like that earthquake study please

August 26, 2020 from Shannon Towery to everyone: 10:48 AM Will do

August 26, 2020 from Nancy Kelley (privately): 10:56 AM Brent, can you say that one more time for the schools and sorry - maybe the last part...owning versus something

August 26, 2020 from Nancy Kelley (privately): 10:58 AM gotcha

August 26, 2020 from Brandon Carpenter to everyone: 10:58 AM Mr. Rehkopf, can you please contact me at 901-208-0386, Thanks.

August 26, 2020 from Robert Rehkopf to everyone: 10:59 AM Yes

August 26, 2020 from James Harvill to everyone: 11:00 AM I will need to get with our planning department to get more exacting information for the Growth Trends portion of the form.

August 26, 2020 from Jared.Darby to everyone: 11:01 AM Jared Darby

August 26, 2020 from Quentin Reed to everyone: 11:02 AM Quentin Reed, SCS Emergency Management - Special Project Assistant

August 26, 2020 from Jared.Darby to everyone: 11:02 AM Jared Darby, Senior Manager, Shelby County, Office of Resilience and Sustainability

file:///C:/Users/da04p51/Desktop/AWS%20COVID%20Folder/Shelby%20County/Shelby%20County%20Meeting%201%20Chat.txt[2/12/2021 9:20:32 AM]

August 26, 2020 from Rick.Stieg to everyone: 11:02 AM Rick Stieg, GIS Administrator

August 26, 2020 from Gary Patterson to everyone: 11:02 AM Gary Patterson,

August 26, 2020 from Manny Belen to everyone: 11:02 AM Manny Belen, City Engineer - City of Memphis

August 26, 2020 from Gary Patterson to everyone: 11:02 AM Gary Patterson

August 26, 2020 from tkelley (privately): 11:02 AM Brent, Sorry I forgot my name, Tommy Kelley Collierville Fire Department Chief of Operations / Emergency Mgt. Coordinator for Collierville

August 26, 2020 from Robin Berzins to everyone: 11:02 AM Robin Berzins, FEMA R-IV, TN FIT

August 26, 2020 from John Fox to everyone: 11:02 AM John Fox, Public Works Manager, Town of Collierville

August 26, 2020 from chris.masin to everyone: 11:02 AM Chriss Masin, Senior Engineer, Shelby County Roads, Bridges and Engineering

August 26, 2020 from Gary Patterson (privately): 11:03 AM Gary Patterson University of Memphis, CERI

August 26, 2020 from Terry Wiggins to everyone: 11:03 AM Rick McClanahan City Engineer City of Bartlett

August 26, 2020 from John Selberg to everyone: 11:03 AM John Selberg, City of Germantown, Fire Chief/Emergency Manager

August 26, 2020 from Steve Fort to everyone: 11:03 AM Steve Fort, Emergency Response Coordinator, Manager - Public Health Emergency Preparedness - Shelby County Health Department

August 26, 2020 from Terry Wiggins to everyone: 11:04 AM Terry Wiggins, City of Bartlett Fire Chief

August 26, 2020 from philip leblanc (privately): 11:06 AM Philip Leblanc, Millington Municipal Schools, Director of Operations and Transportation , pleblanc@millingtonschools.org

August 26, 2020 from Shannon Towery (privately): 11:09 AM Had a question from Roads/Bridges for Shelby Co. They do not need to complete a separate questionnaire?

August 26, 2020 from Shannon Towery (privately): 11:10 AM gotcha. ty

August 26, 2020 from Mack Green to everyone: 11:23 AM Mack Green, TEMA District Coordinator

August 26, 2020 from James Harvill to everyone: 11:25 AM You may have already mentioned this but could I get a copy of this Power Point for a reference?

August 26, 2020 from Gary Patterson to everyone: 11:26 AM You can download the referenced MAE Center EQ study by googling "Impact of Earthquakes on the Central USA"

August 26, 2020 from James Harvill to everyone: 11:39 AM Works for me

August 26, 2020 from Rick.Stieg to everyone: 11:40 AM Rick Stieg GIS Administrator Shelby County

file:///C:/Users/da04p51/Desktop/AWS%20COVID%20Folder/Shelby%20County/Shelby%20County%20Meeting%201%20Chat.txt[2/12/2021 9:20:32 AM]

August 26, 2020 with me	from Gary Patterson to everyone: 11:40 AM	September 30 at 10 AM is ok
August 26, 2020	from Robert Rehkopf to everyone: 11:40 AM	works for me
August 26, 2020	from Brandon Carpenter to everyone: 11:40 AM	Sounds Good
August 26, 2020 available	from Dennis Wolf to everyone: 11:40 AM	Dennis from Lakeland will not be
August 26, 2020	from Gary Graves to everyone: 11:40 AM	Millington OK
August 26, 2020	from tbierdz to everyone: 11:40 AM	that works for me
August 26, 2020	from laTonya McGowan to everyone: 11:40 AM	works for me
August 26, 2020 management Advisor-Shelby County Schools	from Jimmy Tuggers to everyone: 11:41 AM	Jimmy Tuggers-Emergency
August 26, 2020	from Terry Wiggins to everyone: 11:42 AM	Date good with Bartlett
August 26, 2020 during the week.	from Robert Rehkopf to everyone: 11:43 AM	Brent, thanks I'm sure well talk
August 26, 2020	from Gary Patterson (privately): 11:43 AM	Great job Brent....talk soon
August 26, 2020 Intergovernmental Affairs & Special Projects Manager Shelby County Assessor of Property	from George Boyington to everyone: 11:44 AM	George Boyington
August 26, 2020	from Angela Hill to everyone: 11:45 AM	Angela Hill, Adminstrator Parks and Neighborhood- Shelby County TN Govt

file:///C:/Users/da04p51/Desktop/AWS%20COVID%20Folder/Shelby%20County/Shelby%20County%20Meeting%201%20Chat.txt[2/12/2021 9:20:32 AM]

Appendix 2

Attendance Sheet – Committee Meeting #2

September 30, 2020	9:49 AM	from Shannon Towery to everyone: Shannon Towery Shelby County Emergency Management and Homeland Security Office, Planning Coordinator
September 30, 2020	9:51 AM	from Robin Berzins (privately): Good morning, Brent.
September 30, 2020	9:51 AM	from Gary Rikard to everyone: Gary Rikard
September 30, 2020	9:52 AM	from Rick.Stieg to everyone: richard stieg shelby county ITS, Regis Administrator
September 30, 2020	9:52 AM	from Brandon Carpenter to everyone: Brandon Carpenter, Emergency Operations Officer, City of Memphis Office of Emergency Management
September 30, 2020	9:52 AM	from Gary Rikard to everyone: Gary Rikard, Bartlett Schools, Security Manager
September 30, 2020	9:53 AM	from Robin Berzins to everyone: Robin Berzins, FEMA Integration Team TN, Mitigation Spc
September 30, 2020	9:56 AM	from James Harvill to everyone: James Harvill- Town of Arlington- Fire Chief
September 30, 2020	9:56 AM	from Gary Graves to everyone: Gary Graves: City of Millington; Public Safety Director
September 30, 2020	9:57 AM	from LaTonya McGowan to everyone: LaTonya McGowan Shelby County Schools - Emergency Management Specialist
September 30, 2020	9:58 AM	from Misty Haley to everyone: Misty Haley, Emergency Operations Manager, Shelby County Emergency Management Homeland Security Agency
September 30, 2020	10:01 AM	from Shane Horn to everyone: Shane Horn
September 30, 2020	10:01 AM	from Evan Boulanger to everyone: Evan Boulanger--Senior Design Engineer
September 30, 2020	10:01 AM	from Evan Boulanger to everyone: Mark McGuire--Senior Design Engineer
September 30, 2020	10:01 AM	from Ryan (privately): Ryan Groves, MLGW Regulatory Compliance Coordinator
September 30, 2020	10:01 AM	from Evan Boulanger to everyone: Lopa Naik--Senior Design Engineer
September 30, 2020	10:01 AM	from Evan Boulanger to everyone: All of us are from the City of Memphis
September 30, 2020	10:01 AM	from Greg Waymon (privately): Greg Waymon - Memphis OEM, Lieutenant - Planning
September 30, 2020	10:01 AM	from Jeremy Yow to everyone: Jeremy Yow Supervisor-Student Services and HR for Arlington Community Schools Arlington, TN
September 30, 2020	10:01 AM	from Chris Favaloro Memphis OEM to everyone: Christopher Favaloro Memphis OEM Operations Officer

file:///C:/Users/da04p51/Desktop/AWS%20COVID%20Folder/Shelby%20County/Shelby%20County%20Meeting%202%20Chat.txt[2/12/2021 9:25:15 AM]

September 30, 2020	10:02 AM	from Oussama Terrab to everyone: Oussama Terrab (901-412-3506) - Memphis Light Gas & Water - Crisis Management / Shelby County
September 30, 2020	10:02 AM	from Jeff Cox, et. al. (privately): Jeff Cox, City of Bartlett Chief of Police
September 30, 2020	10:02 AM	from chris.masin to everyone: chris masin, Senior Engineer, Shelby County Govt.
September 30, 2020	10:02 AM	from brenda.jones@shelbycountyttn.gov (privately): Brenda Jones - Director - Shelby County Emergency Management & Homeland Security Agency
September 30, 2020	10:02 AM	from Benjamin Hamilton to everyone: Ben Hamilton - Memphis Light, Gas & Water; Asset Management Engineer
September 30, 2020	10:02 AM	from Shane Horn to everyone: Shane Horn - City Manager- City of Lakeland
September 30, 2020	10:02 AM	from Daniel Hochstein to everyone: Daniel Hochstein - Memphis Light, Gas and Water - Lead Project Engineer
September 30, 2020	10:03 AM	from philip leblanc (privately): Philip Leblanc Millington Municipal Schools, operations and transportation.
September 30, 2020	10:04 AM	from Jonathan Haley to everyone: Jonathan Haley CoM MFD-Administrative Lieutenant
September 30, 2020	10:04 AM	from Robert Rehkopf to everyone: RRobert Rehkopf Consultant City of Memphis
September 30, 2020	10:11 AM	from Jeremy Yow to everyone: Tim Ruff Director of Operations Arlington Community Schools
September 30, 2020	10:18 AM	from Madelyn to everyone: Madelyn Lukens Project Engineer at Memphis Light, Gas and Water
September 30, 2020	10:32 AM	from tkelley (privately): Tommy Kelley, Chief of Operations, Collierville Fire Department, Town of Collierville
September 30, 2020	10:34 AM	from Jeff Cox, et. al. (privately): Is this presentation available, or can it be emailed to us?
September 30, 2020	10:40 AM	from Erin Stirgus to everyone: Erin Stirgus
September 30, 2020	10:40 AM	from Erin Stirgus to everyone: Erin Stirgus, MLGW, Project Engineer
September 30, 2020	10:41 AM	from Miracle Roberts to everyone: Miracle Roberts, Chief Financial Officer, Arlington Community Schools
September 30, 2020	10:41 AM	from Brian to everyone: Brian Waldron - University of Memphis CAESER supporting UASI
September 30, 2020	10:41 AM	from Jane Waldrop to everyone: Jane Waldrop, Regional Director TEMA West
September 30, 2020	10:42 AM	from Terry Wiggins to everyone: Terry Wiggins, City of Bartlett

file:///C:/Users/da04p51/Desktop/AWS%20COVID%20Folder/Shelby%20County/Shelby%20County%20Meeting%202%20Chat.txt[2/12/2021 9:25:15 AM]

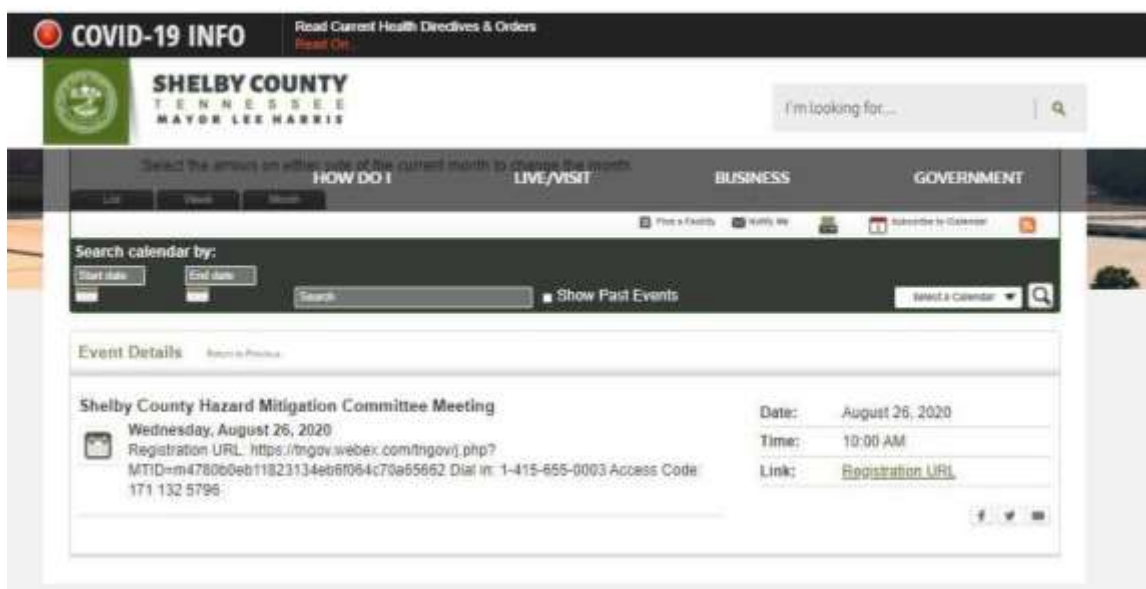
Fire Chief

September 30, 2020	10:43 AM	from Patrina Chambers to everyone: Patrina Chambers Memphis Area Transit Authority (MATA) Director of Grants and Procurement
September 30, 2020	10:46 AM	from Robert Rehkopf to everyone: Sorry, Done
September 30, 2020	11:00 AM	from Jeff Cox, et. al. (privately): Steve Sones, Assistant Chief Bartlett Police
September 30, 2020	11:00 AM	from Jeff Cox, et. al. (privately): Eric Leppanen, Captain Bartlett Police Department
September 30, 2020	11:03 AM	from Shannon Towery to everyone: my contact- shannon.towery@shelbycountyttn.gov or 901-222-6716
September 30, 2020	11:10 AM	from Brent Phillips to everyone: Project List Deadline: Oct 16th
September 30, 2020	11:11 AM	from Angela Brown to everyone: Angela Brown, Grant Manager, Shelby County Emergency Management and Homeland Security
September 30, 2020	11:12 AM	from John Selberg to everyone: John Selberg, Fire Chief/Emergency Manager, City of Germantown
September 30, 2020	11:16 AM	from Brian (privately): Thank soooo much, Brent!!

file:///C:/Users/da04p51/Desktop/AWS%20COVID%20Folder/Shelby%20County/Shelby%20County%20Meeting%202%20Chat.txt[2/12/2021 9:25:15 AM]

Appendix 3

Public Notice/Meeting Minutes/Letters



Record Details - Google Chrome
memphisdailynews.com/Search/Details/ViewNotice.aspx?id=Mpd77722&date=9/25/2020

The Daily News
EST. MEMPHIS 1898

Miscellaneous Notice [Print](#)

Shelby County Hazard Mitigation Committee Meeting

There will be a virtual meeting of the Shelby County Hazard Mitigation Committee on September 30, 2020 at 10:00 a.m. to discuss and review the Shelby County Hazard Mitigation Plan. The meeting will address pending revisions to the 2021-2025 Shelby County Hazard Mitigation Plan. This meeting is open to the public.
September 30, 2020 at 10:00 a.m.
Registration URL: <https://tngov.webex.com/tngov/j.php?MTID=mf1cb61d0b8dbd6671271b8eac6db49cb>
To join by phone +1-415-655-0003
Meeting number (access code): 171 575 0900

Sept. 25, 2020 Mpd77722

COVID-19 DIRECTIVES Coronavirus Disease 2019 (COVID-19) [Click Here](#) Report COVID-19 Concerns [Click Here](#)

SHELBY COUNTY
TENNESSEE
MAYOR LEE HARRIS

I'm looking for...

Calendar
View all calendars in the HOW DO I... Select a Calendar **LIVE/VISIT** a specific calendar **BUSINESS** **GOVERNMENT**
Select the arrows on either side of the current month to change the month.

Calendar navigation: List, Week, Month. Tools: Find a Facility, Notify Me, Subscribe to Calendar.

Search calendar by:
Start date: End date: Search Show Past Events Select a Calendar

Event Details [Return to Previous](#)

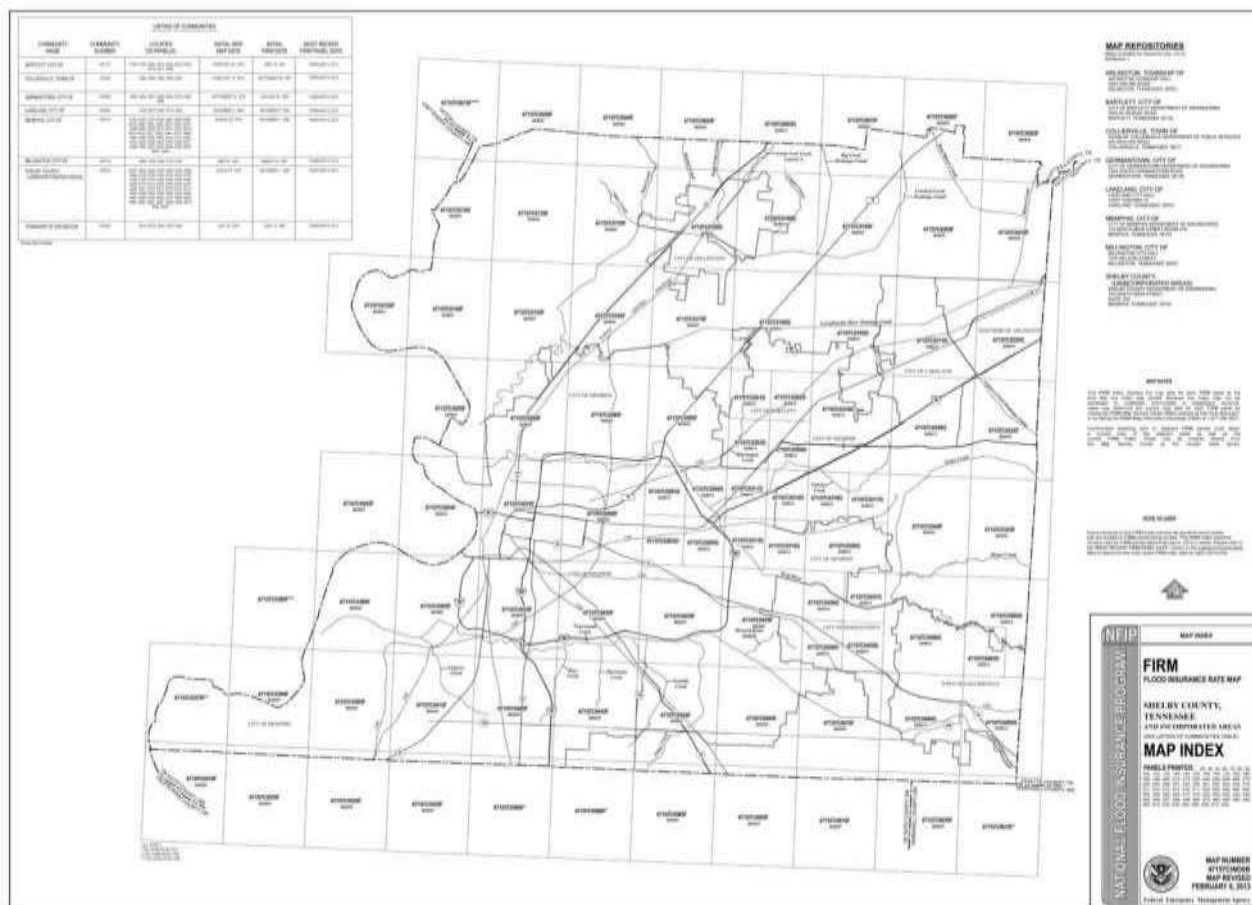
Shelby County Hazard Mitigation Committee Meeting
Wednesday, September 30, 2020
To discuss and review the Shelby County Hazard Mitigation Plan. The meeting will address pending revisions to the 2021-2025 Shelby County Hazard Mitigation Plan. This meeting is open to the public. To join by phone +1-415-655-0003 Meeting number (access code): 171 575 0900

Date: September 30, 2020
Time: 10:00 AM
Location: There will be a virtual meeting.
Link: [Registration URL](#)

Facebook, Twitter, Email icons

Appendix 4

Flood Insurance Rate Maps for Shelby County













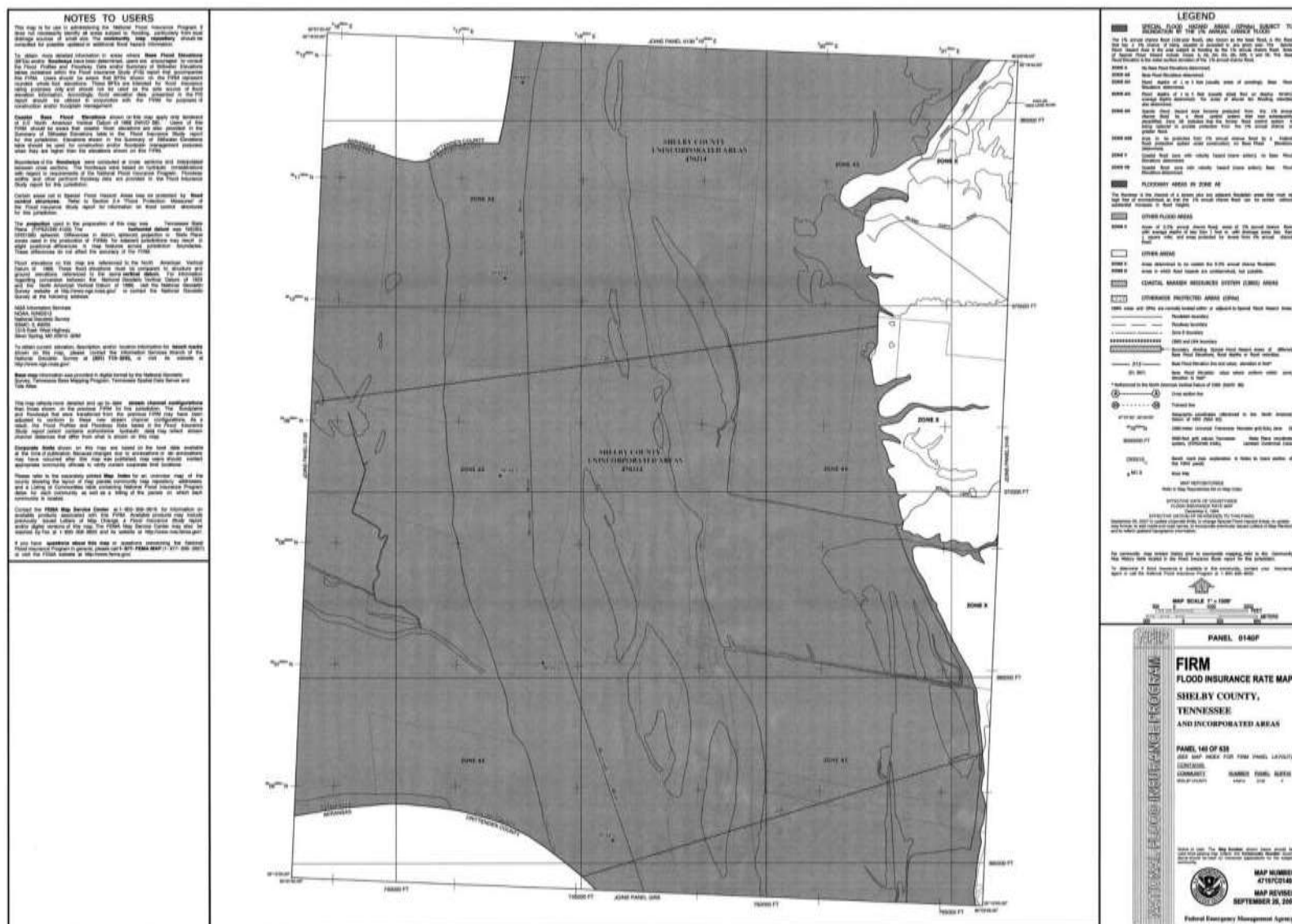












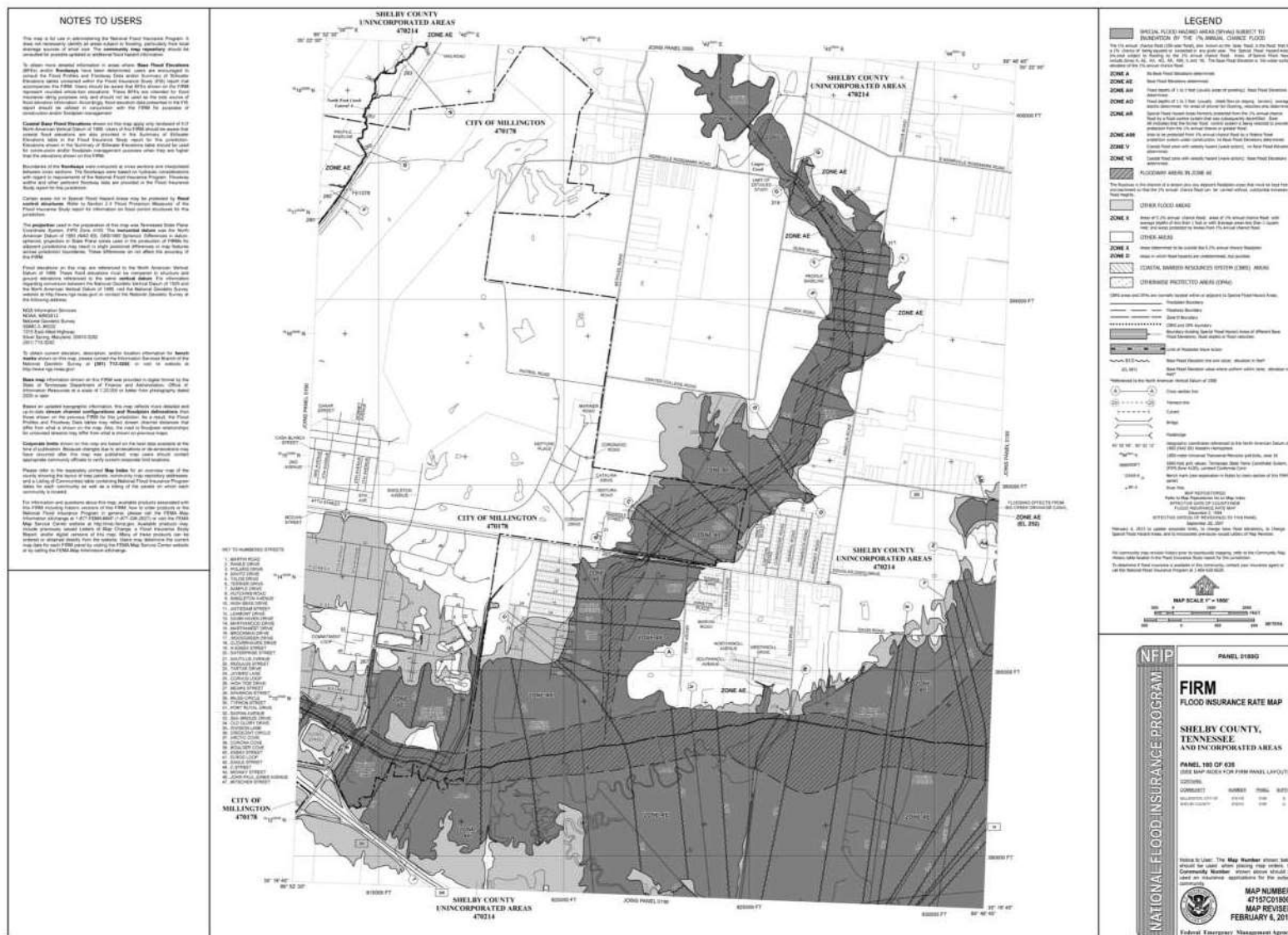












Shelby County Hazard Mitigation Plan 2020 Update
159





































Shelby County Hazard Mitigation Plan 2020 Update
177











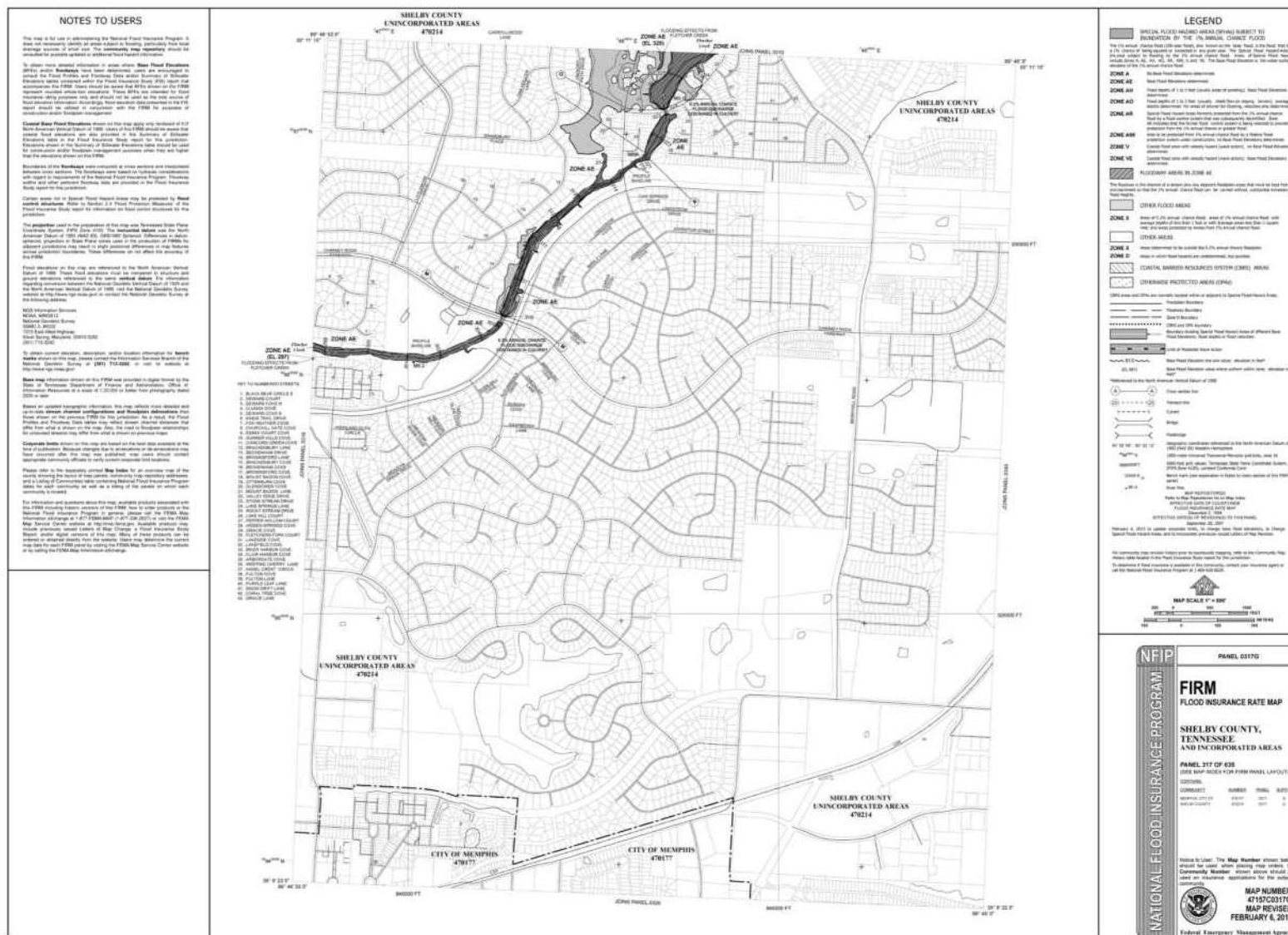




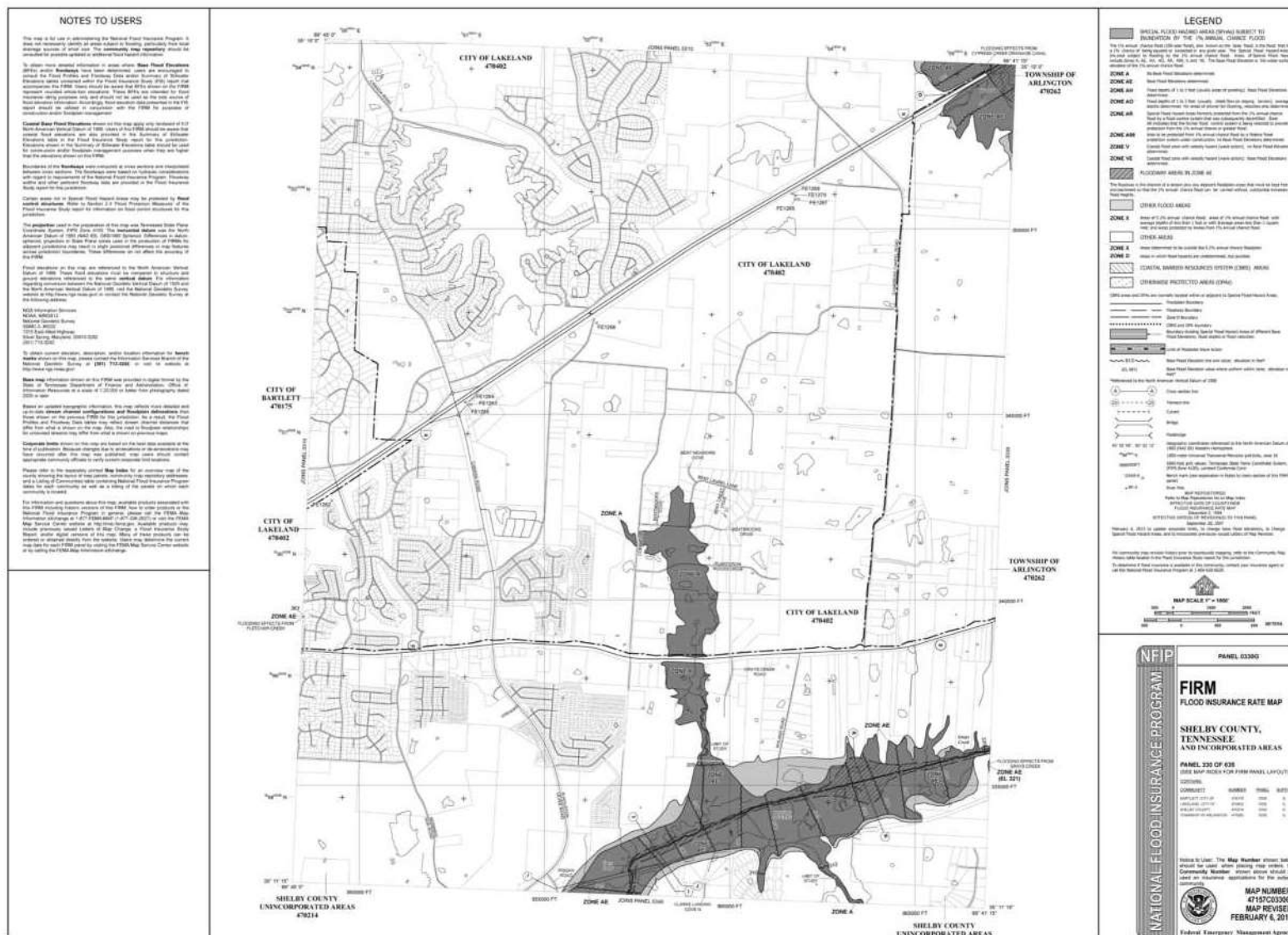


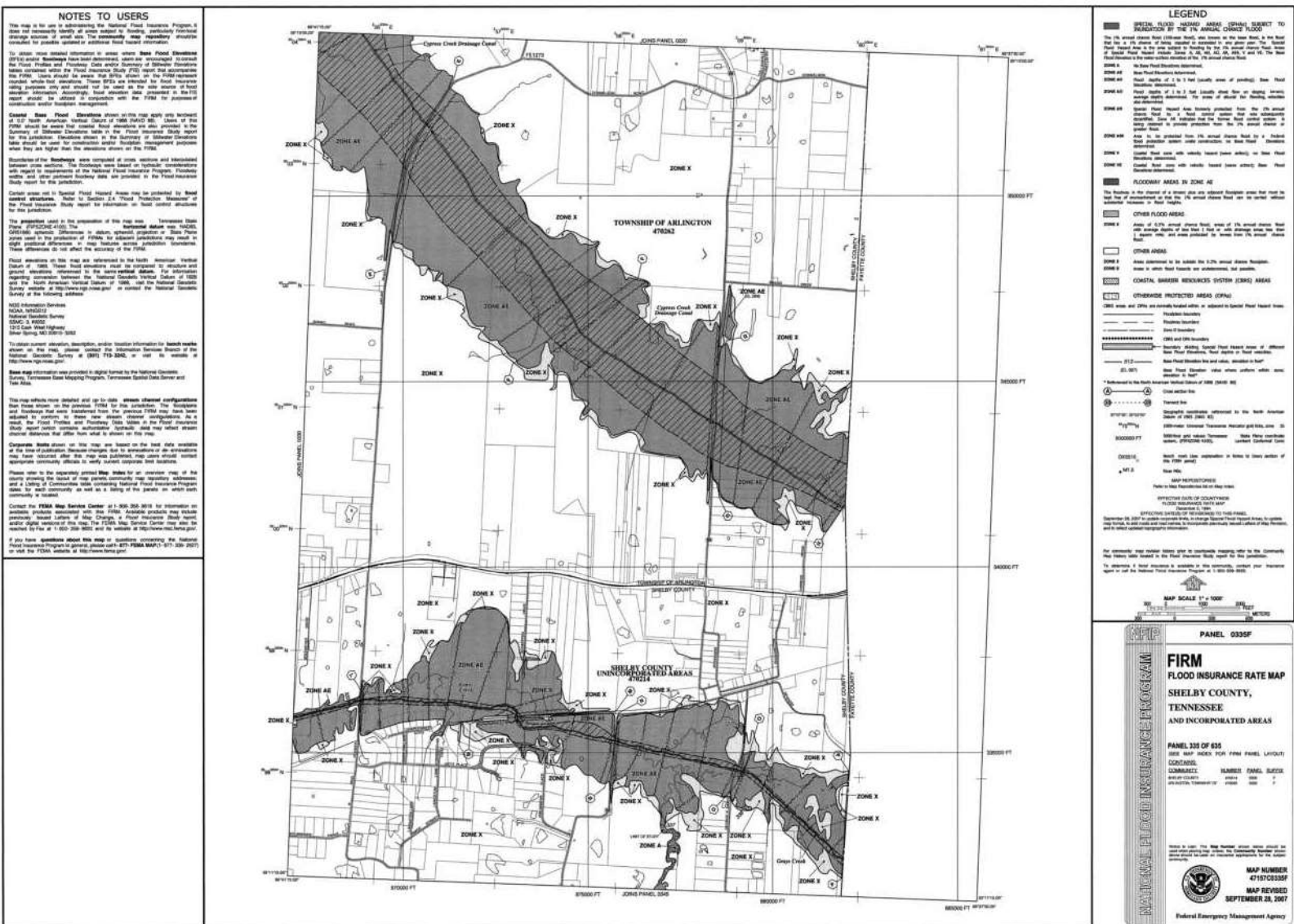








































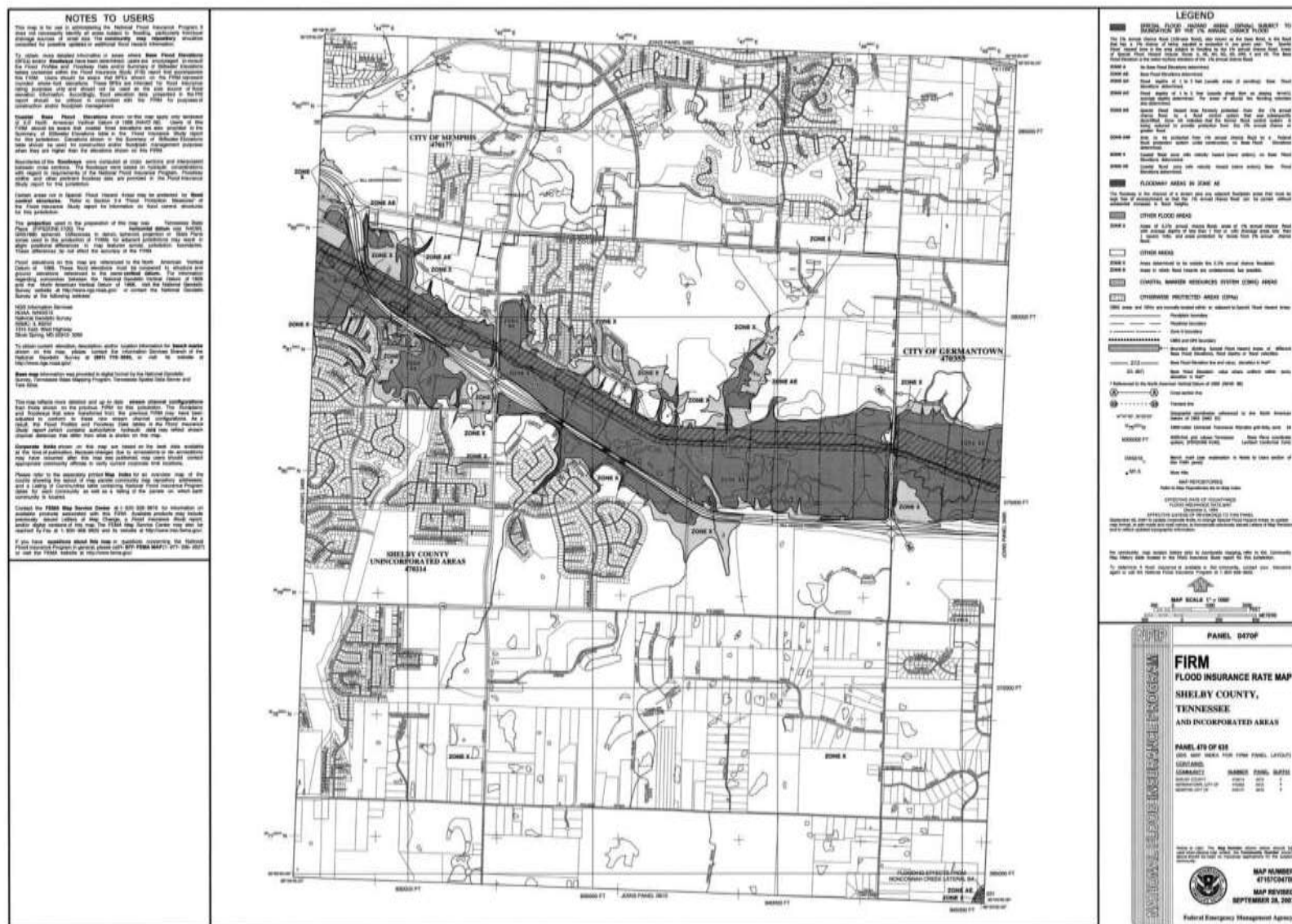




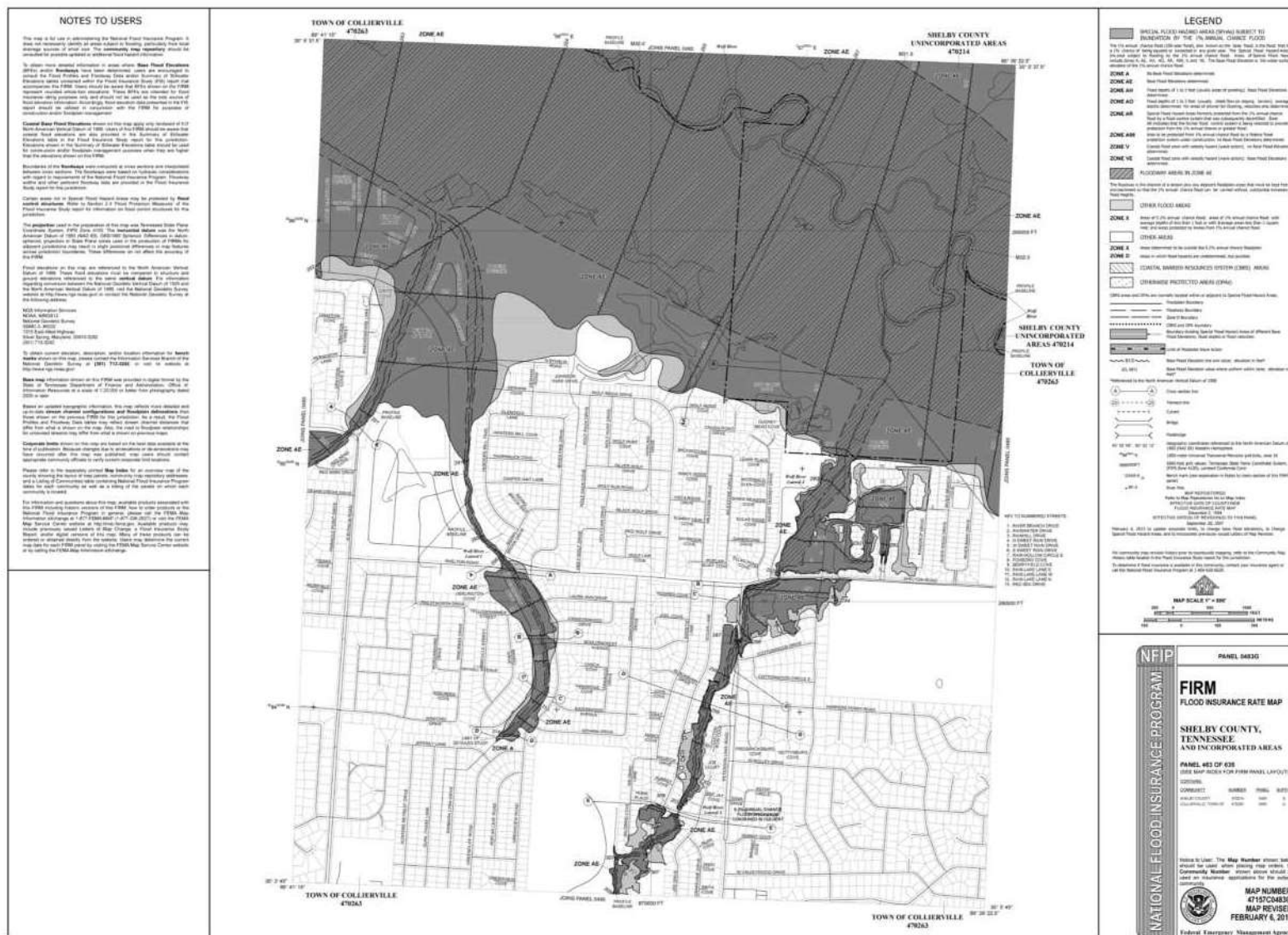


































Appendix 5

HAZUS: 500-year Flood Study



Disclaimer:

This version of Hazus utilizes 2010 Census Data.
Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific flood. These results can be improved by using enhanced inventory data and flood hazard information.



FEMA

RiskMAP
Increasing Resilience Together



Table of Contents

Section	Page #
General Description of the Region	3
Building Inventory	
General Building Stock	4
Essential Facility Inventory	5
Flood Scenario Parameters	6
Building Damage	
General Building Stock	7
Essential Facilities Damage	9
Induced Flood Damage	10
Debris Generation	
Social Impact	10
Shelter Requirements	
Economic Loss	12
Building-Related Losses	
Appendix A: County Listing for the Region	15
Appendix B: Regional Population and Building Value Data	16



FEMA

Flood Global Risk Report

RiskMAP
Increasing Resilience Together

Page 2 of 16



General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences (NIBS). The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The flood loss estimates provided in this report were based on a region that included 1 county(ies) from the following state(s):

- Tennessee

Note:

Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is approximately 785 square miles and contains 17,275 census blocks. The region contains over 351 thousand households and has a total population of 927,644 people (2010 Census Bureau data). The distribution of population by State and County for the study region is provided in Appendix B.

There are an estimated 335,912 buildings in the region with a total building replacement value (excluding contents) of 109,057 million dollars. Approximately 91.43% of the buildings (and 73.49% of the building value) are associated with residential housing.



FEMA

Flood Global Risk Report

RiskMAP
Increasing Resilience Together

Page 3 of 16



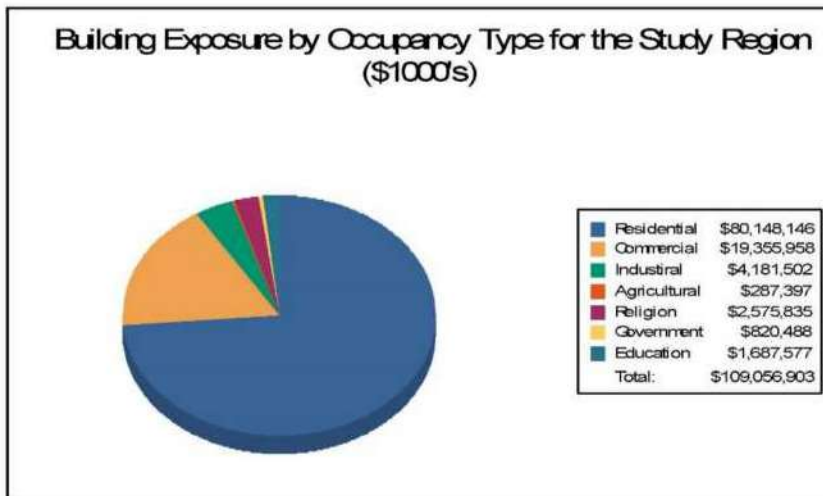
Building Inventory

General Building Stock

Hazus estimates that there are 335,912 buildings in the region which have an aggregate total replacement value of 109,057 million dollars. Table 1 and Table 2 present the relative distribution of the value with respect to the general occupancies by Study Region and Scenario respectively. Appendix B provides a general distribution of the building value by State and County.

Table 1
Building Exposure by Occupancy Type for the Study Region

Occupancy	Exposure (\$1000)	Percent of Total
Residential	80,148,146	73.5%
Commercial	19,355,958	17.7%
Industrial	4,181,502	3.8%
Agricultural	287,397	0.3%
Religion	2,575,835	2.4%
Government	820,488	0.8%
Education	1,687,577	1.5%
Total	109,056,903	100%



Flood Global Risk Report

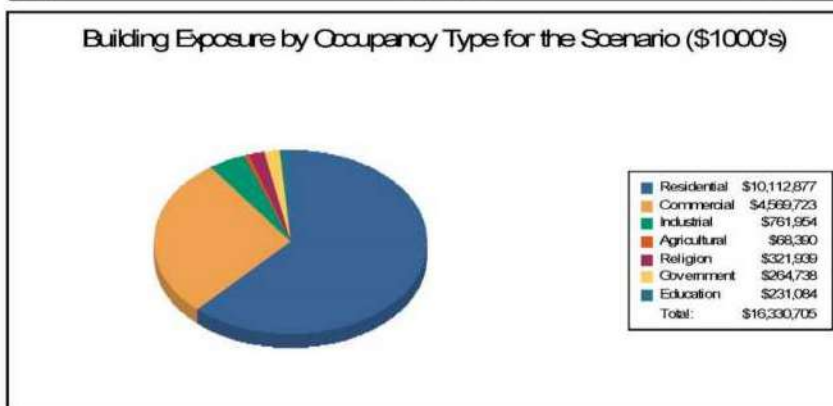


Page 4 of 16



Table 2
Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	10,112,877	61.9%
Commercial	4,569,723	28.0%
Industrial	761,954	4.7%
Agricultural	68,390	0.4%
Religion	321,939	2.0%
Government	264,738	1.6%
Education	231,084	1.4%
Total	16,330,705	100%



Essential Facility Inventory

For essential facilities, there are 12 hospitals in the region with a total bed capacity of 4,163 beds. There are 339 schools, 11 fire stations, 36 police stations and 2 emergency operation centers.



Flood Global Risk Report



Page 5 of 16



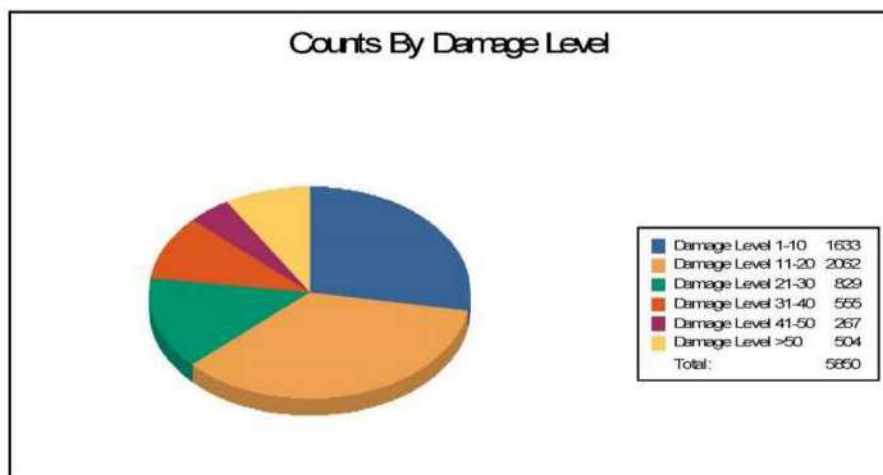
Hazus estimates that about 1,217 buildings will be at least moderately damaged. This is over 59% of the total number of buildings in the scenario. There are an estimated 504 buildings that will be completely destroyed. The definition of the 'damage states' is provided in the Hazus Flood Technical Manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 summarizes the expected damage by general building type.





Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		>50	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0	1	100	0	0	0	0	0	0	0	0
Commercial	42	42	56	57	1	1	0	0	0	0	0	0
Education	0	0	0	0	0	0	0	0	0	0	0	0
Government	10	59	6	35	1	6	0	0	0	0	0	0
Industrial	0	0	2	100	0	0	0	0	0	0	0	0
Religion	0	0	2	100	0	0	0	0	0	0	0	0
Residential	1,581	28	1,995	35	827	14	555	10	267	5	504	9
Total	1,633		2,062		829		555		267		504	



FEMA

Flood Global Risk Report

RiskMAP
Increasing Resilience Together

Page 8 of 16



Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		>50	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	6	50	6	50	0	0	0	0	0	0	0	0
Manuf/Housing	1	3	2	6	1	3	0	0	1	3	27	84
Masonry	140	32	188	43	47	11	33	7	13	3	20	5
Steel	12	41	17	59	0	0	0	0	0	0	0	0
Wood	1,496	28	1,881	35	790	15	530	10	254	5	463	9



FEMA

Flood Global Risk Report

RiskMAP
Increasing Resilience Together

Page 9 of 16



Essential Facility Damage

Before the flood analyzed in this scenario, the region had 4,163 hospital beds available for use. On the day of the scenario flood event, the model estimates that 4,163 hospital beds are available in the region.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Emergency Operation Centers	2	1	0	1
Fire Stations	11	0	0	0
Hospitals	12	0	0	0
Police Stations	36	1	0	1
Schools	339	8	0	8

If this report displays all zeros or is blank, two possibilities can explain this:

- (1) None of your facilities were flooded. This can be checked by mapping the inventory data on the depth grid.
- (2) The analysis was not run. This can be tested by checking the run box on the Analysis Menu and seeing if a message box asks you to replace the existing results.



Flood Global Risk Report



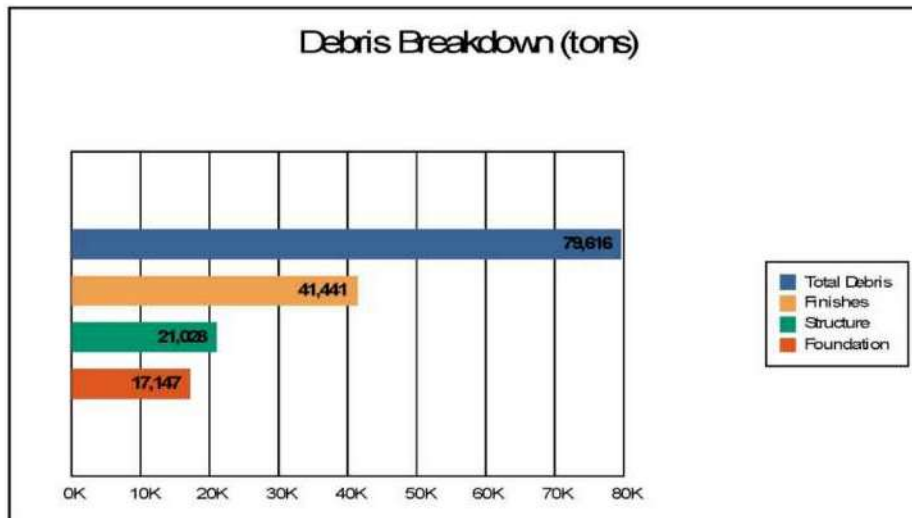
Page 10 of 16



Induced Flood Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). This distinction is made because of the different types of material handling equipment required to handle the debris.



The model estimates that a total of 79,616 tons of debris will be generated. Of the total amount, Finishes comprises 52% of the total, Structure comprises 26% of the total, and Foundation comprises 22%. If the debris tonnage is converted into an estimated number of truckloads, it will require 3185 truckloads (@25 tons/truck) to remove the debris generated by the flood.



FEMA

Flood Global Risk Report

RiskMAP
Increasing Resilience Together

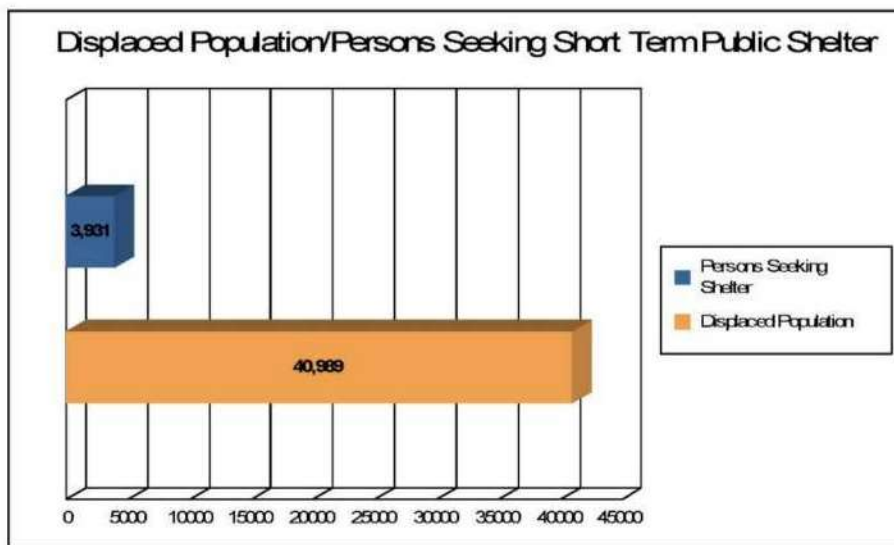
Page 11 of 16



Social Impact

Shelter Requirements

Hazus estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. Hazus also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 13,663 households (or 40,989 of people) will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 3,931 people (out of a total population of 927,644) will seek temporary shelter in public shelters.



FEMA

Flood Global Risk Report

RiskMAP
Increasing Resilience Together

Page 12 of 16



Economic Loss

The total economic loss estimated for the flood is 4,222.68 million dollars, which represents 25.86 % of the total replacement value of the scenario buildings.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood.

The total building-related losses were 1,957.77 million dollars. 54% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 27.36% of the total loss. Table 6 below provides a summary of the losses associated with the building damage.



FEMA

Flood Global Risk Report

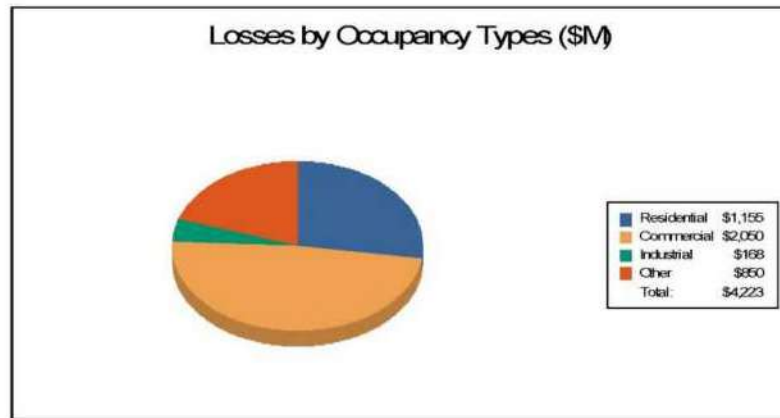
RiskMAP
Increasing Resilience Together

Page 13 of 16



Table 6: Building-Related Economic Loss Estimates
(Millions of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	522.73	227.24	45.36	31.24	826.57
	Content	296.09	558.32	94.07	146.55	1,095.02
	Inventory	0.00	18.34	16.32	1.52	36.18
	Subtotal	818.82	803.91	155.75	179.30	1,957.77
Business Interruption						
	Income	12.02	453.94	3.01	54.13	523.10
	Relocation	168.76	157.36	3.41	32.65	362.22
	Rental Income	107.48	100.30	0.58	4.90	213.26
	Wage	26.29	533.98	5.21	578.85	1,146.33
	Subtotal	336.57	1,245.59	12.21	670.53	2,264.90
ALL	Total	1,155.39	2,049.50	167.96	849.83	4,222.68



FEMA

Flood Global Risk Report

RiskMAP
Increasing Resilience Together

Page 14 of 16



Appendix A: County Listing for the Region

Tennessee
- Shelby



FEMA

Flood Global Risk Report

RiskMAP
Increasing Resilience Together

Page 15 of 16



Appendix B: Regional Population and Building Value Data

	Population	Building Value (thousands of dollars)		
		Residential	Non-Residential	Total
Tennessee				
Shelby	927,644	80,148,146	28,908,757	109,056,903
Total	927,644	80,148,146	28,908,757	109,056,903
Total Study Region	927,644	80,148,146	28,908,757	109,056,903



FEMA

Flood Global Risk Report

RiskMAP
Increasing Resilience Together

Page 16 of 16

Appendix 6

Ongoing Performance Tasks

1. The EMA will continue to educate the public on preparedness and safety.
2. The EMA will continue to participate in formal campaigns such as CUSEC's Earthquake Awareness Week.
3. The EMA will continue to coordinate activities for severe weather awareness week.
4. The EMA will continue to encourage residents to buy flood and earthquake insurance.
5. The utility companies have adopted a program to maintain right of ways. This Ongoing program will continue to keep power lines free of ground growth and tree limbs that could cause power outages during severe storms.
6. EMA will continue to monitor any flooding conditions that may arise within the county.
7. The EMA will continue working with all agencies to review and update the BEOP and other response plans.
8. The EMA will continue working with those agencies that will provide shelter during times of emergencies.
9. The mitigation committee working with the local media will provide periodic releases dealing with personal disaster plans for the general public; such as maintaining emergency supplies, family contacts, evacuation plans, shelter locations, etc.

Appendix 7

Ordinances

To be completed after FEMA approval

RESOLUTION

A RESOLUTION AUTHORIZING THE MAYOR TO EXECUTE A FUNDING AGREEMENT BETWEEN THE CITY OF LAKELAND AND THE LAKELAND AREA CHAMBER OF COMMERCE FOR FISCAL YEAR 2021-2022

RESOLVED; that the Board of Commissioners of the City of Lakeland, Tennessee authorizes the Mayor to execute an Agreement with the Lakeland Area Chamber of Commerce, attached as “2021-2022 Funding Agreement Between the City of Lakeland and the Lakeland Area Chamber of Commerce.”

PASSED AND ADOPTED by the Board of Commissioners of Lakeland, Tennessee on this 8th day of July, 2021, the public welfare requiring it.

Mike Cunningham, *Mayor*

ATTEST:

Debra Murrell
City Recorder

**2021-2022 FUNDING AGREEMENT BETWEEN THE CITY OF LAKELAND AND
THE LAKELAND AREA CHAMBER OF COMMERCE**

THIS AGREEMENT is entered into this ____ day of ____, 2021, by and between the CITY OF LAKELAND, a Tennessee municipal corporation established under the laws of the State of Tennessee (hereinafter referred to as "the City") with a principal address of 10001 Highway 70, Lakeland, Tennessee, 38002, and The Lakeland Area Chamber of Commerce, a not-for-profit Tennessee corporation (hereafter referred to as "the Agency"), with a principal address of 10001 Highway 70, Lakeland, Tennessee, 38002.

WITNESSETH

WHEREAS, the Lakeland Area Chamber of Commerce exists to promote 1) Business Advocacy by assisting in identifying and eliminating challenges within the business community at large; 2) Economic Development by serving as effective private sector partners for the community and public sector partners in utilizing resources with greater flexibility and confidentiality; 3) Marketing of the community at large in local and out-bound promotional programs for the community as a place to live and work; and 4) Community development by serving as an important voice in supporting community development projects in a cost effective and independent manner; and

WHEREAS, the Chamber has applied to the City for funds for contracted services in order to provide such services and/or programs as are set forth in Exhibit "A" attached hereto (hereinafter "Services") and incorporated herein by this reference; and

WHEREAS, the City and Chamber have determined that the public will benefit from such Services in order to promote the general health, welfare and/or safety of the community and that the provision of such Services is in the best interests of the City, and, to that end, the City has appropriated funds to be paid to the Agency for such Services; and

WHEREAS, the Agency commits to making available the necessary qualified and trained personnel, resources, materials and supplies to perform such Services as set forth in this Agreement; including, but not limited to, a part-time coordinator, professional economic development consulting, and an independent Board of Directors; and

WHEREAS, the City desires to enter into an agreement with the Agency whereby the Agency will receive and disburse said funds of the City for the purpose of providing the Services in accordance with the terms and conditions set forth herein;

NOW, THEREFORE, in consideration of the premises, the mutual covenants, and agreements herein contained, the receipt and sufficiency of which are hereby acknowledged, the parties hereby agree as follows:

1. **INCORPORATION OF RECITALS.** The recitals set forth above are true and correct and are incorporated herein and made a part of this Agreement.

2. **FUNDING.** The City has appropriated for the period commencing July 1, 2021, and ending June 30, 2022 in monthly installments of \$2,000 to be administered and disbursed by the Agency solely for the purposes set forth herein (hereinafter "Funds"). The Agency will also possess the ability to seek/request reimbursable expenses other incidental from the City (for example, travel expenses, promotional material design and duplication, etc.). The Agency hopes for a continued funding relationship from the City of Lakeland as is the traditional arrangement between other municipalities and their local

chambers within Shelby County as we continue to prove the value of the Agency's efforts to the City and community; however, the Agency will continue to solicit financial contributions, grants, appropriations, sponsorships, public and private government funding, and in-kind contributions to support the organization, with a long-term goal to generate majority funding from those sources and narrative updates will be provided to this end within our regular reporting measures (Exhibit "B").

3. **PAYMENTS.** Under the terms and conditions of this Agreement, the City agrees to contribute the Funds to the Agency in monthly installments, unless otherwise approved and authorized in writing by the Chief Administrative Officer and the Chief Financial Officer of the City. Payments by the City shall be contingent upon the following:

- (a) receipt and approval by the City of the reports specified in Paragraph 4 of this Agreement;
- (b) inclusion of the oversight provisions in sub-recipient agreements as set forth in Paragraph 7 of this Agreement;
- (c) compliance with such other reporting and administrative requirements specifically set forth in Exhibit "B" of this Agreement; and
- (d) continuing faithful performance of all the provisions of this Agreement by the Agency.
- (e) receipt of audit report as required by the Internal Control and Compliance Manual for TN Municipalities.

4. **PERFORMANCE MEASURES ; PROGRESS AND FINANCIAL REPORTS.** The City shall use the Performance Measures listed in Exhibit "A" to determine the effectiveness of the Services provided by the Agency. The Agency agrees to submit progress and financial reports on a quarterly basis in accordance with the schedule in Exhibit "B", which shall be consistent with the Services and Performance Measures, and shall detail the expenditure of the Funds. Failure to comply with the requirement for submission of such reports shall constitute grounds for termination of this Agreement and may result in the ineligibility of the Agency to receive contributions from the City.

5. **BOARD MEETINGS.** A member of City staff, designated by the City Manager, shall be permitted to attend board meetings, upon request to do so. The City shall receive electronic copies of Chamber Board Meeting minutes after each meeting (normally monthly).

6. **NONPROFIT STATUS.** The Agency shall maintain its corporate, non-profit status in the State of Tennessee and will pursue and secure 501(c)6 status with the Federal Internal Revenue Service for the term of this Agreement. If the Agency should, during the term of this Agreement, lose its corporate or non-profit status, it shall immediately notify the City within ten (10) days of the event. Upon such an event, the City reserves the right to immediately terminate this Agreement and discontinue distribution of Funds to the Agency.

7. **NONDISCRIMINATION.** The Agency agrees to provide the Services without regard to race, color, creed, sex, age, national origin, or disability.

8. **ACCOUNTING.** The Agency shall utilize and maintain such records and practices regarding receipts and disbursements of the Funds as to be in accordance with generally accepted accounting principles. All such records shall be open to inspection by the City or by the City's designee during normal business hours during the term hereof and for a period of three (3) years after the termination of this Agreement.

9. **MONITORING.** The Agency shall permit the City to monitor the Services and the Agency's records and facilities, and/or interview the Agency's clients or employees in order to ensure compliance with the terms of this Agreement. The Agency shall, to assist monitoring of its program, provide to the

City or the City's designee access to all client records and such other information as the City may deem necessary. The Agency shall interact with City economic development staff during regular hours of business for the purposes of continual monitoring of this agreement, and to coordinate mutual program activities.

10. **TERM.** Unless earlier terminated, this Agreement shall remain in effect for the period commencing July 1, 2021 and terminating June 30, 2022. This agreement will be reviewed annually with the potential for reapplication for support in the City of Lakeland's Budgeting Cycle.

11. **TERMINATION.** This Agreement may be terminated by either party at any time, with or without cause, upon no less than thirty (30) days' notice in writing to the other party. Said notice shall be delivered by certified mail or in person to the business address of the party upon whom such notice is served.

12. **DEFAULT.** The following shall constitute an Event of Default under this Agreement:

- (a) Agency's failure to provide the Services in accordance with the terms and conditions of this Agreement;
- (b) Agency makes a material representation in any certification or communication submitted by the Agency to the City in an effort to induce the contribution of the Funds or the administration thereof that is later determined by the City to be false, misleading, or incorrect in any material manner; or
- (c) Agency's failure to comply with any of the terms and conditions in this Agreement.

Upon the occurrence of any Event of Default, or any other breach of this Agreement, the City shall have the authority to terminate this Agreement and discontinue the Funds and/or exercise all rights and remedies available to it under the terms of this Agreement under statutory law, or under common law.

13. **NO WAIVER.** The continued performance by either party hereto, pursuant to the terms of this Agreement, after an Event of Default shall not be deemed a waiver of any rights by the City. Furthermore, the waiver of any default by the City shall in no event be construed as a waiver of rights with respect to any other default, past or present.

14. **CONSTRUCTION; SEVERABILITY.** This Agreement shall be construed in accordance with the laws of the State of Tennessee. It is agreed by and between the parties that if any covenant, condition or provision contained in this Agreement is held to be invalid by any court of competent jurisdiction, such invalidity shall not affect the validity of any other covenants, conditions or provisions herein contained.

15. **NONASSIGNABILITY.** The Agency may not assign its rights hereunder without the prior written consent of the City. Failure to comply with this section may result in immediate termination of this Agreement.

16. **NO JOINT VENTURE.** It is mutually understood and agreed that nothing contained in this Agreement is intended, or shall be construed, as in any way creating or establishing the relationship as partner or joint ventures between the parties hereto or as constituting the Agency as the agent or representative of the City for any purpose or in any manner whatsoever.

17. **VENUE.** Any litigation occurring as a result of this Agreement shall be held in the courts of Shelby County, Tennessee and shall be governed by the laws of the State of Tennessee. The Agency agrees to notify the City of an occurrence of any incident or action filed against the agency, such as but not limited to, lawsuits, injuries, or allegations of abuse or neglect.

18. **CORPORATE TABLES.** The Agency agrees that, if it holds any fundraising events during the term of this Agreement at which "corporate tables" are sold, the City shall receive a table

without cost in consideration of the contribution provided to the Agency under this Agreement.

20. **ENTIRE AGREEMENT.** This Agreement constitutes the entire agreement between the parties hereto with respect to the subject matter hereof; any representations or statement heretofore made with respect to such subject matter, whether verbal or written, are merged herein. No other agreement, whether verbal or written, with regard to the subject matter hereof shall be deemed to exist. This Agreement may only be modified in writing, signed by both parties.

21. **NOTICE.** Any notices to be delivered hereunder shall be in writing and be deemed to be delivered when (i) hand delivered to the person hereinafter designated, or (ii) deposited in the United States Mail, addressed to a party at the addresses set forth opposite the party's name below, or at such other address as the applicable party shall have specified, from time to time, by written notice to the other party delivered in accordance herewith:

City: City of Lakeland
City Manager
10001 Highway 70
Lakeland, TN 38002

Agency: Lakeland Area Chamber of Commerce
Wil Ashworth, President
10001 Highway 70
Lakeland, TN 38002

IN WITNESS WHEREOF, the parties hereto have executed these presents and have set their hands and seals the day and year first above written.

CITY OF LAKELAND, TENNESSEE

By: _____
Mayor

By: _____
City Manager

STATE OF TENNESSEE COUNTY OF SHELBY

PERSONALLY APPEARED before me, the undersigned authority, MAYOR MIKE CUNNINGHAM, well known to me, and known to me to be the Mayor of the City of Lakeland,

And MR. SHANE HORN, well known to me, and known to me to be the City Manager of the City of Lakeland, and acknowledged before me that they executed the foregoing instrument on behalf of the City of Lakeland as its true act and deed, and that they were duly authorized to do so.

WITNESS my hand and official seal this _____ day of _____, 2021.

NOTARY PUBLIC _____

Print Name: _____

My Commission Expires: _____

THE LAKELAND AREA CHAMBER OF
COMMERCE

By: _____
President

Federal I.D. No. : _____

STATE OF TENNESSEE COUNTY OF SHELBY

PERSONALLY APPEARED before me, the undersigned authority, Wil Ashworth, well known to me, and known to me to be the President of the Lakeland Area Chamber of Commerce and acknowledged before me that he executed the foregoing instrument on behalf of the Lakeland Area Chamber of Commerce as its true act and deed, and that he was duly authorized to do so.

WITNESS my hand and official seal this _____ day of _____, 2021.

NOTARY PUBLIC _____

Print Name: _____

My Commission Expires: _____

EXHIBIT “A” EXECUTIVE SUMMARY

The Lakeland Economic Development (LED) initiative is designed as an endeavor of the Lakeland Area Chamber of Commerce to work with the City of Lakeland, the Lakeland Economic Development Commission (EDC), and other constituents to promote and sustain economic development within the Lakeland Area. As a result of planning processes conducted by LED and other community groups, the Lakeland Chamber believes the most immediate (and promising) strategy is one to protect and grow opportunities within the business sector.

Support of Existing Businesses

The existing business community is a ready source for expansion and additional investment. The principal components of Chamber support would be to educate and organize existing businesses to support and provide a voice for community efforts for economic development and the implementation of the City of Lakeland's Economic Development Strategic Plan. The existing business plan calls for existing businesses in Lakeland to be visited and engaged each year of the program. Our feedback has been that both the business and residential communities support this approach, but understand the need for organizational leadership, which this program would provide. The goal would be that at least 65% of the existing business community would be engaged in this program each year.

Areas of Service

Three broad areas of service have been identified to be offered as a value added benefit to the City of Lakeland:

- Business retention and expansion that will include a business visitation program
- Marketing/Promotion at various venues including special events, business conventions, publications, and public relations presence.
- Tourism

Other Efforts

The Chamber will document efforts toward increasing funding resources. The Chamber will provide in its quarterly reports the use of funds provided by the City, and other revenue generated by the Chamber to improve funding leverage (for example, in grant-writing, etc.).

EXHIBIT “B”

REPORTING

The Chamber will report progress toward the services in this agreement monthly at its regular Chamber board meetings.

The Chamber will have a representative appear regularly at the Lakeland Development Corporation Board meeting, which meets approximately monthly. Written quarterly reports, as noted below, will also be shared with this board.

A quarterly written activities summary is due to the City of Lakeland prior to the Board of Commissioners (BOC) Work Sessions in January, April, July, and October, and a corresponding quarterly Chamber appearance will be made at the Work Session, or at another BOC meeting as arranged through the BOC.

The quarterly reports shall include information on services provided using City of Lakeland funding.

Additional regular contact with Director of Planning will occur during business hours to provide for monitoring of services, and to coordinate shared efforts. The Director of Planning will appear approximately quarterly (or more often when needed) at the Chamber’s regular board meetings, and may engage the Chamber board as necessary regarding services.

Mail or deliver the quarterly progress reports by mutually agreed means to:

City of Lakeland
City Manager
10001 Highway 70
Lakeland, TN 38002

Meeting Cycle: Thursday, July 1, 2021

Subject: **Resolution** – authorizing the City Manager to execute a licensing agreement with Central Technologies, Inc. for Microsoft 365 licensing. *Sponsored by Josh Thompson*

Staff Contact: Josh Thompson, GIS Manager

STAFF RECOMMENDATION

Staff recommends approval of the resolution authorizing the City Manager to execute the licensing agreement in the amount of Ten Thousand, One Hundred Eighty-Five Dollars, and Sixty-Six Cents (\$10,185.66).

BUDGET IMPACT

This agreement will be funded from the General Fund – Data Processing Services. This agreement is a budgeted item in the approved Fiscal 2021-22 budget.

DISCUSSION

Microsoft 365 (MS365) environment allows users to access cloud and desktop-based applications and services within the Microsoft Windows platform. MS365 requires an annual licensing agreement for access to these applications and services. Executing this agreement will allow staff to maintain access to documents, applications, and collaborative environments as well as serving as a access point to integrated services such as Cityworks Asset Management System (AMS) and the City's Geographic Information System (GIS).

RESOLUTION R-53-2021
AUTHORIZING THE CITY MANAGER TO EXECUTE A LICENSING
AGREEMENT WITH CENTRAL TECHNOLOGIES, INC. FOR MICROSOFT 365
LICENSING

WHEREAS, the City of Lakeland desires to execute a licensing agreement for Microsoft 365 licensing; and,

WHEREAS, Microsoft 365 is required for access to business applications.

NOW, THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE CITY OF LAKELAND, TENNESSEE: That the City Manager is hereby authorized to enter into a license agreement with Microsoft Corporation in the amount of Ten Thousand, One Hundred Eighty-Five Dollars, and Sixty-Six Cents (\$10,185.66). This agreement is a budgeted item in the approved Fiscal Year 2021-2021 budget.

APPROVED AND ADOPTED by the Board of Commissioners of Lakeland, Tennessee this 8th day of July 2021, the public welfare requiring it.

Mike Cunningham, *Mayor*

ATTEST:

Debra Murrell
City Recorder



We have prepared a quote for you

Office 365 Renewal

Quote # 006113
Version 1

Prepared for:

City of Lakeland Tennessee

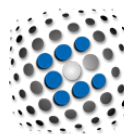
Shane Horn
shorn@lakelandtn.org



Products

Description		Price	Qty	Ext. Price
Q4Y-00007	Microsoft Office 365 (Plan E1) - Subscription License - 1 User - 1 Year - Price Level D - Additional Product, Microsoft Qualified, Local Government - MOLP: Open Value Subscription - English - PC, Mac	\$89.28	35	\$3,124.80
Q5Y-00007	Microsoft Office 365 (Plan E3) - Subscription License - 1 User - 1 Year - Price Level D - Additional Product, Microsoft Qualified, Local Government - MOLP: Open Value Subscription - English - PC, Mac	\$223.11	26	\$5,800.86
5A9-00007	Microsoft Exchange Online Archiving for Exchange Server - Subscription License - 1 User - 1 Month - Government, Annual Fee, Local - English	\$36.00	35	\$1,260.00

Subtotal: **\$10,185.66**



Office 365 Renewal

Prepared by:

Central Technologies Inc

Chris Scoggins
901-230-8490
Fax 865-312-8190
cscoggins@centralinc.com

Prepared for:

City of Lakeland Tennessee

10001 Hwy 70
Lakeland, TN 38002
Shane Horn
(901) 867-2717
shorn@lakelandtn.org

Quote Information:

Quote #: 006113

Version: 1
Delivery Date: 06/28/2021
Expiration Date: 09/21/2021

Quote Summary

Description	Amount
Products	\$10,185.66

Total: \$10,185.66

Taxes, shipping, handling and other fees may apply. We reserve the right to cancel orders arising from pricing or other errors.

Central Technologies Inc

Signature:

Name: Chris Scoggins

Title: Account Executive

Date: 06/28/2021

City of Lakeland Tennessee

Signature:

Name: Shane Horn

Date:

Meeting Cycle: Thursday, July 1, 2021

Subject: **Resolution** - approving a contract with Holbrook Asphalt for the FY22 Pavement Preservation Project. *Sponsored by Alejandra Arriaga*

Staff Contact: Alejandra Arriaga, Staff Engineer

STAFF RECOMMENDATION

Staff recommends the Board of Commissioners, by resolution to approve a contract with Holbrook Asphalt Co. for the FY22 Asphalt Pavement Preservation Project in the amount of One Hundred Twenty Seven Thousand Four Hundred Eleven Dollars and Forty Four Cents (\$127,411.44).

BUDGET IMPACT

This project will be budgeted with monies from the FY22 Street Aid Fund-Repair & Maintenance-Streets.

DISCUSSION

HA5 is high density mineral bond surface treatment used on pavement to reduce oxidation caused by uv rays and moisture. The pavement preservation method will extend the life of the asphalt by 67% as well as reduce cracking and brittle pavement. The product is applied on pavement with a Pavement Condition Index of 80 and will be applied in The Grove Subdivision. The City will use a sole source contract for the project since Holbrook Asphalt is the only contractor authorized and qualified to install HA5.



May 11, 2021

To: City of Lakeland
Attn: Emily Harrell, P.E.
10001 Highway 70
Lakeland, TN 38002

Subject: HA5 – Sole Source

Ms. Harrell,

This letter serves as documentation that Holbrook Asphalt is the only approved contractor authorized and qualified by Integrated Pavement Solutions to install HA5 High Density Mineral Bond in the Tennessee market.

HA5 High Density Mineral Bond is a sole source product and the only product meeting the rigorous specification of a High Density Mineral Bond established by engineering professionals.

Holbrook Asphalt has invested in all the necessary equipment and trained crews to successfully complete High Density Mineral Bond projects.

Why Sole Source? A High Density Mineral Bond requires specific emulsification properties processed with distinct components for time-tested performance results. The differentiator is the durability of the product and its effectiveness at reducing the deterioration of the asphalt binder as demonstrated over the previous 19 years in various climate types around the U.S.

If you would like a High Density Mineral Bond specification, or have questions about it, please contact me at (435) 862-8064.

Warm Regards,

A handwritten signature in black ink that reads "Mark Beatty". The signature is fluid and cursive, with the first and last names being clearly legible.

Mark Beatty
Sr. Vice President
Integrated Pavement Solutions (IPS)

RESOLUTION R-54-2021

A RESOLUTION APPROVING A CONTRACT WITH HOLBROOK ASPHALT CO. FOR THE
FISCAL YEAR 2022 PAVEMENT PRESERVATION PROJECT.

WHEREAS, the City desires to apply a pavement preservation product within The Grove Subdivision ; and,

WHEREAS, HOLBROOK ASPHALT CO. is willing and able to provide these services as specified in the Contract documents; and,

WHEREAS, the City of Lakeland will utilize a sole source contract with Holbrook Asphalt Co.,

WHEREAS, Funding for this work will be appropriated from FY22- State Street Aid Fund- Repair & Maintenance - Streets

NOW, THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE CITY OF LAKELAND, TENNESSEE: That the City Manager is hereby authorized and directed to execute, and the City Recorder to attest, an agreement with HOLBROOK ASPHALT CO. for the Fiscal Year 2022 Pavement Preservation Project in the amount of One Hundred Twenty Seven Thousand Four Hundred Eleven Dollars and Forty Four Cents (\$127,411.44).

PASSED AND ADOPTED by the Board of Commissioners of Lakeland, Tennessee on this 8th day of July 2021, public welfare requiring it.

Mike Cunningham, *Mayor*

ATTEST:

Debra Murrell
City Recorder