

MIDDLESBORO SMALL URBAN AREA TRANSPORTATION STUDY



Final Report

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EXECUTIVE SUMMARY

Project Description

The Middlesboro Small Urban Area (SUA) Transportation Study was conducted by the Kentucky Transportation Cabinet (KYTC), Division of Planning and District 11 in cooperation with the Cumberland Valley Area Development District (CVADD) with the goal of identifying improvements to the transportation system in the City of Middlesboro and part of the surrounding unincorporated area. The study's focus was primarily on maximizing current transportation facilities rather than proposing additions to the existing transportation system. Current road system data was analyzed to identify locations within the study area where problems with safety and congestion may need to be addressed. After the problem areas were identified, short-term, long-term, and local recommendations were made and prioritized. Many of the recommendations are low cost projects that would have an immediate, positive impact for the traveling public in Middlesboro, Kentucky.

Study Location

The project study area includes all of the incorporated limits of the City of Middlesboro in Bell County as well as part of the surrounding area encompassed in the limits shown in Figure ES-1 and Exhibit 1 in Appendix A. Located in the southeastern corner of the state, Bell County is bordered by Virginia to the southeast and Tennessee to the south.

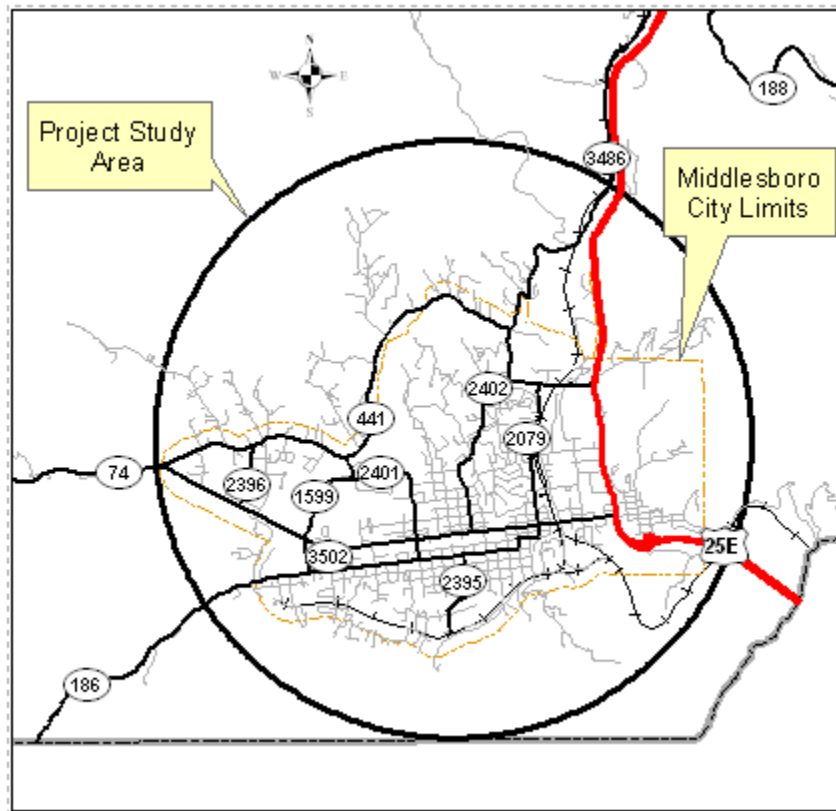


Figure ES-1: Project Study Area

Project Recommendations

A list of recommended safety and congestion improvement projects was assembled by the Project Team. The initial ranking of the projects was done by the Advisory Committee. The results were compiled and presented to the group. Following the final Advisory Committee meeting, the Project Team, taking into consideration the rankings of the committee, determined the final prioritization of projects for each category described below.

The project team separated the recommended projects into three categories based on project cost and feasibility and party responsibility. The categories are as follows:

- **KYTC Long-Term**—projects of the scale that would likely have to be included in the Highway Plan. They will be considered for the Unscheduled Projects List (UPL). One page descriptions of these projects are listed on project sheets, pages 12 to 14, in the report.
- **KYTC Short-Term**—lower-cost projects that may be executed quickly by the District personnel. These projects are listed and ranked below in Table ES-1, and one page descriptions of each are included on project sheets, pages 15 to 19, in the report.

Rank	Project Name	Description	Type	Cost	ID
1	KY 74/KY 186/KY 1599 Intersection Improvements	Raising grade of KY 186 & KY 1599, removing/ resetting obstructions to improve site distance	Safety	\$300,000	5S
2	Cumberland Avenue (KY74) Traffic Study for a Road Diet	Road Diet Study on KY 74 from 18 th St. to 24 th St.	Traffic Study	<\$50,000	1S
3	KY 2079/Chester Avenue Signing	Place <i>Cross Traffic Does Not Stop</i> signs	Signage	<\$200	4S
4	KY 2079/KY 2401 - Maintenance	Trim trees and bushes to improve sight distance.	Maintenance	<\$5000	3S
5	Cumberland Avenue/Hollywood Dr. (KY 74/KY 2402) Intersection Improvements	Increase turning radius, drainage improvements, and a signal warrant analysis	Maintenance/Signal Warrant Analysis	\$190,000	2S

- **Local**—projects that would be the responsibility of the City of Middlesboro, Bell County, and/or private developers and that may be undertaken at the discretion of any of those entities. One page descriptions of these projects are listed on project sheets, pages 20 to 22, in the report.

1.0 INTRODUCTION

1.1 *Study Purpose*

This Small Urban Area (SUA) Transportation Study was conducted by the Kentucky Transportation Cabinet (KYTC) with the goal of identifying improvements to the transportation system in the City of Middlesboro and part of the surrounding unincorporated area. The study's focus was primarily on maximizing current transportation facilities rather than proposing additions to the existing transportation system. Current road system data was analyzed to identify locations within the study area where problems with safety and congestion may need to be addressed. After the problem areas were identified, short-term, long-term, and local recommendations were made and prioritized. Many of the recommendations are low cost projects that would have an immediate, positive impact for the traveling public in Middlesboro, Kentucky.

The planning process included the following tasks:

- Review and evaluate KYTC, Division of Planning's Highway Information System (HIS) and Collision Reports Analysis for Safer Highways (CRASH) data.
- Establish the project team to guide the study effort.
- Consult with the advisory committee made up of local officials to obtain their input.
- Identify potential problem areas.
- Conduct field reviews to study problems.
- Identify possible solutions and estimate project costs.
- Develop recommendations and prioritize projects with input from the local officials and other stakeholders.

1.2 *Programming and Other Projects*

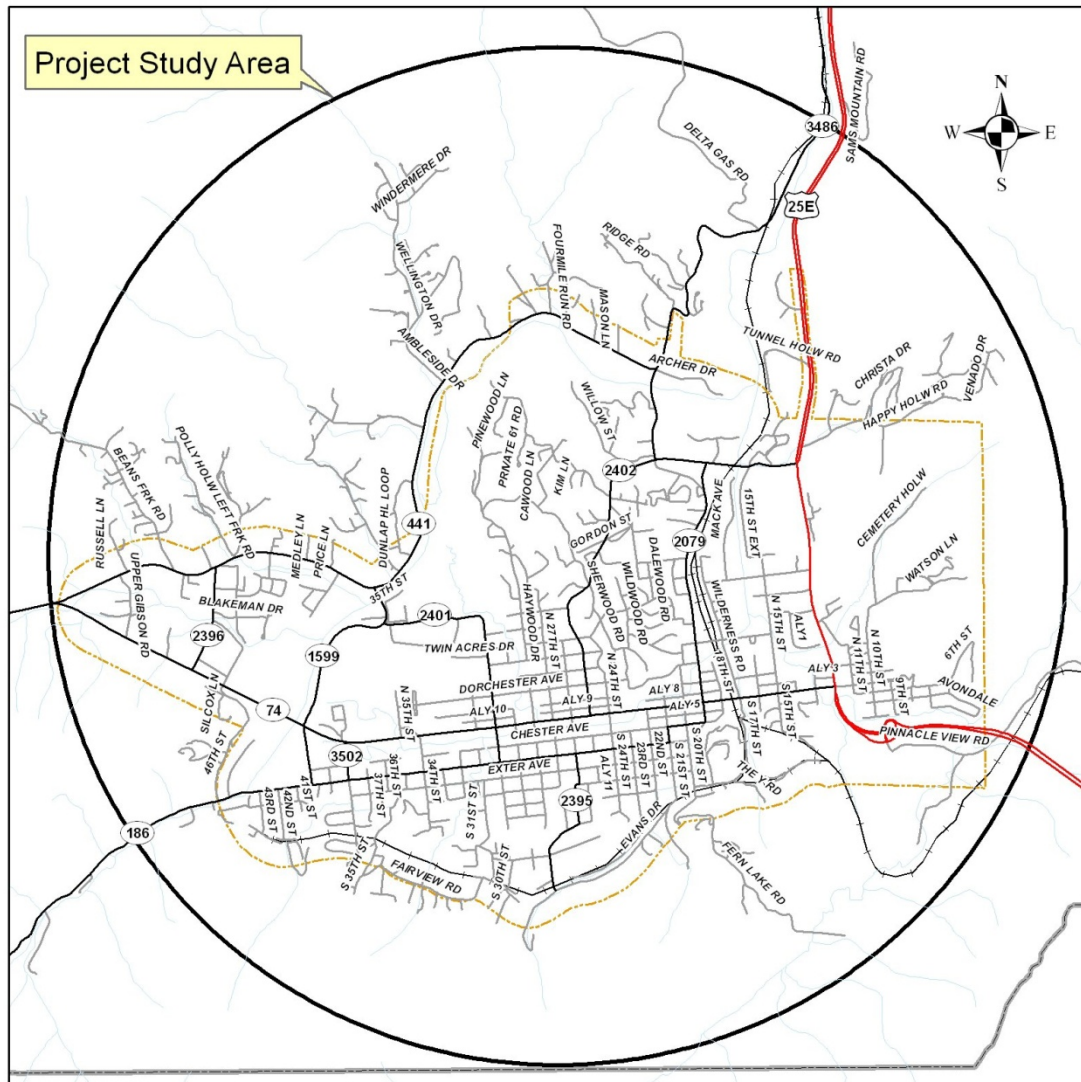
There is one project within the study area listed in Kentucky's 2008 Highway Plan. This project is the construction of a new route from KY 441 to US 25 E, approximately 0.8 miles. A planning study is in progress for this route, and future phases are listed in the current Highway Plan. The construction of the new route from KY 441 to US 25 E is also listed in the Unscheduled Project List (UPL). There are no other projects in the study area listed on the UPL.

2.0 PROJECT LOCATION AND EXISTING CONDITIONS

2.1 Project Location

The project study area includes all of the incorporated limits of the City of Middlesboro in Bell County as well as part of the surrounding area encompassed in the limits shown in Figure 1 and Exhibit 1 in Appendix A. Located in the southeastern corner of the state, Bell County is bordered by Virginia to the southeast and Tennessee to the south. Bell County is located in the Cumberland Valley area of the state. Middlesboro is Bell County's largest city, and is believed to be built inside a meteor crater. The Cumberland Gap National Historical Park and Pine Mountain State Resort Park are within minutes of Middlesboro.

Figure 1: Study Area Limits



2.2 Existing Conditions

Data on the existing conditions in the study area were taken from the Division of Planning's Highway Information System (HIS) database. Table 1 lists some general route information for state-maintained roadways in the study area. Detailed information on the existing routes can be seen in Appendix B, Table B1 of this report.

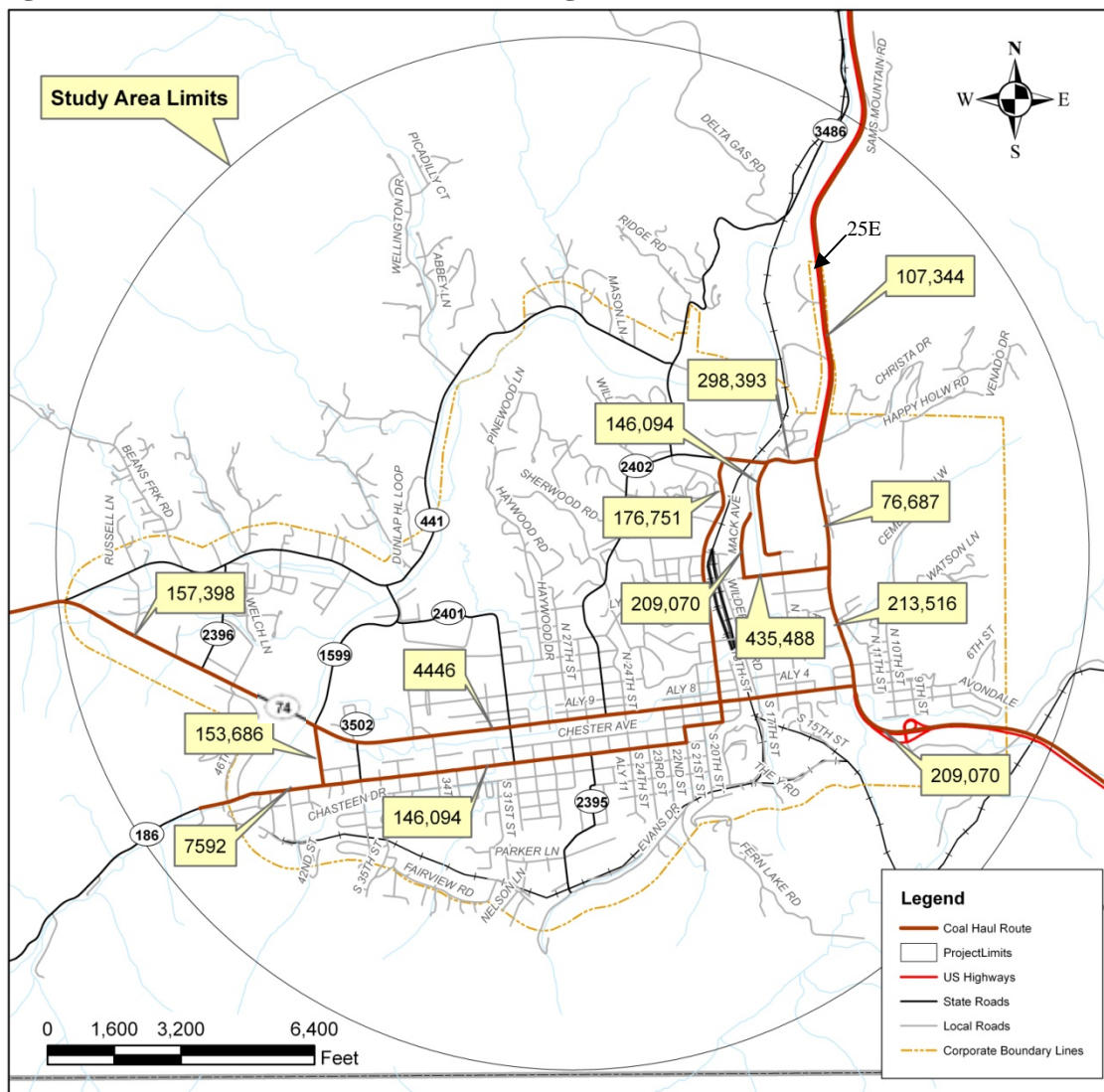
Table 1: Existing Highway Systems

Route	Begin MP	End MP	National Truck Network	National Highway System	Functional Classification	Truck Weight Class
US 25 E	0.650	1.689	Yes	Yes	Rural Principle Arterial	AAA
	1.689	3.690	Yes	Yes	Urban Principle Arterial	AAA
	3.690	4.350	Yes	Yes	Rural Principle Arterial	AAA
KY 74	12.860	12.995	No	No	Rural Major Collector	A
	12.995	16.753	No	No	Urban Minor Arterial	A
KY 186	1.850	2.278	No	No	Rural Major Collector	A
	2.278	2.717	No	No	Urban Minor Arterial	A
	2.717	2.977	No	No	Urban Collector	A
KY 441	0.000	4.257	No	No	Urban Collector	A
	4.257	4.897	No	No	Urban Minor Arterial	A
KY 1599	0.000	0.871	No	No	Urban Collector	A
KY 2079	0.000	1.871	No	No	Urban Collector	A
	1.871	3.036	No	No	Urban Minor Arterial	A
KY 2395	0.000	0.766	No	No	Urban Local	A
KY 2396	0.000	0.492	No	No	Urban Collector	A
KY 2401	0.000	1.136	No	No	Urban Collector	A
KY 2402	0.000	1.392	No	No	Urban Minor Arterial	A
KY 3486	0.000	1.670	No	No	Rural Local	A
KY 3502	0.000	3.728	No	No	Urban Minor Arterial	A

US 25 E provides a four-lane connection to Interstate 75 at Corbin, 45 miles to the northwest. US 25 E is the only route in Middlesboro on the National Highway System (NHS), a system of national roads established by the Intermodal Surface Transportation Efficiency Act (ISTEA) that are important to the nation's economy, defense, and mobility. US 25 E is also the only route in Middlesboro on the National Truck Network which includes routes designated for use by trucks with increased dimensions.

There are many active coal haul routes in the area. Currently coal traffic going through the city primarily uses US 25 E and KY 2079. In the past coal traffic was rerouted to KY 441 to take the coal traffic around the City of Middlesboro instead of through it. However, due to complaints from residents in the area and the existing conditions of KY 441, coal traffic was rerouted through the city. Figure 2 displays approximate annual tons of coal on the roadways in the study area.

Figure 2: Coal Routes and Annual Tonnages (2007, both directions)



Freight transportation by rail also exists in Middlesboro. The City of Middlesboro is commercially served by CSX and Norfolk Southern Railroad. The active lines run east to west along the southern part of the incorporated limits and from north to south through the city. A railroad switchyard is located just east of KY 2079 near an industrial area. There are no navigable waterways in or near Middlesboro for freight transportation.

Currently, no dedicated bike routes or bike lanes are located in the study area; however, there are signs near the downtown area to advise motorists that bicyclists may be present on the roadway. Part of the Southern Lakes Tour, one of Kentucky's scenic bike tours, is located approximately nine miles north of the study area at the intersection of US 25 E and US 119.

2.2.1 Average Daily Traffic

Current (2008) average daily traffic (ADT) on state-maintained routes in the study area ranges from 334 vehicles per day (vpd) to 24,800 vpd. US 25 E and sections of KY 74 have the highest traffic volumes. Most of the other roadways in the study area have less than 10,000 vpd. Projected ADTs for the year 2030 were also calculated based on functional class average growth rates. Current and projected ADTs for roadways in the study area can be seen in Exhibits 3 and 4 of Appendix A, respectively.

2.2.2 Measurements of Roadway Conditions

Volume/Service Flow (VSF) is a measure of capacity. The closer the VSF ratio is to 1.0, the closer the roadway is to capacity. Exhibit 4 in Appendix A displays segments of roadways in the study area with traffic volumes nearing capacity. These segments are located on US 25 E, KY 441, and KY 2079. VSF ratios were not available for KY 2395 or KY 3486.

An LOS analysis was performed on roadway segments in the study area. LOS C is usually considered the threshold for small cities, such as Middlesboro. LOS D, E, and F indicate that a problem may need to be addressed. A projected LOS for the year 2030 was also obtained based on projected ADT values. The LOS values for segments of roadways in the study area are displayed in Exhibits 5 and 6 in Appendix A.

The Level of Service (LOS) is a measurement-of-effectiveness used to determine the quality of service on roadways. LOS takes into account expected traffic conflicts, delay, driver discomfort, and congestion. The LOS system uses letters A through F, with A being the best, and F being the worst measurement of efficiency.

Two roadways in the study area have segments with a current (2008) year LOS rating of D. These segments include the part of KY 74 between KY 1599 and KY 2401, and

segments of KY 441 between KY 2079 and US 25 E. The 2030 projected LOS ratings for two adjoining segments of the southern part of US 25 E near the Cumberland Gap Tunnel are D. The KY 74 segment between KY 1599 and KY 2401 changed from a rating of D to E while the KY 441 segments remained at D. No other segments have a projected LOS rating of D, E, or F.

Composite Adequacy Rating is a method originally developed by FHWA and adapted by KYTC to assess a roadway's condition and prioritize highway improvements. The ratings are calculated by individual functional class and based upon three roadway components (safety, service, and condition) with each component comprised of several measures. The rating scores 100 as a perfect, or near perfect, highway. The Composite Adequacy Percentile ranks a particular roadway section compared to other Kentucky roads in the same functional class into a percentile. For example, a road section with a composite adequacy percentile of 75.0 means that 25% of the roads are rated better in that functional class.

Exhibit 7 in Appendix A displays segments of roadway with a composite adequacy rating less than the 20th percentile. These segments are located on most of KY 441, and parts of KY 74, US 25 E, and KY 186. Adequacy ratings were not available for KY 2395 or KY 3486.

2.2.3 Crash Analysis

Summaries of vehicle crashes were recorded with valid reference points in the study area during the three-year period between February 1, 2006 and January 31, 2009. Of the 608 recorded crashes, 452 were property damage only (PDO) occurrences, 151 resulted in one or more injuries and 5 resulted in one or more fatalities.

There are five segments of the state routes in the study area with a Critical Rate Factor (CRF) greater than 1.00 (See Exhibit 8 in the Appendix). In addition to highway segments, high-crash spot locations, defined as having a length of 0.1 or 0.3 mile, were identified. Crash data for the spots (0.1 mile) with high CRFs are listed with more detail in Tables 2 and 3. A map of the locations of the 0.1 mile and 0.3 mile spots can be seen in Exhibits 9a and 9b, respectively, in Appendix A.

The CRF is the ratio of the actual crash rate on a segment of highway for a given time period as compared to the average crash rate for other similar roads in Kentucky. A CRF greater than 1.00 indicates the segment of roadway has a statistically significant number of crashes and they may not be occurring at random.

Table 2: Crash Analysis – Spot (0.10 mile)

Route	Begin MP	End MP	Crashes				CRF>1	Roadway Conditions		Most Frequent "Manor of Collision"
			PDO	Fatal	Injury	Total		% in Daylight	% in Dry	
US 25 E	1.700	1.800	28	0	2	30	1.58	73	87	Rear End
	2.300	2.400	20	0	1	21	1.05	52	81	Rear End
	2.780	2.880	24	0	12	36	2.78	61	76	Rear End & Angle
KY 74	14.200	14.300	9	0	4	13	1.82	69	76	Angle
	15.900	16.000	17	0	4	21	1.74	81	90	Vehicle Entering/ Leaving Entrance
	16.400	16.500	12	0	6	18	1.05	72	94	Angle
KY 186	2.200	2.300	2	0	0	2	1.05	100	*	Rear End & Angle
KY 441	1.300	1.400	4	0	0	4	1.20	75	50	Various
	3.200	3.300	5	0	0	5	1.18	60	80	Rear End
	3.727	3.827	4	0	1	5	1.18	100	60	Rear End & Side Swipe
	4.600	4.700	8	0	1	9	1.01	78	89	Rear End
	4.800	4.900	9	0	0	9	1.01	100	89	Side Swipe
KY 2079	0.700	0.800	3	0	3	6	1.33	83	83	Vehicle Entering/ Leaving Entrance
	1.200	1.300	3	0	2	5	1.11	100	80	Angle
	1.800	1.900	8	0	4	12	1.80	100	100	Rear End

*Sand-mud-dirt-oil-gravel was listed at the roadway condition for both crashes in this segment.

A significant majority of the crashes occurred in dry weather conditions during daylight hours. Segments of roadway on US 25 E where crashes occurred more often in the dark are currently lighted. It is unlikely that a majority of the crashes on these roadway segments are related to bad weather or poor visibility.

“Rear end” crashes accounted for 28.0% of the crashes which occurred in the 0.10 mile segments. Crashes described as angle, vehicles entering/leaving entrance, and sideswipes accounted for 18.5%, 17.5%, and 15.0%, respectively.

3.0 PROJECT TEAM AND PROJECT ADVISORY COMMITTEE

3.1 KYTC Project Team

Two interdisciplinary project team meetings, consisting of members from KYTC Central Office, KYTC District 11, and Cumberland Valley ADD (CVADD), were held at the KYTC District 11 conference room on April 9, 2009 and October 8, 2009. Those in attendance at these meetings as well as the documentation of meeting minutes can be

viewed in Appendix C of this report. A summary of the major topics discussed at each meeting follows:

1) **April 9, 2009:** Members of the Project Team were introduced and the scope and purpose of the study were discussed. The limits of the study were defined. Existing conditions of the roadways in the study were included on handouts given to the attendees and reviewed during the meeting. The Project Team members identified some areas of concern with the current roadways in the study area. The need for an Environmental Justice report and an environmental footprint of the area were discussed. The next step was identified as putting together a list of local officials and stakeholders as potential members of the Advisory Committee and scheduling a meeting for them.

2) **October 8, 2009:** The status of the study was reviewed. Long-term, short-term, and local recommendations made by the Project Team and the Advisory Committee were evaluated. Based upon the comments from the meeting a final list of recommendations would be made and sent to the district so they could provide cost estimates for each recommendation. The Environmental Justice report was reviewed and finalized. A second Advisory Committee meeting was potentially scheduled for early 2010 for prioritization of recommended projects.

3.2 Advisory Committee

Two Advisory Committee meetings, consisting of local official and other stakeholders in the Middlesboro community were held at Middlesboro City Hall on June 8, 2009, and March 29, 2010. Those in attendance at these meetings as well as the documentation of meeting minutes can be viewed in Appendix D of this report. A summary of the major topics discussed at each meeting follows:

1) **June 8, 2009:** Introductions were made and the scope and purpose of the study were discussed. The limits of the study were defined. Current Six-Year Plan and Unscheduled Projects in the area were discussed. Existing conditions of the roadways in the study were included on handouts given to the attendees and reviewed during the meeting. The Advisory Committee members identified some areas of concern with the current roadways in the study area.

2) **March 29, 2010:** The Advisory Committee was presented with the list of recommended projects organized into the three categories identified by the project team: KYTC Long-Term, KYTC Short-Term, and Local projects. The committee provided feedback on the recommendations and prioritized each category. Members were informed that there was no designated funding for these projects. The KYTC Short-Term projects could be done with maintenance funds or possibly safety funds if they are available. KYTC Long-Term projects would be considered for the UPL. Local projects are the responsibility of the local government to fund and implement.

4.0 ENVIRONMENTAL AND SOCIOECONOMIC OVERVIEW

4.1 Environmental Footprint

A brief environmental footprint review was conducted to locate places of significant historical or cultural value. There are two National Register Districts, Middlesboro Downtown and Cumberland Gap, in the study area. There are 69 National Register Properties in the study area, mostly located in the Middlesboro Downtown Historic District. There are also several Historic Survey Properties located in or near downtown Middlesboro. This study does not have any recommendations for new roadways; therefore, it is unlikely that any historic location will be affected. It is suggested that further study and documentation be completed to avoid or mitigate impacts where recommended projects exist in areas that may impact these sites.

Places of potential hazards including floodplains and wetlands were also identified in the footprint. Sections of existing KY 441 were built on top of a levee for Yellow Creek. It should be noted that other recommended projects may fall within the area of a 100 Year Flood Potential. Flood Insurance Rate Maps of the study area can be viewed in Appendix G. It should also be noted that the incorporated limits of the City of Middlesboro are in a Municipal Separate Storm Sewer System (MS4) area.

Consideration should also be given to the location of churches, cemeteries, schools, wells, USTs, and other manmade environmental features in the study area. Many of these features are illustrated on the Environmental Footprint which can be viewed as Exhibit 10 in Appendix A.

4.2 Environmental Justice

The Environmental Justice Report was prepared by the Cumberland Valley Area Development District (CVADD) to assess the community demographics in the Middlesboro Small Urban Area (SUA) study area. The study area contains 14 Block Groups within 4 Census Tracts. The Census Tracts and Block Groups are listed below.

Bell County:

Census Tract 9605

Block Group: 1, 2

Census Tract 9606

Block Group: 1, 2, 3, 4, 5

Census Tract 9607

Block Group: 1, 2, 3, 4

Census Tract 9608

Block Group: 1, 2, 3

Based on data obtained by CVADD from the U.S. Census Bureau for minority, low income, and aging populations, as well as field observations and discussions with local

officials, it appears that there is a small concentration of populations over 65 years of age in Middlesboro. The concentrations identified in Middlesboro should not be affected.

Analysis of the minority population data showed several of the block groups as having an identified concentration of some sort. Some were significant while some were only minor. The more significant concentrations identified were noted in the narrative analysis of the Environmental Justice Report. All areas within this study should be given full consideration in the planning process to achieve the goals put forth by the U.S. Department of Transportation. The concentrations identified should not be adversely affected by improvements.

The elevated percentages in the populations below the poverty level might be indicative of concentrations throughout the study area. However, based on the economic status of this rural depressed county, these percentages are not uncommon for this area.

Although the percentage of persons over 5 with disabilities is higher than state and national percentages within the study area, they are comparable in percentage to each other as well as surrounding counties of this section of eastern Kentucky and are not uncommon for this area. The complete Environmental Justice Report produced by LCADD is in Appendix E.

5.0 RECOMMENDATIONS & PROJECT PRIORITIZATION

5.1 Recommendations

Following the first Advisory Committee meeting, the Project Team took into account all of the available project information. The team then identified alternatives to be carried forward or eliminated from further consideration. The criteria that were considered in the decision included the project ease of implementation, costs, impacts, traffic volumes, and public comments. The following is a list of project team and advisory committee suggested projects which were not carried forward:

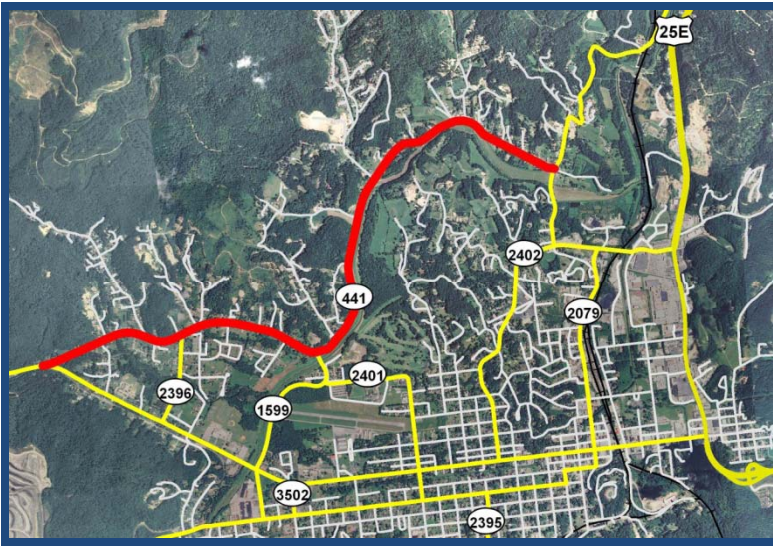
- ***KY 441 Widening for Two-Way Left-Turn Lane (TWLTL)*** – The project team agreed that a TWLTL is not needed on KY 441 between KY 2079 and KY 2402 since there are very few access points, and this section of roadway does not have a significant history of crashes.
- ***KY 74 at 22nd Street Signal Warrant Analysis*** – The project team discussed the need for a signal at this intersection, but concluded that it would not currently meet signal warrants.
- ***KY 74 between 18th and 24th Streets, Stripe Parking*** – KYTC's policy is to restripe the parking when the roadway is resurfaced. The project team agreed to exclude this recommendation from the study.

- ***KY 74 (Downtown Business Area), Pavement Marking and Signing for Pedestrian Crossings*** - KYTC replaces the thermoplastic marking on a 5-year cycle. A visual inspection of the markings indicated that they were sufficient.
- ***KY 441 at KY 2402, Intersection Improvements*** – This intersection is currently a 4-way stop that becomes congested during peak traffic periods. Turning movement traffic counts were done at this intersection to determine the need for a left-turn lane for vehicles traveling east on KY 2402 to turn north onto KY 441 or a right-turn lane for vehicles continuing west to north on KY 441. HCS+ software was used to determine the LOS of the intersection. At peak hours all the legs of the intersection operated at an LOS of B or better. The largest delay was calculated at less than 14 seconds for vehicles approaching the intersection from the west with an overall intersection delay of less than 13 seconds and an LOS of B. It was determined that the intersection operated sufficiently without the turning lanes, but may need to be re-evaluated in the future if traffic volumes increase. The turning movement counts and LOS analysis of the intersection can be seen in Appendix F.
- ***US 25E @ KY 74*** – The advisory committee suggested the need to extend the right-turn lane on southbound US 25 E. The project team discussed this issue; however, extending the turn lane would adversely impact access to several businesses and utilities. Right of way and utility costs would be very significant and there are alternate routes available, although not as direct, for traveling from southbound US 25 E to westbound KY 74.

In determining the alternatives to be carried forward, the project team first separated the recommended projects into three categories based on project cost and feasibility and party responsibility. The categories are as follows:

- **KYTC Long-Term**—projects of the scale that would likely have to be included in the Highway Plan. They will be considered for the Unscheduled Projects List (UPL).
- **KYTC Short-Term**—lower-cost projects that may be executed quickly by the District personnel due to their less intricate nature.
- **Local**—projects that would be the responsibility of the City of Middlesboro, Bell County, and/or private developers and that may be undertaken at the discretion of any of those entities.

The projects recommended by the Advisory Committee and Project Team are shown in detail in the following project summary sheets.



KY 441 looking west at Johnson Cemetery Road



KY 441 looking west at Ambleside Drive



KY 441 looking west at Chasteen Lane

KY 441 - Widening and Curve Improvements

Background: Several high crash segments and spots exist along this portion of KY 441. There is some desire to route coal traffic along this roadway to remove the traffic from roadways going through town. A new corridor connecting KY 441 and US 25 E near Archer Drive is being considered in a current planning study.

Existing Conditions and Issues:

- Lane width < 11ft.
- Adequacy Rating < 20th percentile
- Segments and spots with CRF > 1

Proposed Project: Widen KY 441 from KY 1599 to KY 2079 from 10 ft. to 12 ft. wide lanes with shoulders 4 ft. wide. Spot improvements to improve horizontal deficiencies, and turning lanes at KY 1599 and KY 2396.

Project Type: Reconstruction

Planning Cost Estimate:

Design:	\$1,000,000
ROW:	\$2,000,000
Utility:	\$2,000,000
Construction:	\$5,000,000

Total: \$10,000,000

Notes:



KY 2079 @ KY 74 looking north



KY 2079 @ KY 74 looking north



KY 2079 (19th St.) @ KY 74 (Cumberland Ave.) – Intersection Improvements

Background: KY 74 (Cumberland Ave.) in the downtown area does not have turn lanes or a protected-permissive phase at most of its intersections. Traffic loops on KY 2079 (19th Street) are continuously torn up by coal trucks. KY 2079 has a crash history at this intersection.

Existing Conditions and Issues:

KY 2079: ADT=6,130
Spot CRF>1

KY 74: ADT=19,000, Parallel Street Parking
Adequacy Rating Percentile=12.1
Coal Route

Proposed Project: Remove the asphalt pavement and concrete the intersection. Add left-turn lanes on both KY 74 approaches. Perform a signal warrant analysis to determine the need for a protected-permissive left-turn phase on KY 74. Consider curb extensions at the intersection to lessen pedestrian crossing time; however, do not place in the path of truck turning movements.

Project Type: Intersection Improvements & Signal Warrant Analysis

Planning Cost Estimate:

TOTAL: \$1,500,000

Notes:



KY 441 @ Bridge over Yellow Creek



KY 441



Sidewalk Along KY 441 from Wal-Mart to KY 2402

Background: There currently is no sidewalk connecting this commercial area of KY 441 to the intersection of KY 441 and KY 2402. Constructing a sidewalk would provide a safe walkway for pedestrians to travel.

Existing Conditions and Issues:

KY 441: ADT = 9,450 to 12,400
Spot CRF>1

Proposed Project: Construct a sidewalk and curb and gutter section along the south side of KY 441 from Wal-Mart to the 4-way stop at KY 2402. This will require the widening of the bridge over Yellow Creek. No additional right of way will be needed.

Project Type: Sidewalk, Curb & Gutter, Bridge Widening

Planning Cost Estimate:

TOTAL: \$628,000

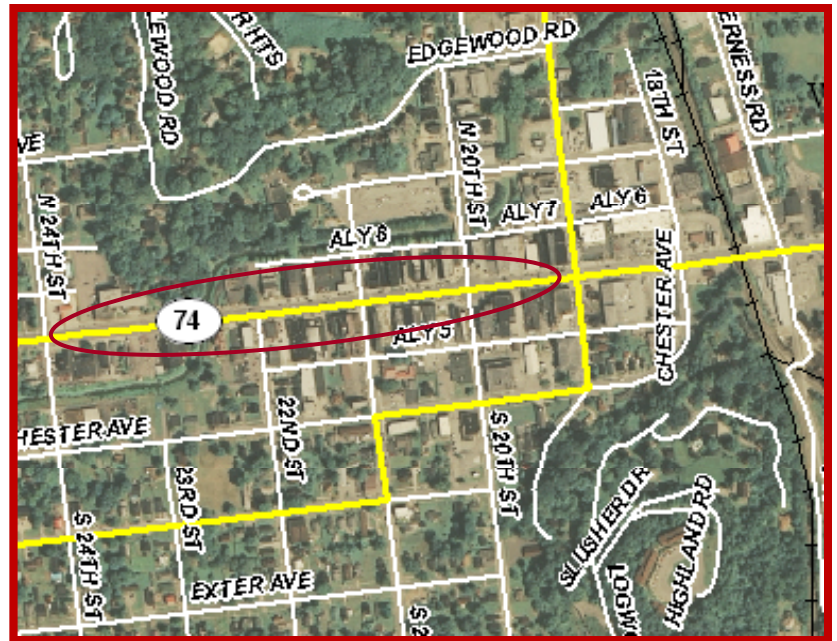
Notes:



KY 74 @ 21st Street looking east



Example of an Implemented Road Diet



KY 74 Traffic Study for Road Diet

Background: Local business owners along KY 74 have requested that a 4-lane section of KY 74 be changed to a 2-lane with a two-way left-turn lane, parallel parking, and bike lanes.

Existing Conditions and Issues:

Four 11 ft. lanes
No turning lanes at intersections
Parallel street parking
ADT = 11,700
CRF > 1

Proposed Project: Perform a traffic study to determine if converting this 4-lane section of roadway on KY 74 from 18th Street to 24th Street to a 2-lane roadway with a two-way left-turn lane will provide adequate current and future capacity and to consider safety benefits.

Project Type: Traffic Study

Planning Cost Estimate:

TOTAL: <\$50,000

Notes:



KY 2402 @ KY 74 looking west



KY 2402 @ KY 74 looking south



KY 74 at KY 2402 Intersection Improvements

Background: This intersection lies in a residential area near the downtown business area. There are drainage issues at this location. There is also a tight turning radius at this location.

Existing Conditions and Issues:

KY 74: ADT = 11,700
Four 11 ft. lanes
Segment CRF > 1

KY 2402: ADT = 4,690
No Turning Lanes

Proposed Project: The radius at this intersection needs to be increased to 50 feet to make it more accessible. Drainage improvements are needed. A signal warrant analysis is recommended.

Project Type: Signal Warrant Analysis, Drainage & Maintenance

Planning Cost Estimate: (includes \$50,000 for new signal if warranted)

Design:	\$50,000
ROW:	\$20,000
Utility:	\$20,000
Construction:	\$100,000

TOTAL: \$190,000

Notes:



*KY 2079 from
KY 2401
southbound*

*KY 2079 from
KY 2401
northbound*



KY 2079 at KY 2401 – Maintenance

Background: Vegetation blocks the sight distance for drivers turning westbound on KY 2079 from northbound S. Petersburg Avenue and southbound KY 2401. The 0.1 mile spot CRF indicates that the intersections is located in a high crash rate area.

Existing Conditions and Issues:

KY 2079: ADT = 4,190
0.10 Mile Spot CRF = 1.33
Coal Haul Route

KY 2401: ADT = 8050

Proposed Project: Trim trees and bushes to improve sight distance.

Project Type: Maintenance (Trim Trees)

Planning Cost Estimate:

TOTAL: <\$5,000

Notes:



KY 2079 @ Chester Ave. looking south



KY 2079 @ Chester Ave. looking south



KY 2079 at Chester Avenue – Signing

Background: KY 2079 is a truck route that is heavily used by coal truck traffic. The route requires the trucks to make a 90 degree turn to continue on KY 2079. The intersection is a 2-way stop for vehicles in the northbound and southbound directions. It is sometimes mistaken for a 4-way stop.

Existing Conditions and Issues:

KY 2079: ADT=8,050
VSF>1
Street Parking
Coal Route

Proposed Project: Place *Cross Traffic Does Not Stop* signs on the northbound and southbound legs of the intersection.

Project Type: Signing

Planning Cost Estimate:

TOTAL: <\$200

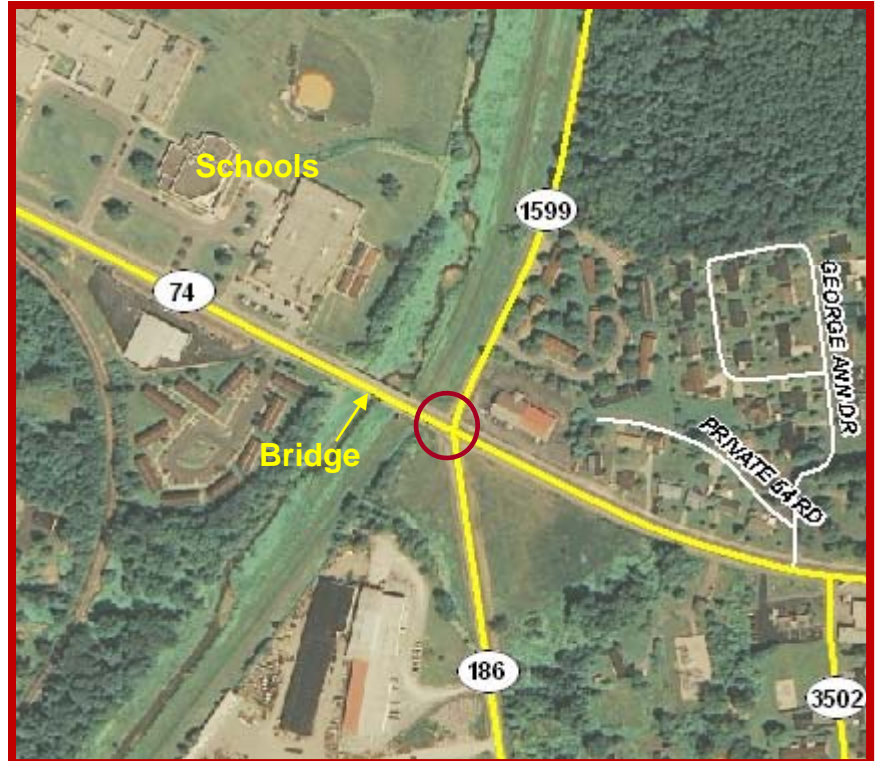
Notes:



KY 74 @ KY 186 looking west



KY 74 @ KY 186 looking east



KY 74 / KY 186 / KY 1599 Intersection - Safety

Background: KY 74 is intersected to the north by KY 1599 and to the south by KY 186 at this location. Just west of the intersection is a bridge and Middleboro Middle School and High School. This intersection has a history of crashes.

Existing Conditions and Issues:

KY 74: ADT=12,400
0.10 Mile Spot CRF = 1.82
KY 186: ADT = 1,930
KY 1599: ADT = 2,590

Proposed Project: Possible improvements include:

- Raising the grade on KY 1599 and adding curb and gutter
- Raising the grade on KY 186
- Removing the outside barrier wall on the bridge and constructing a pedestrian fence to increase visibility from KY 1599
- Moving signs and/or utility pole obstructions to improve visibility

Proposed Projects Continued:

- Removing and resetting guardrail and bridge end near KY 186.

The intersection will be investigated to determine which improvements would be most beneficial to increasing the sight distance.

Project Type: Safety

Planning Cost Estimate:

TOTAL: \$300,000
(Includes cost of all improvements)

Notes:



KY 74 @ 21st Street looking east



Example of Curb Extensions



KY 74 between 18th and 24th Streets – Curb Extensions

Background: KY 74 between 18th and 24th Streets is the downtown business area of Middlesboro. Local stakeholders requested safer pedestrian crossings across the wide intersections in this area.

Existing Conditions and Issues:

Four 11 ft. lanes
Parallel street parking
ADT = 11,700
CRF > 1

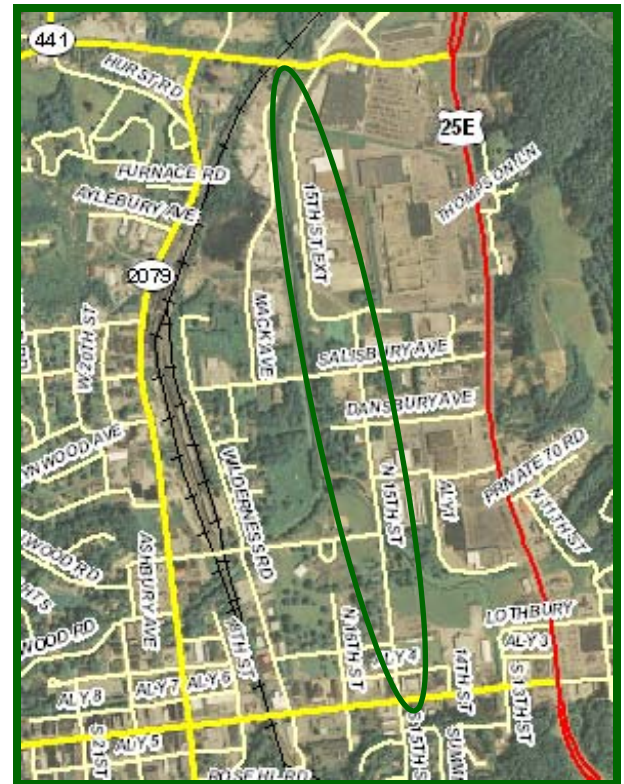
Proposed Project: Provide 22 curb extensions or sidewalk bulb-outs to decrease the width of the pedestrian crossings between 18th and 24th Streets. Curb extensions may not need to be considered in areas where the turning volume of large trucks is high.

Project Type: Sidewalk

Planning Cost Estimate:

TOTAL: \$60,000

Notes:

15th Street Ext.15th Street Ext.
intersection with
KY 441

15th Street & 15th Street Extension Widening

Background: 15th Street Extension is a city street used by many of the locals as a backage road to access the large shopping centers that front on US 25 E. The use of this road alleviates some of the congestion from US 25 E.

Existing Conditions and Issues:

City-maintained 2-lane road

Proposed Project: Widen 15th and 15th Street Extension to 3 lanes (2 through lanes and a TWLTL) or a 4-lane roadway to alleviate congestion on US 25 E.

Project Type: Reconstruction

Planning Cost Estimate:

	<u>3 Lanes</u>	<u>4 Lanes</u>
Design:	\$500,000	\$650,000
ROW:	\$750,000	\$1,000,000
Utility:	\$750,000	\$1,000,000
Const.:	\$3,000,000	\$5,000,000
<u>TOTAL</u>	\$5,000,000	\$7,650,000

Notes:



Proposed location for pedestrian bridge



Pedestrian Bridge

Background: In the past there was a pedestrian bridge that crossed over a creek from the city parking lot to a location behind businesses on the corner of KY 74 and 20th Street . The parking lot is large and currently under-utilized. Better pedestrian access from the lot to the downtown business area may increase occupancy. There is a bridge on 20th Street with a sidewalk to accommodate pedestrians.

Existing Conditions and Issues:

City owned/maintained

Proposed Project: Build a pedestrian bridge that connects the city parking lot to the downtown business area.

Project Type: Pedestrian Structure

Planning Cost Estimate:

TOTAL: \$35,000

Notes:

5.2 Project Prioritization

At this time, funding is not available for future development of the projects. To assist with future initiatives, projects were ranked numerically within each category (KYTC Long-Term, KYTC Short-Term, and Local). The initial ranking of the projects was done by the Advisory Committee meeting on March 29, 2010. The results were compiled and presented to the group. The Advisory Committee rankings can be seen in the March 29, 2010 meeting notes in Appendix D.

Following the Advisory Committee meeting, the PDT, taking into consideration the rankings of the committee, determined the final prioritization of projects for each category. The rankings remained the same as the rankings from the Advisory Committee meeting. The following tables (Tables 3 to 5) display the final project prioritization for all projects. These priorities are also displayed on the project sheets on the previous pages.

Table 3: KYTC Long-Term Project Recommendations

Ranking	Project Name	Description	Type	Cost	ID
1st	Cumberland Avenue/19th Street (KY 74 / KY 2079) Intersection Improvements	Remove the asphalt pavement and concrete the intersection. Add left-turn lanes on both KY 74 approaches. Perform a signal warrant analysis to determine the need for a protected-permissive left-turn phase on KY 74.	Reconstruct	\$1.5 Million	2LT
2nd	KY 441 Widening and Curve Improvements	Widen KY 441 from MP 0.000 to MP 3.827 from 10 ft. to 12 ft. wide lanes with shoulders 4 feet wide. Includes spot improvements to improve horizontal deficiencies, and construction of turning lanes at KY 1599 and KY 2396.	Reconstruct	\$10 Million	1LT
3rd	Sidewalk Along KY 441 from Wal-Mart to KY 2402	Construct a sidewalk and curb and gutter section along the south side of KY 441 from Wal-Mart to the 4-way stop at KY 2402. This will require the widening of the bridge over the railroad tracks.	Sidewalk/ Curb & Gutter	\$628,000	3LT

Table 4: KYTC Short-Term Project Recommendations

Ranking	Project Name	Description	Type	Cost	ID
1st	KY 74/KY 186/KY 1599 Intersection Improvements	Improvements include raising the grade on KY 1599, raising the grade on KY 186, removing the outside barrier wall on the bridge and constructing a pedestrian fence, and moving signs and/or utility pole obstructions, and removing and resetting guardrail and bridge end to improve site distance.	Safety	\$300,000	5S
2nd	Cumberland Avenue (KY74) Traffic Study for a Road Diet	Perform a traffic study to determine if converting this 4-lane section of roadway on KY 74 from 18 th Street to 24 th Street to a 2-lane roadway with a two-way left-turn lane will provide adequate current and future capacity.	Traffic Study	<\$50,000	1S
3rd	KY 2079/Chester Avenue Signing	Place <i>Cross Traffic Does Not Stop</i> signs on the northbound and southbound legs of the intersection.	Signage	<\$200	4S
4th	KY 2079/KY 2401 - Maintenance	Trim trees and bushes to improve sight distance.	Maintenance	<\$5000	3S
5th	Cumberland Avenue/Hollywood Dr. (KY 74/KY 2402) Intersection Improvements	The radius at this intersection needs to be increased to 50 feet to make it more accessible. Drainage improvements. A signal warrant analysis is recommended.	Maintenance/Signal Warrant Analysis	\$190,000	2S

Table 5: Local Project Recommendations

Ranking	Project Name	Description	Type	Cost	ID
1st	15th Street and 15th Street Extension Widening	Widen to 3 lanes (2 through lanes and a TWLTL) or a 4-lane roadway to alleviate congestion.	Reconstruct	\$5 to \$7.7 Million	2L
2nd	Cumberland Avenue (KY 74) Curb Extensions	Provide 22 curb extensions or sidewalk bulb outs to decrease the width of the pedestrian crossing between 18th and 24th Streets.	Sidewalk	\$60,000	1L
3rd	Pedestrian Bridge	Build a pedestrian bridge that connects the city parking lot to the downtown business area.	Structure	\$35,000	3L

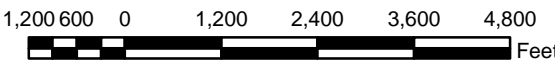
Appendix A

Exhibits

EXHIBIT 1

MIDDLESBORO
VICINITY MAP

MIDDLESBORO SMALL
URBAN AREA STUDY:
BELL COUNTY



Road System

- US Highway
- State Highway
- Local Road
- Bridge
- Railroad
- Incorporated Area
- Lake
- Stream
- National Park

Study Area Limits

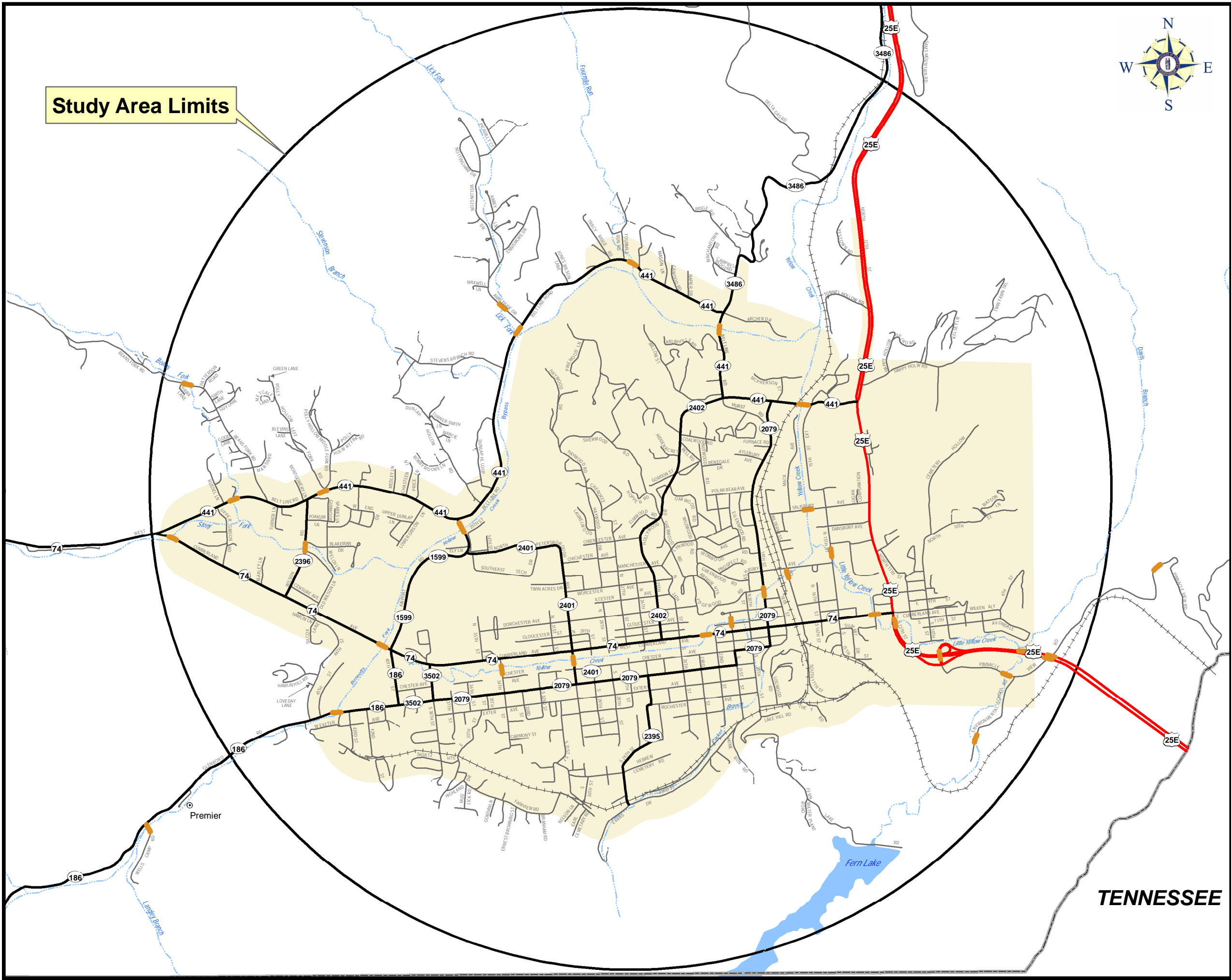
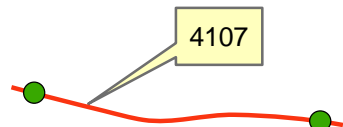


EXHIBIT 2

CURRENT (2008) AVERAGE
DAILY TRAFFIC

MIDDLESBORO SMALL URBAN AREA STUDY: BELL COUNTY

Average Daily Traffic
of Certain Road
Segments



Road System

- US Highway
- State Highway
- Local Road
- Bridge
- Railroad
- Incorporated Area
- Lake
- Stream
- National Park



1,200 600 0 1,200 2,400 3,600 4,800
Feet



Division of Planning

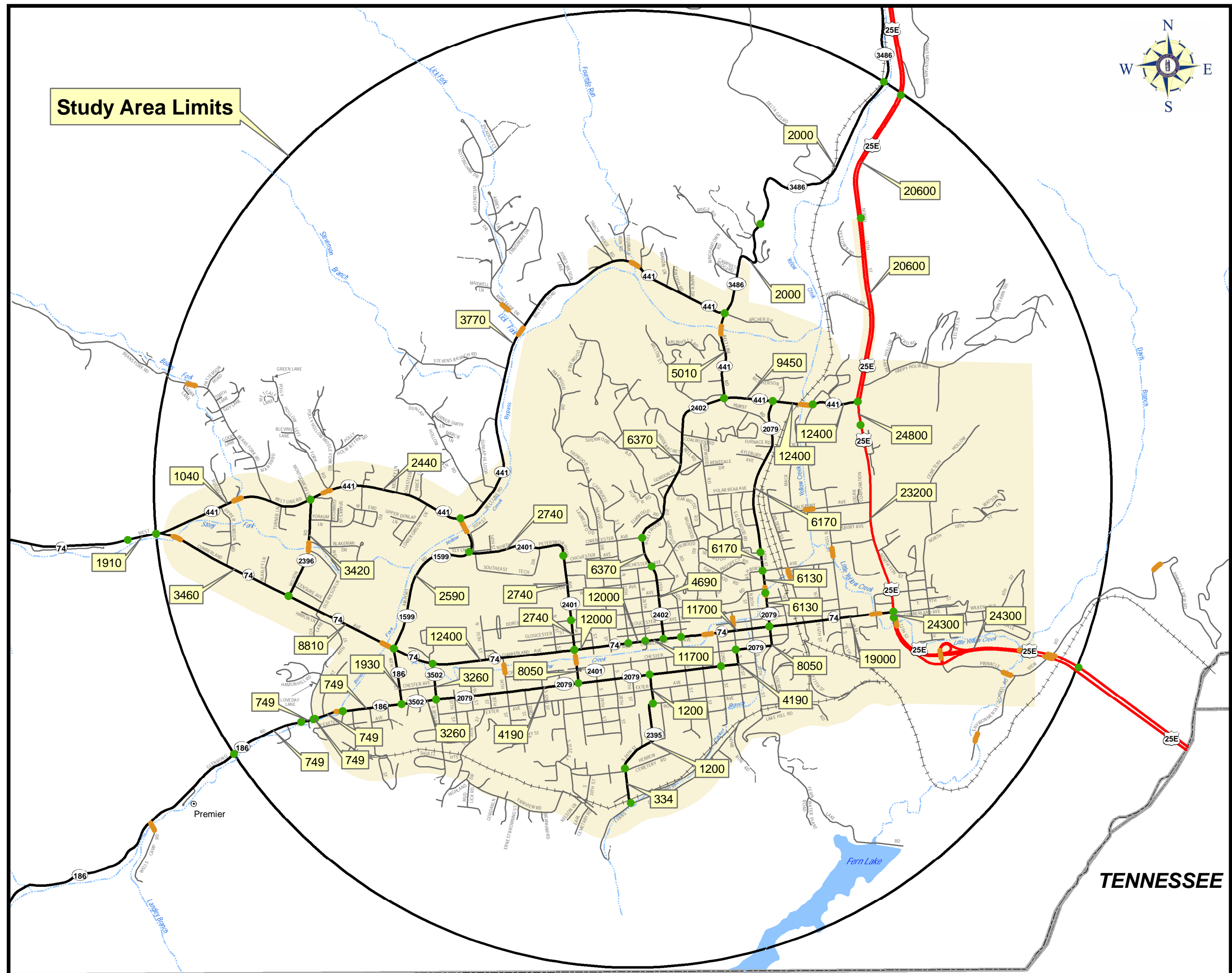
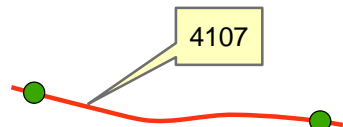


EXHIBIT 3

PROPOSED AVERAGE
DAILY TRAFFIC 2030

MIDDLESBORO SMALL
URBAN AREA STUDY:
BELL COUNTY

Average Daily Traffic
of Certain Road
Segments



Road System

- US Highway
- State Highway
- Local Road
- Bridge
- Railroad
- Incorporated Area
- Lake
- Stream
- National Park



1,200 600 0 1,200 2,400 3,600 4,800
Feet



Division of Planning



Study Area Limits

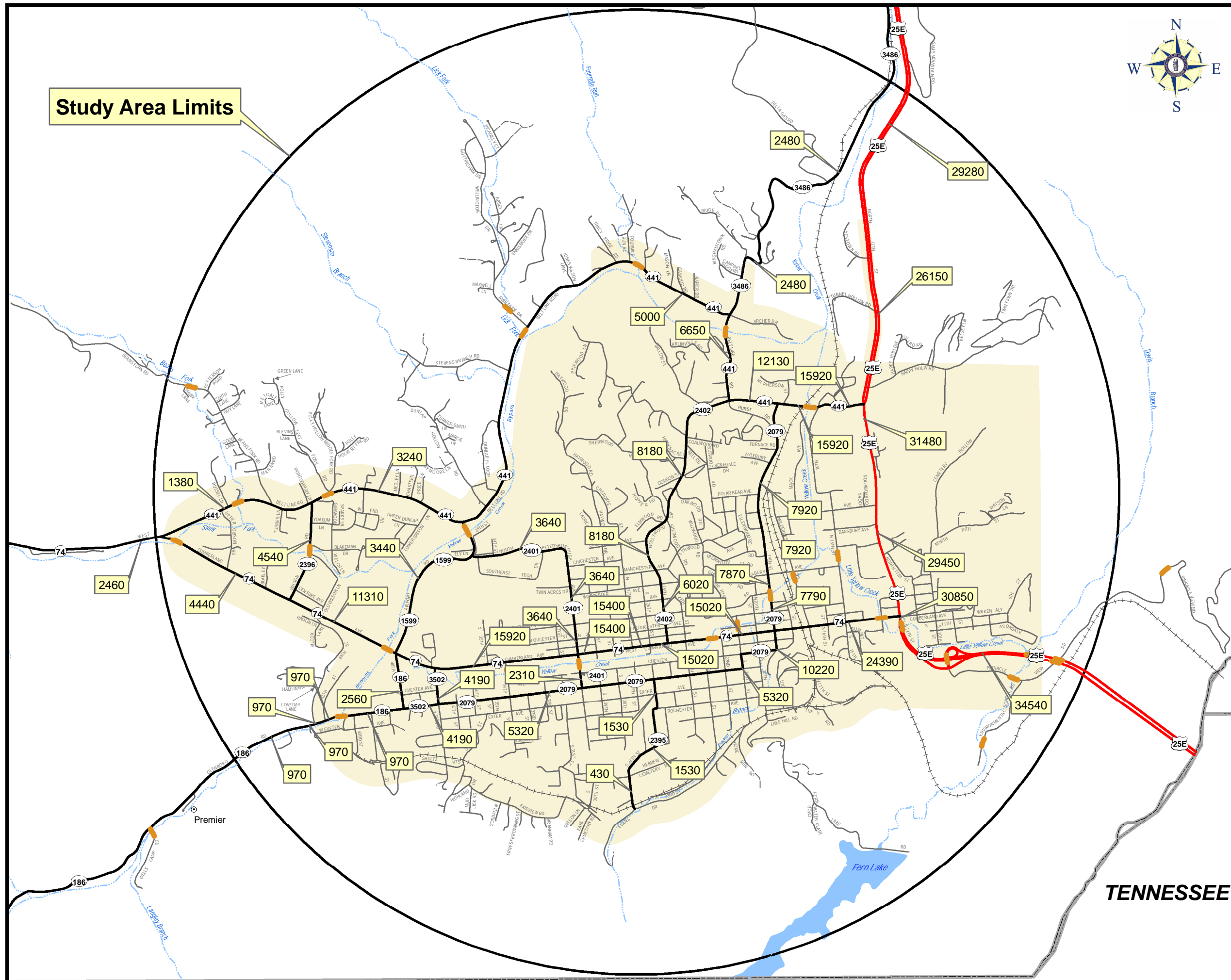


EXHIBIT 4

VOLUME / SERVICE
FLOW

MIDDLESBORO SMALL URBAN AREA STUDY: BELL COUNTY

Volume / Service Flow

Volume / Service Flow > .70

Road System

- US Highway
- State Highway
- Local Road
- Bridge
- Railroad
- Incorporated Area
- Lake
- Stream
- National Park



1,200 600 0 1,200 2,400 3,600 4,800 Feet



Division of Planning



Study Area Limits

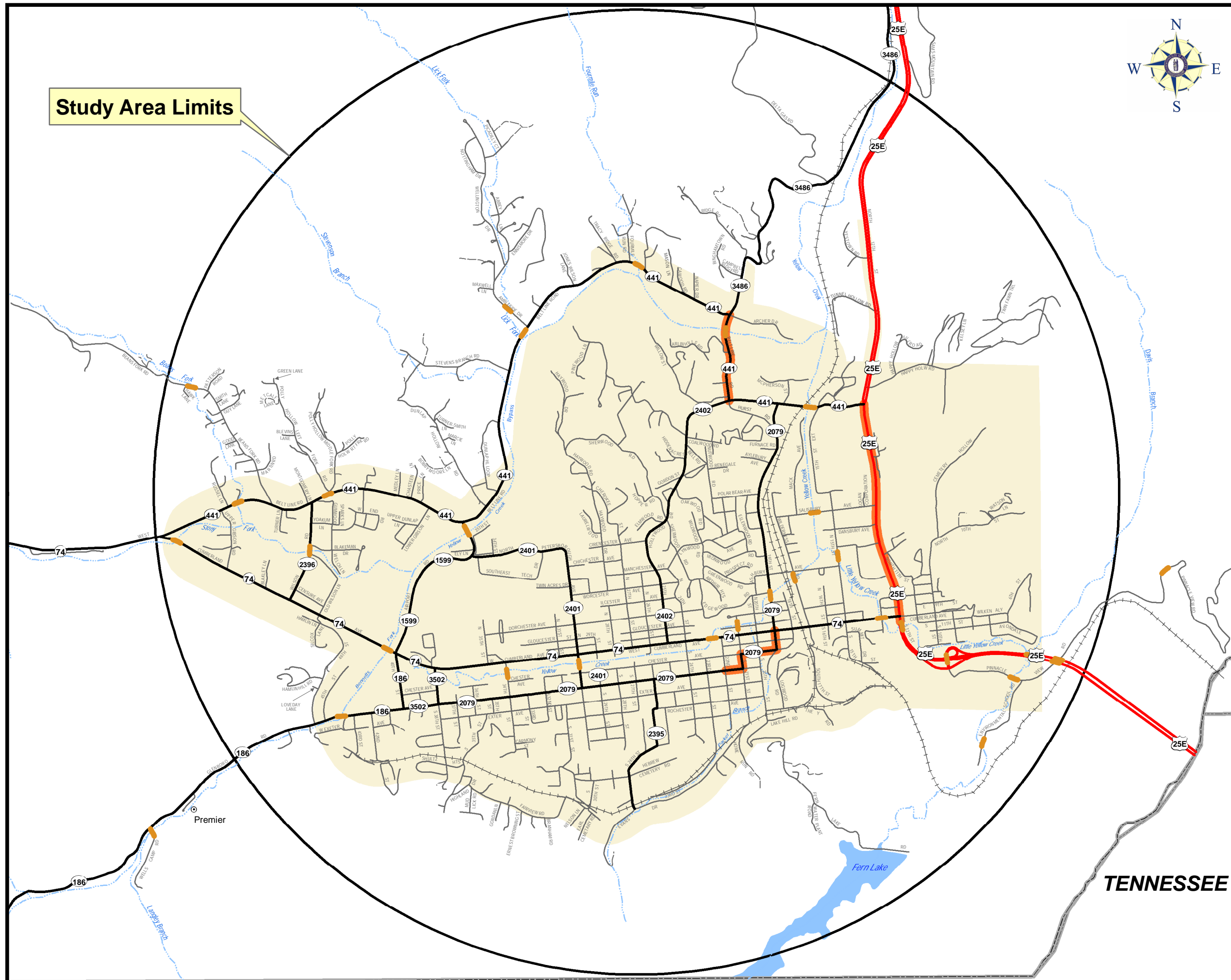


EXHIBIT 5

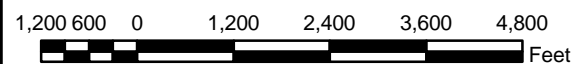
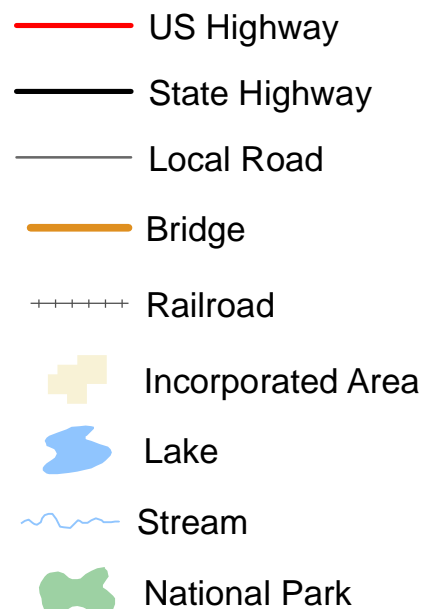
CURRENT (2008)
LEVEL OF SERVICE

MIDDLESBORO SMALL
URBAN AREA STUDY:
BELL COUNTY

Level of Service



Road System



Division of Planning



Study Area Limits

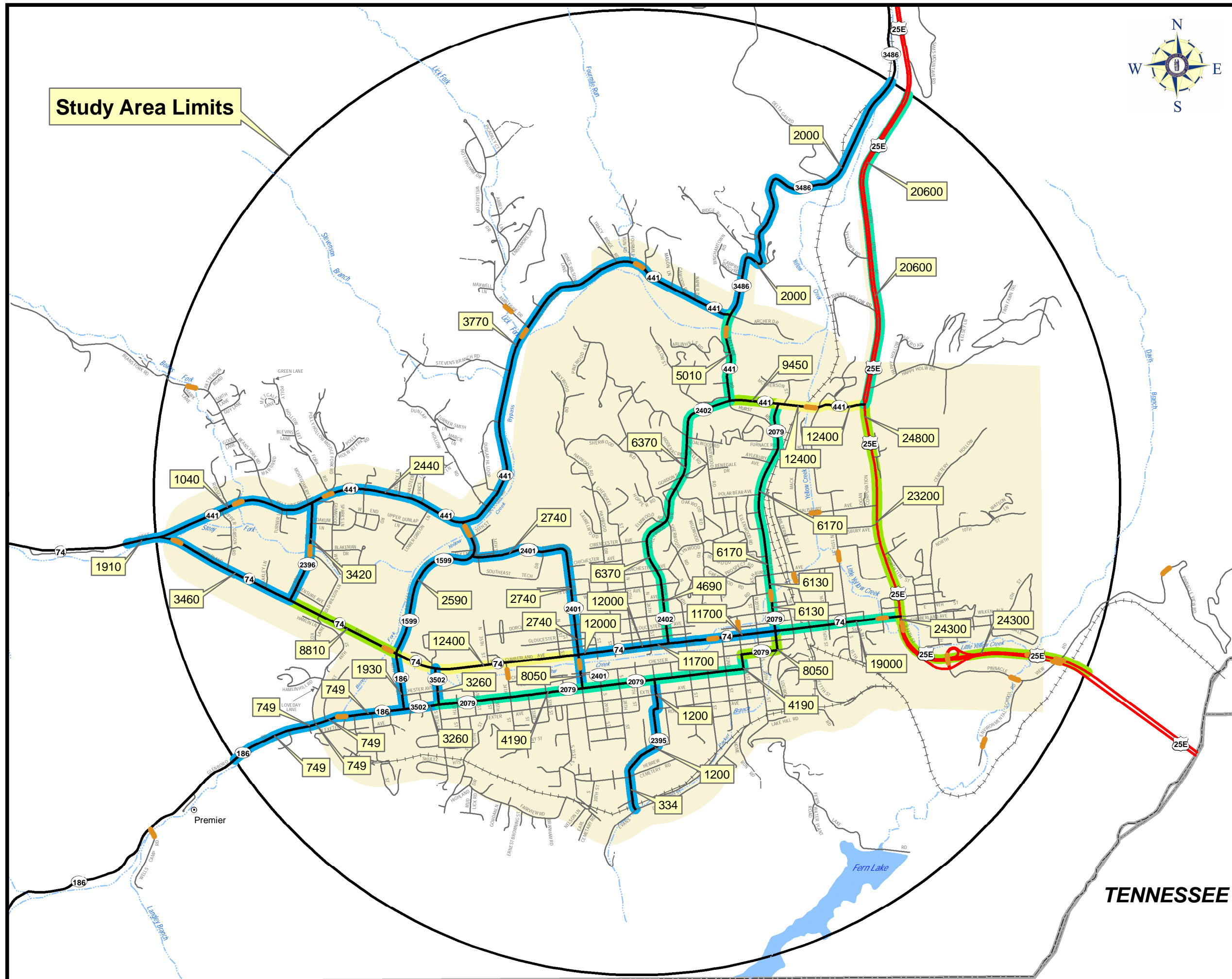


EXHIBIT 6










**FUTURE (2030)
LEVEL OF SERVICE
MIDDLESBORO SMALL
URBAN AREA STUDY:
BELL COUNTY**

Level of Service



A B C D E F

Road System

	US Highway
	State Highway
	Local Road
	Bridge
	Railroad
	Incorporated Area
	Lake
	Stream
	National Park



1,200 600 0 1,200 2,400 3,600 4,800 Feet



Division of Planning

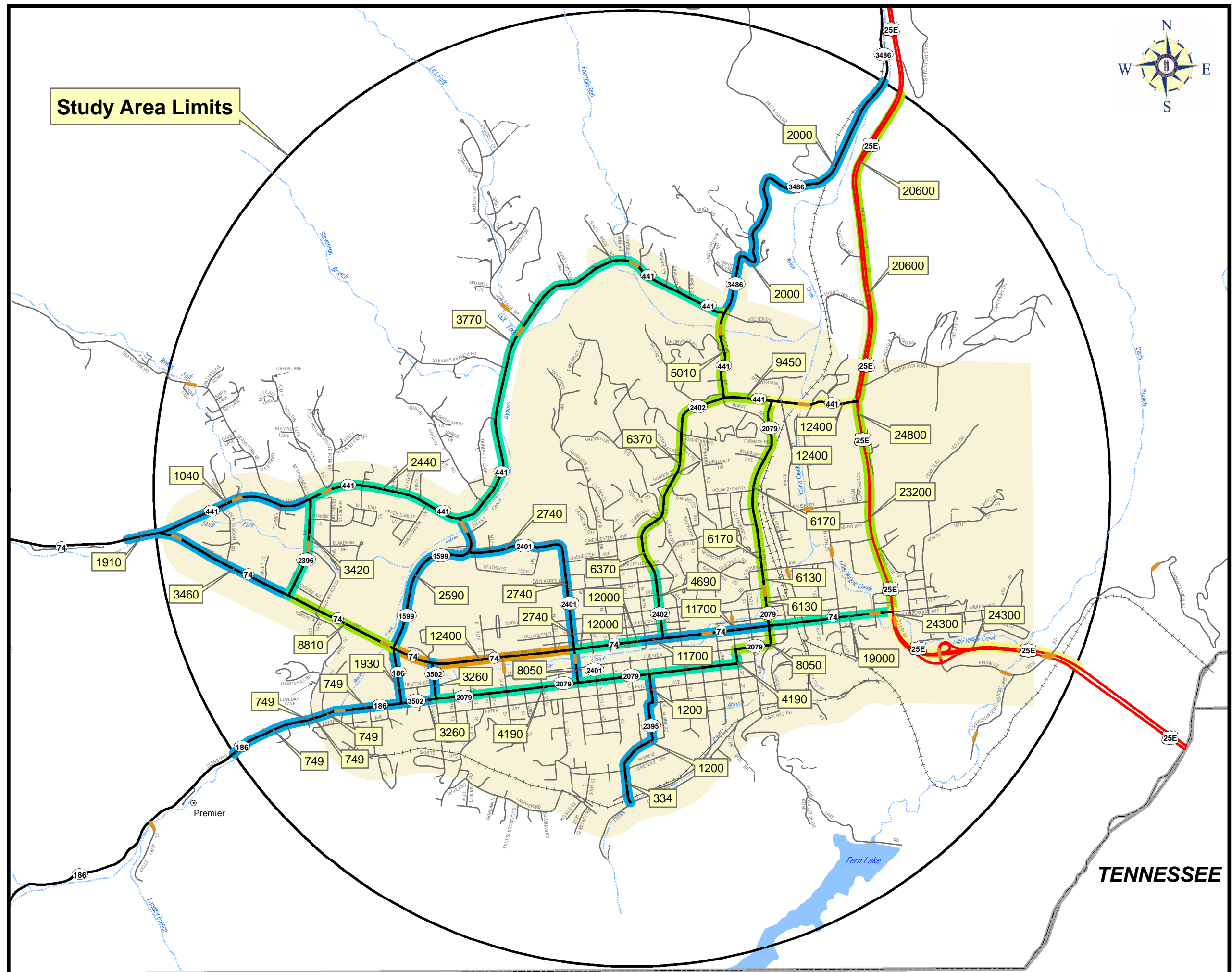


EXHIBIT 7

Adequacy Rating

MIDDLESBORO SMALL URBAN AREA STUDY: BELL COUNTY

Adequacy Rating of Certain Road Segments

Rating < 20 Percentile

Road System


— US Highway

— State Highway

—— Local Road

— Bridge

+++++ Railroad

 Incorporated Area Lake Stream National Park

1,200 600 0 1,200 2,400 3,600 4,800 Feet



Division of Planning

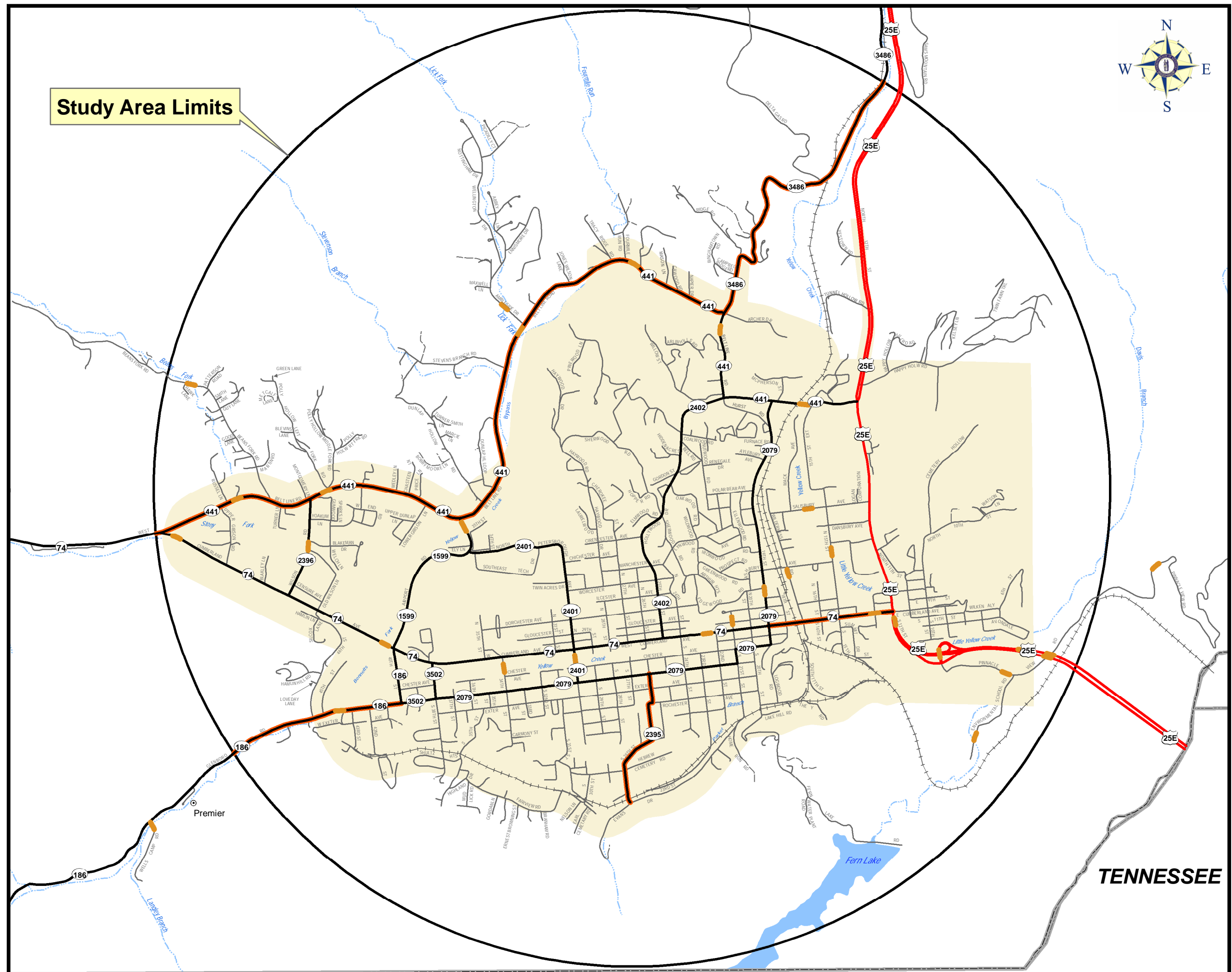




EXHIBIT 8






CRITICAL RATE FACTORS OF ANALYZED SEGMENTS

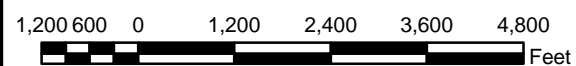
MIDDLESBORO SMALL URBAN AREA STUDY: BELL COUNTY

Critical Rate Factors

-  Critical Rate Factor -- .90 to .99
-  Critical Rate Factor -- ≥ 1.0

Road System

-  US Highway
-  State Highway
-  Local Road
-  Bridge
-  Railroad
-  Incorporated Area
-  Lake
-  Stream
-  National Park



Division of Planning



Study Area Limits

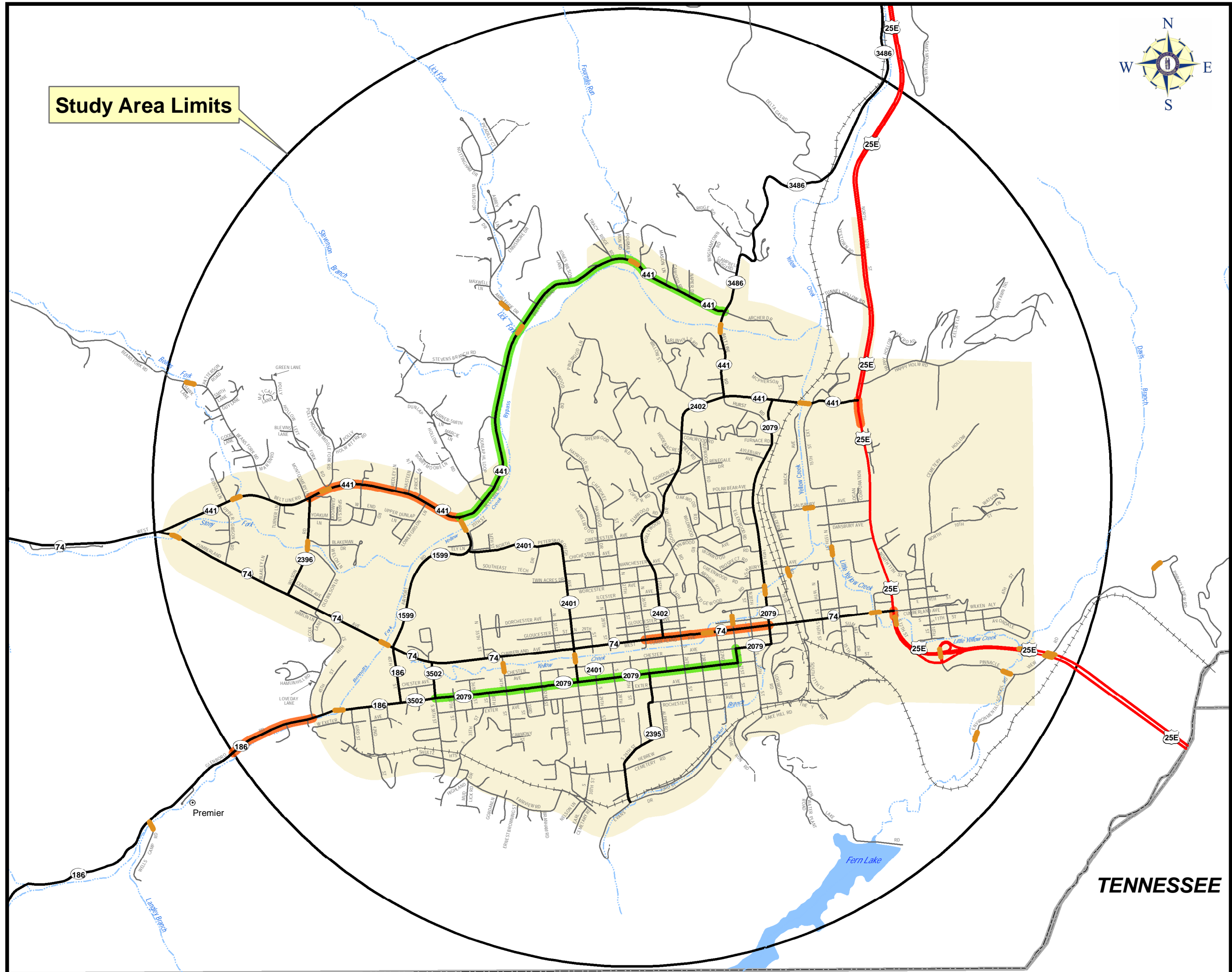


EXHIBIT 9A

MIDDLESBORO VICINITY MAP

MIDDLESBORO AREA TRANSPORTATION STUDY: BELL COUNTY

Crash Data of Certain
.10 Mile Spots
With CRF Greater than or
Equal to 1

Injury = 3
Fatal = 0
Total = 6

Road System

- US Highway
- State Highway
- Local Road
- Bridge
- Railroad
- MS4 Area
- Lake
- Stream
- National Park



1,200 600 0 1,200 2,400 3,600 4,800
Feet



Division of Planning



Study Area Limits

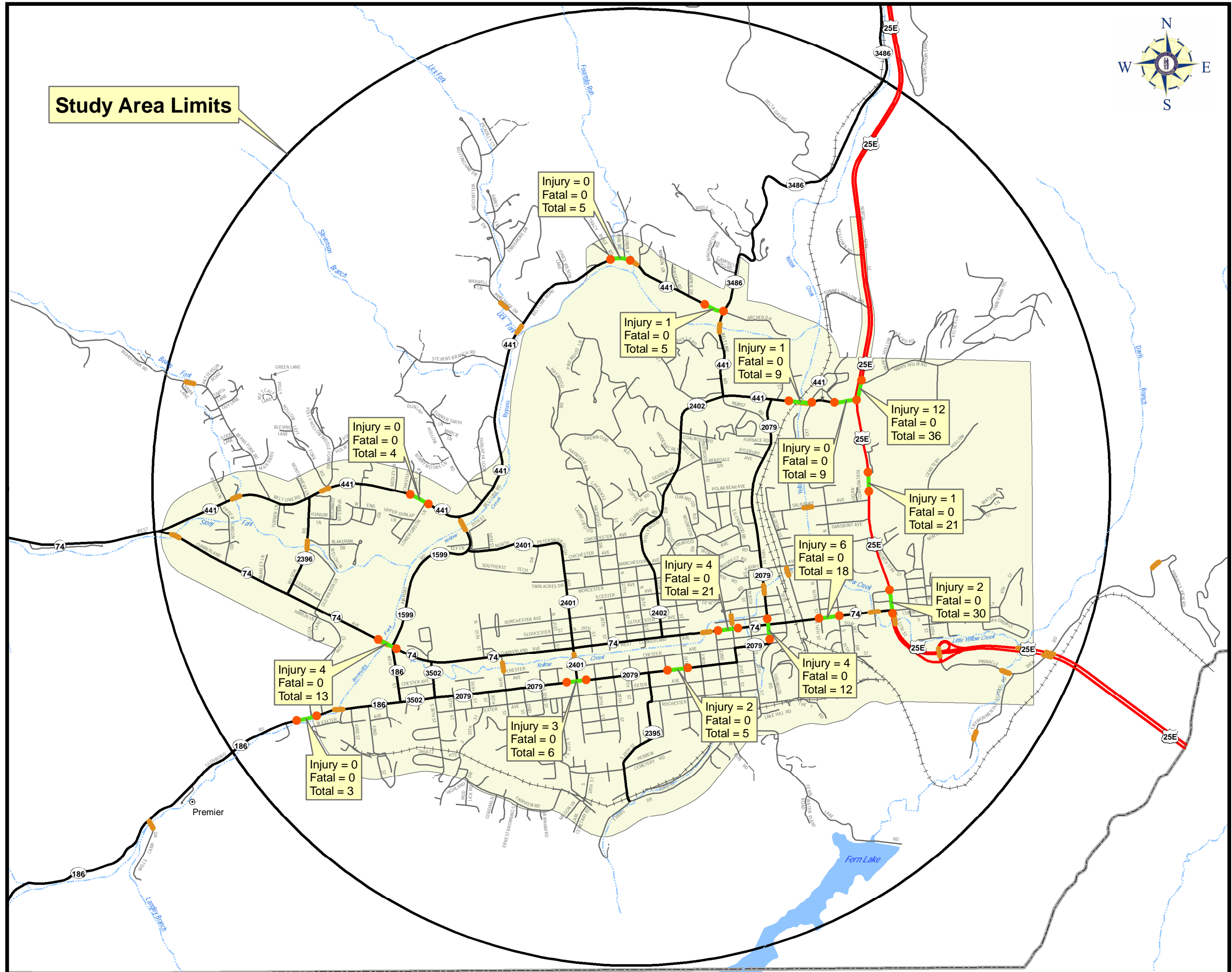





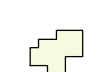





EXHIBIT 9B
MIDDLESBORO
VICINITY MAP
MIDDLESBORO AREA
TRANSPORTATION STUDY:
BELL COUNTY

Crash Data of Certain .30 Mile Road Spots With CRF Greater than or Equal to 1

Injury = 3
Fatal = 0
Total = 6

Road System

-  US Highway
-  State Highway
-  Local Road
-  Bridge
-  Railroad
-  MS4 Area
-  Lake
-  Stream
-  National Park



1,250 625 0 1,250 2,500 3,750 5,000 Feet



Division of Planning

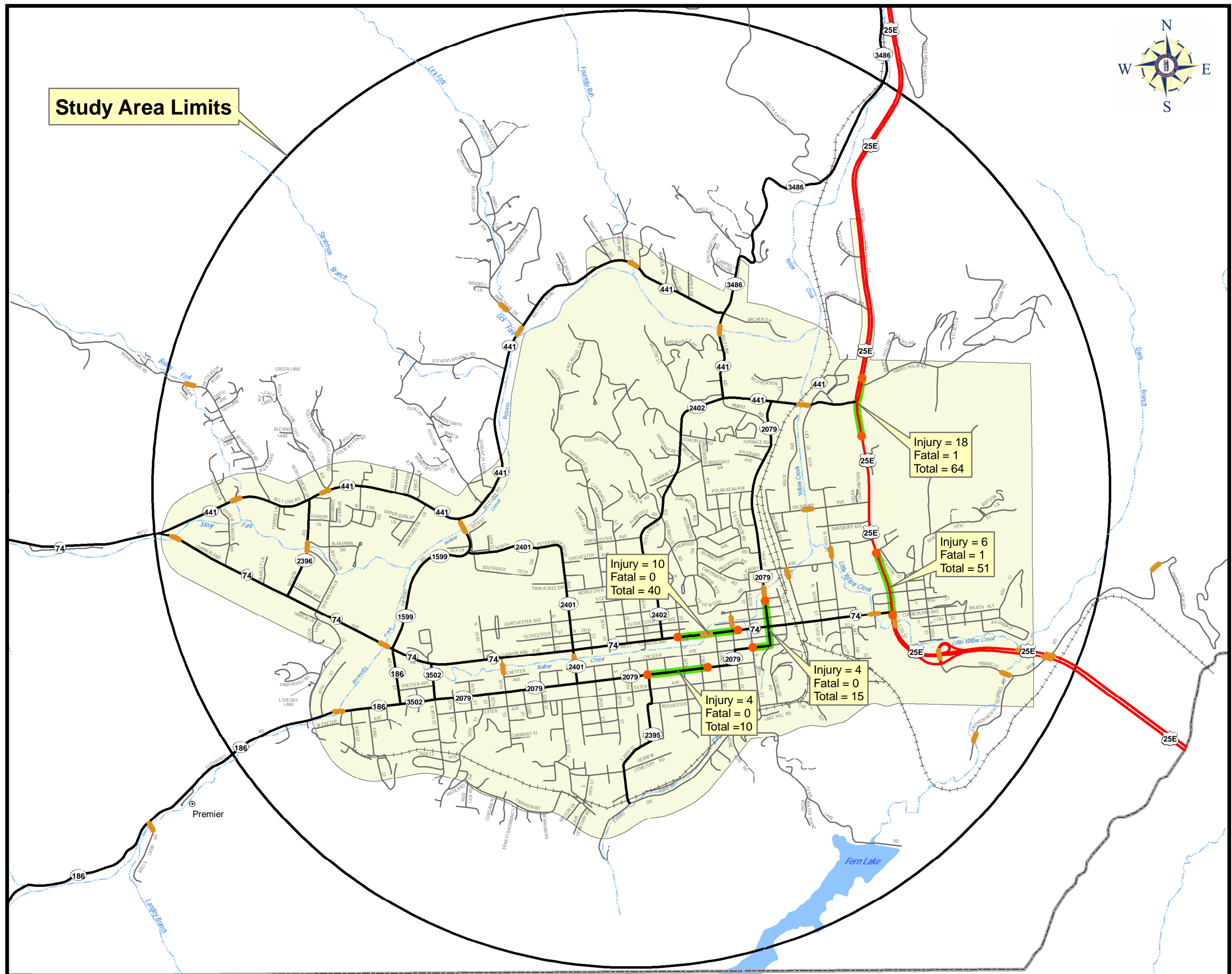


EXHIBIT 10

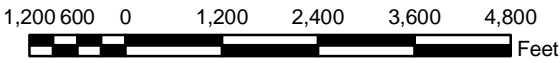
Environmental Footprint

MIDDLESBORO SMALL URBAN AREA STUDY: BELL COUNTY

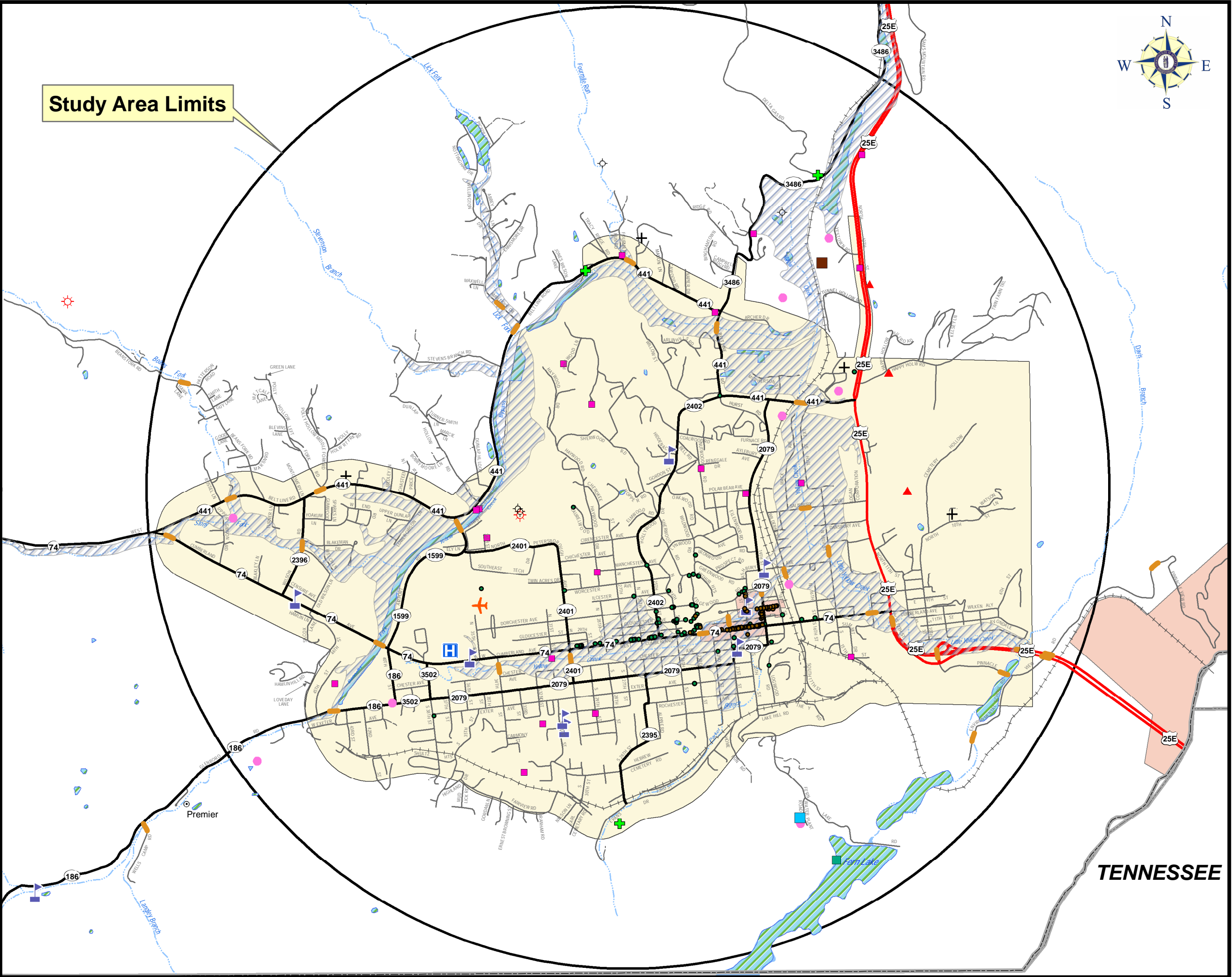
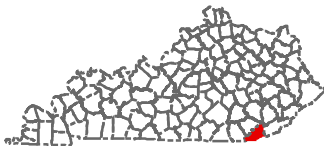
- Church
- Cemetery
- National Register Properties
- Historic Survey Properties
- Lift Stations
- Wastewater Treatment Plants
- Water Treatment Plants
- Pump Stations
- Oil Well
- Gas Well
- Dry and Abandoned Well
- Schools
- Airports
- Hospitals
- Landfills
- Pollution Compliance System
- MS4 Area
- National Register Districts
- 100 Year Flood Potential
- Wetlands
- Abandoned Railroad

Road System

- US Highway
- State Highway
- Local Road
- Bridge
- Railroad
- Incorporated Area
- Lake
- Stream
- National Park



Division of Planning



Appendix B

Tables

Table B1: Geometrics and Traffic Characteristics of Existing Highways																	
Begin MP	End MP	Length (miles)	No. of Lanes	Lane Width (feet)	Shoulder Width (feet)	% Passing Sight Distance ¹	Speed Limit (mph)	Roadway Type	Terrain Type	Pavement Type	ADT		Truck % ³	LOS		Volume/ Service Flow (VSF)	Adequacy Rating Percentile
											2008	2030 ²		2008	2030		
US 25 E																	
0.650	1.689	1.039	4	12	11	100	45	Divided	Rolling	High Flexible	24300	34540	14.5	C	D	0.57	34.0
1.689	1.719	0.030	4	12	2	100	45	Divided	Rolling	High Flexible	24300	30850	9.5	C	D	0.73	71.8
1.719	2.659	0.940	4	12	2	100	45	Undivided	Rolling	High Flexible	23200	29450	9.5	C	C	0.73	71.8
2.659	2.781	0.122	4	12	10	100	45	Divided	Rolling	High Flexible	24800	31480	9.5	C	C	0.73	71.8
2.781	3.690	0.909	4	12	10	100	45-55	Divided	Rolling	High Flexible	20600	26150	9.5	B	C	0.35	86.5
3.690	4.350	0.660	4	12	10	100	55	Divided	Rolling	High Flexible	20600	29280	14.5	B	C	0.44	70.2
KY 74																	
12.85	12.995	0.145	2	11	2	0	55	Undivided	Rolling	Mixed Bituminous	1910	2460	10.4	A	A	0.29	74.1
12.995	13.700	0.705	2	12	2	0	45	Undivided	Rolling	High Flexible	3460	4440	8.7	A	A	0.12	93.7
13.700	14.278	0.578	2	11	9	0	35-45	Undivided	Rolling	High Flexible	8810	11310	8.7	C	C	0.30	93.7
14.278	15.190	0.912	2	11	9	81	35-45	Undivided	Rolling	High Flexible	12400	15920	8.7	D	E	0.30	71.8
15.190	15.452	0.262	4	12	2	100	35	Undivided	Rolling	High Flexible	12000	15400	8.7	A	B	0.52	46.2
15.452	15.535	0.083	4	12	2	100	35	Divided	Rolling	High Flexible	12000	15400	8.7	A	B	0.52	46.2
15.535	15.712	0.177	4	12	2	100	35	Undivided	Rolling	High Flexible	11700	15020	8.7	A	A	0.52	46.2
15.712	16.148	0.436	4	11	2	100	25-35	Undivided	Rolling	High Flexible	11700	15020	8.7	A	A	0.29	46.2
16.148	16.753	0.605	4	11	2	100	25	Undivided	Rolling	High Flexible	19000	24390	8.7	B	C	0.25	12.1
KY 186																	
1.850	2.217	0.367	2	10	1	0	55	Undivided	Mountainous	Mixed Bituminous	749	970	10.4	A	A	0.09	11.7
2.217	2.278	0.061	2	10	1	0	45	Undivided	Rolling	Mixed Bituminous	749	970	10.4	A	A	0.09	11.7
2.278	2.286	0.008	2	10	1	0	45	Undivided	Rolling	Mixed Bituminous	749	970	9.5	A	A	0.03	11.1
2.286	2.427	0.141	2	10	1	0	45	Undivided	Rolling	High Flexible	749	970	9.5	A	A	0.03	11.1
2.427	2.717	0.290	2	12	6	0	35-45	Undivided	Rolling	High Flexible	749	970	9.5	A	A	0.09	13.8
2.717	2.977	0.260	2	12	6	N/A	35	Undivided	Rolling	High Flexible	1930	2560	6.7	A	A	0.37	50.1
KY 441																	
0.000	0.791	0.791	2	9	1	N/A	35	Undivided	Rolling	Mixed Bituminous	1040	1380	6.7	A	A	0.08	8.1
0.791	1.563	0.772	2	9	1	N/A	35	Undivided	Rolling	Mixed Bituminous	2440	3240	6.7	A	B	0.08	8.1
1.563	3.827	2.264	2	10	1	N/A	35-45	Undivided	Rolling	Mixed Bituminous	3770	5000	6.7	A	B	0.15	15.8
3.827	4.257	0.430	2	10	1	N/A	35	Undivided	Rolling	Mixed Bituminous	5010	6650	6.7	B	C	0.86	49.0
4.257	4.526	0.269	2	10	1	N/A	35	Undivided	Rolling	Mixed Bituminous	9450	12130	8.7	C	C	0.32	53.3
4.526	4.699	0.173	2	12	1	N/A	35	Undivided	Rolling	Mixed Bituminous	12400	15920	8.7	D	D	0.56	56.3
4.699	4.897	0.198	2	12	2	N/A	35	Undivided	Rolling	Mixed Bituminous	12400	15920	8.7	D	D	0.56	56.3
KY 1599																	
0.000	0.871	0.871	2	10	2	N/A	35	Undivided	Rolling	Mixed Bituminous	2590	3440	6.7	A	A	0.46	60.0
KY 2079																	
0.000	1.460	1.460	2	15	2	N/A	35	Undivided	Rolling	High Flexible	4190	5320	6.7	B	B	0.15	65.5
1.460	1.613	0.153	2	12	0	N/A	35	Undivided	Rolling	High Flexible	4190	5320	6.7	B	B	1.03	21.2
1.613	1.871	0.258	2	12	0	N/A	35-45	Undivided	Rolling	High Flexible	8050	10220	6.7	C	C	1.03	21.2
1.871	2.042	0.171	2	12	0	N/A	45	Undivided	Rolling	Bituminous Penetration	6130	7790	6.7	B	C	0.34	46.2
2.042	2.154	0.112	2	20	2	N/A	45	Undivided	Rolling	Bituminous Penetration	6130	7870	8.7	B	C	0.18	80.9
2.154	2.247	0.093	2	20	2	N/A	45	Undivided	Rolling	Bituminous Penetration	6170	7920	8.7	B	C	0.18	80.9
2.247	3.036	0.789	2	11	2	N/A	45	Undivided	Rolling	Bituminous Penetration	6170	7920	8.7	B	C	0.67	83.8

Table B2: Crash Analysis - Segments

Route	Begin Milepoint	End Milepoint	AADT	Functional Class Rate	Crashes	Segment Length (miles)	HMVM	Critical Accident Rate	Total Accident Rate	Critical Rate Factor
US 25	0.000	0.613	24300	268	3	0.613	0.16	375.5	18.4	0.049
	0.613	1.689	24300	268	10	1.076	0.29	348.7	34.9	0.100
	1.689	1.719	24300	268	12	0.030	0.01	802.6	1503.3	1.873
	1.719	2.659	23200	432	100	0.940	0.24	543.7	418.8	0.770
	2.659	2.781	24800	268	43	0.122	0.03	514.8	1297.9	2.521
	2.781	3.690	20600	268	33	0.909	0.21	363.6	160.9	0.443
	3.690	4.350	20600	111	18	0.660	0.15	184.7	120.9	0.655
KY 74	12.850	12.995	1910	261	1	0.145	0.00	1181.6	329.7	0.279
	12.995	13.700	3640	261	2	0.705	0.03	527.1	71.2	0.135
	13.700	14.278	8810	261	14	0.578	0.06	446.2	251.1	0.345
	14.278	15.190	12400	261	26	0.912	0.12	383.3	210.0	0.326
	15.190	15.452	12000	432	7	0.262	0.03	735.1	203.3	0.277
	15.452	15.535	12000	268	2	0.083	0.01	717.7	183.4	0.256
	15.535	16.148	11700	432	73	0.613	0.08	629.4	929.5	1.477
	16.148	16.753	19000	432	57	0.605	0.13	586.9	452.8	0.772
KY 186	2.278	2.717	749	261	1	0.439	0.00	1093.4	277.7	0.254
	2.717	2.977	1930	261	1	0.260	0.01	913.4	182.0	0.199
KY 441	0.000	0.791	1040	261	5	0.791	0.01	755.0	555.1	0.735
	0.791	1.563	2440	261	12	0.772	0.02	575.0	581.8	1.012
	1.563	3.827	3770	261	35	2.264	0.09	402.5	374.5	0.930
	3.827	4.257	5010	261	3	0.430	0.02	553.2	127.2	0.230
	4.257	4.526	9450	261	6	0.269	0.03	528.4	215.6	0.408
	4.562	4.897	12400	261	19	0.335	0.05	467.1	417.7	0.894
KY 1599	0.000	0.871	2590	261	5	0.871	0.02	546.0	202.4	0.371
KY 2079	0.000	1.613	4190	261	28	1.613	0.07	420.7	378.4	0.899
	1.613	1.871	8050	261	9	0.258	0.02	558.9	395.7	0.708
	1.871	2.154	6130	261	7	0.283	0.02	589.3	368.5	0.625
	2.154	3.036	6170	261	5	0.882	0.06	439.9	83.9	0.191
KY 2395	0.000	0.170	334	261	0	0.170	0.00	2734.2	0.0	0.000
	0.170	0.766	1200	261	4	0.596	0.01	795.1	510.8	0.642
KY 2396	0.000	0.492	3420	261	5	0.492	0.02	594.7	271.4	0.456
KY 2401	0.000	0.170	2310	261	3	0.170	0.00	1011.9	697.7	0.689
	0.170	1.136	2740	261	13	0.966	0.03	522.7	448.5	0.858
KY 2402	0.000	0.353	4690	261	9	0.353	0.02	597.7	496.5	0.831
	0.353	1.392	6370	261	19	1.039	0.07	422.5	262.2	0.621
KY 3486	0.000	3.728	2000	261	18	3.728	0.08	412.8	220.5	0.534
KY 3502	0.000	0.349	3260	261	1	0.349	0.01	674.0	80.3	0.119

Table B3: Crash Rate Factors and Types of Crashes for 0.10 Mile and 0.30 Mile Spots

Crash Analysis - 0.10 Mile Spot, Detailed																
Route	Begin Milepoint	End Milepoint	Crashes				CRF>1	Types of Crashes						Roadway Conditions		
			PDO	Fatal	Injury	Total		Rear Ends	Side Swipes	Veh. Entering/ Leaving Entrance	Angle	Opposing Left Turn	Other	% in Daylight	% in Dry	
US 25 E	1.700	1.800	28	0	2	30	1.58	13	3	8	2	0	4	73	87	
	2.300	2.400	20	0	1	21	1.05	9	6	4	0	0	2	52	81	
	2.780	2.880	24	0	12	36	2.78	9	5	4	9	3	6	61	76	
KY 74	14.200	14.300	9	0	4	13	1.82	2	1	1	6	1	2	69	76	
	15.900	16.000	17	0	4	21	1.74	2	1	4	3	2	9	81	90	
	16.400	16.500	12	0	6	18	1.05	3	4	4	6	0	1	72	94	
KY 186	2.200	2.300	2	0	0	2	1.05	1	0	0	1	0	0	100	*	
KY 441	1.300	1.400	4	0	0	4	1.20	1	1	0	1	0	1	75	50	
	3.200	3.300	5	0	0	5	1.18	3	0	0	1	0	1	60	80	
	3.727	3.827	4	0	1	5	1.18	1	1	0	0	0	3	100	60	
	4.600	4.700	8	0	1	9	1.01	5	2	0	1	1	0	78	89	
	4.800	4.900	9	0	0	9	1.01	1	3	2	1	0	2	100	89	
KY 2079	0.700	0.800	3	0	3	6	1.33	0	0	4	2	0	0	83	83	
	1.200	1.300	3	0	2	5	1.11	1	0	1	2	0	1	100	80	
	1.800	1.900	8	0	4	12	1.80	4	1	3	1	1	2	100	100	
*Both listed as sand-mud-dirt-oil-gravel at intersection with Apollo fuels																
Crash Analysis - 0.30 Mile Spot, Detailed																
Route	Begin Milepoint	End Milepoint	Crashes				CRF>1	Types of Crashes						Roadway Conditions		
			PDO	Fatal	Injury	Total		Rear Ends	Side Swipes	Veh. Entering/ Leaving Entrance	Angle	Opposing Left Turn	Other	% in Daylight	% in Dry	
US 25 E	1.7	2	44	1	6	51	1.07	15	6	14	4	1	11	69	82	
	2.6	2.9	45	1	18	64	1.80	15	8	10	10	2	19	68	80	
KY 74	15.7	16	30	0	10	40	1.45	5	2	6	10	2	15	88	88	
KY 2079	1.1	1.4	6	0	4	10	1.12	4	0	1	3	0	2	90	60	
	1.7	2	11	0	4	15	1.15	4	2	0	1	1	7	100	93	

Appendix C
Project Team
Meeting Minutes

MEETING MINUTES

Project: Middlesboro Small Urban Area Study

Purpose: Project Team Meeting #1

Place: Kentucky Transportation Cabinet (KYTC), District 11 Conference Room, Manchester, Ky.

Meeting Date: April 9, 2009, 10:00 am EST

In Attendance:

Dean Croft	KYTC-D11 Environmental Coordinator
Don Breeding	KYTC-D11 Project Delivery & Preservation
Christopher Harris	KYTC-D11 Planning
David Fields	KYTC-D11 Design
Joel Holcomb	KYTC-D11 Engineering Support
Mike Calebs	KYTC-D11 Project Delivery & Preservation
Lesli Gill	Cumberland Valley ADD
David Martin	KYTC-CO Planning
Thomas Witt	KYTC-CO Planning
Jill Asher	KYTC-CO Planning

INTRODUCTIONS: David Martin opened the first Project Team Meeting by asking meeting attendees to introduce themselves. A meeting agenda and other handouts were given to all meeting attendees.

STATUS OF STUDY: David stated that Small Urban Area (SUA) transportation studies are conducted on cities with a population between 5,000 and 50,000, and this one is being done in-house by KYTC Central Office, Division of Planning. The purpose of this study is to identify and examine transportation issues in Middlesboro with a focus on short-term, low-cost improvements than can be quickly implemented, not necessarily those to be included in the Six-Year Plan. In addition to the short-term projects, the study will also address long-term and local transportation concerns. There will be no public meetings or contact with resource agencies for this study. Public involvement will consist of meetings with an Advisory Committee which will include local officials and other stake holders in the project area.

Jill Asher described the project area as including those areas in the incorporated limits of the City of Middlesboro. Part of KY 441 which weaves in and out of the incorporated limits and US 25 E to the Cumberland Gap Tunnels were also included. Don Breeding asked that local roads branching off to the north of KY 441, which are residential areas, also be included in the study.

OTHER PROJECTS: Jill went over Six-Year Plan projects in the study area. The KY 441 Study to build a section of roadway from existing KY 441 to US 25 E is the only project listed in the Unscheduled Projects List (UPL) in the project area. The meeting attendees agreed that this is a worth-while project. David Martin stated that KYTC

District 11 and the Cumberland Valley Area Development District could rate this project high in their prioritization to help the project move into future phases.

EXISTING CONDITIONS: Tables and maps of the study area displaying roadway conditions, current and future Average Daily Traffic (ADT) count, and crash data were provided to the project team members. Jill reviewed the information on the state routes in the study area and potential problem areas identified by the data. The project team members were asked to identify any areas of concern they might have. The following concerns were discussed:

- Coal traffic currently goes through town and a residential area on KY 2079, requiring trucks to make two ninety-degree turns. If the KY 441 extension were built and improvements made to the existing KY 441, coal traffic could be moved out of town onto KY 441, but there would be opposition from the residential areas north of the roadway.
- The local merchants in the downtown area of Middlesboro have asked the Kentucky Transportation Center (KTC) to look at making the 4-lane section of KY 74 a 2-lane roadway with reverse angle parking.
- Turning lanes may be needed on KY 74, but merchants are reluctant to lose street parking. There is currently parallel parking in this area.
- Several schools on KY 74 generate traffic on the 2-lane section of KY 74. An alternate route or widening the existing section to 4 lanes could be studied. Turning lanes for these schools are scheduled to be built soon.
- 15th Street Extension is a backage road used by local traffic to access businesses on US 25 E. FD39 money has been used in the past to rebuild this road. Continuing to provide funding for roadway improvements to 15th Street Extension and providing better access to it via 15th Street may alleviate congestion on US 25 E.
- Widening US 25 E to 6 lanes was discussed since sections of the roadway had a projected LOS of E and F in 2030. However, the LOS was calculated by Highway Capacity Software (HCS) Plus, and it is not a good representation of LOS measurement on urban roadways with stop conditions. Many members of the project team did not believe that widening the roadway would help.
- The traffic light at the entrance to the Middlesboro Mall on US 25 E may no longer be needed. A traffic study could be done at this location to determine its need. Removal may provide more continuous flow on US 25 E.

ENVIRONMENTAL FOOTPRINT AND ENVIRONMENTAL JUSTICE: A map identifying environmentally sensitive locations in the study area will be prepared and sent to Dean Croft, the Environmental Coordinator for District 11, for review. Dean stated that Middlesboro is an MS4 area.

An Environmental Justice (EJ) report will be done by the CVADD. Jill will send Lesli Gill an example of a recent EJ study done for a SUA Study.

NEXT STEP: ADVISORY COMMITTEE MEETING: The Advisory Council Meeting should be scheduled around the first week of June. Jill will send Chris Harris a list of possible attendees. He and others from the district will add other possible attendees and determine a location in Middlesboro for the meeting. Jill will send out letter invitations for the meeting.

END OF MINUTES

MEETING MINUTES

Project: Middlesboro Small Urban Area Study

Purpose: Project Team Meeting #2

Place: Kentucky Transportation Cabinet (KYTC), District 11 Conference Room, Manchester, Ky.

Meeting Date: October 8, 2009, 10:30 am EST

In Attendance:

Adam Knuckles	KYTC-D11 Planning
Don Breeding	KYTC-D11 Project Delivery & Preservation
Lesli Gill	Cumberland Valley ADD
Thomas Witt	KYTC-CO Planning
Jill Asher	KYTC-CO Planning
Tonya Higdon	KYTC-CO Planning
Allen Rust	KYTC-CO Planning

INTRODUCTIONS: Jill opened the second Project Team Meeting by asking meeting attendees to introduce themselves. A meeting agenda and other handouts of project recommendations were given to all meeting attendees. A sign-in sheet was also passed around.

STATUS OF STUDY: An Advisory Committee Meeting was held on June 8, 2009. Several suggestions were made for roadway improvements within the study area. Recommendations were analyzed to present at this meeting.

PROJECT RECOMMENDATIONS: The project team discussed each recommended project in detail. Recommended projects will be presented in three categories based on project origination and party responsibility. The categories will be KYTC Long-Term, KYTC D11 Short-Term, and Local Projects. The projects classified as Long-Term are of the scale that they would likely have to be included in the Six-Year Plan (SYP). Comments and classifications for each project are listed below:

KYTC Long-Term

- 1) ***KY 441 Widening and Curve Improvements*** – KY 441, originally built by the Corp of Engineers, is near a floodway on the levee side. Drainage is an issue. There is much growth in the Ambleside community just north of KY 441. There is a planning study in its final stages that recommends extending KY 441 near the area of Archer Drive to US 25E. The new route and improvements to the existing KY 441 would provide an alternate route for coal truck traffic that currently travels through the town. Adam will determine what template needs to be used for the roadway widening. This project will be categorized as a “KYTC Long-Term” project.

- 2) ***KY 441 Widening for Two-Way Left-Turn Lane (TWLTL)***– The project team agreed that a TWLTL is not needed on KY 441 between KY 2079 and KY 2402 since there are few access points, and this section of roadway does not have a significant history of crashes. It will not be considered as a project recommendation for this study.

KYTC Short-Term

- 3) ***KY 74 Traffic Study for a Road Diet*** – The district will determine if a three-lane roadway has the capacity to accommodate the current and future ADTs in the downtown business area of Middlesboro. This project will be categorized as a “KYTC Short-Term” project.
- 4) ***KY 74 Turning Lanes*** – The project team discussed the need for turning lanes on KY 74 at the intersections of 19th, 20th, 21st, and/or 22nd Streets. It was suggested that a left- and right-turn lane be added at 19th Street. The addition of turn lanes would require the removal of some parking on the west side of the intersection, but shouldn’t have a major impact on the east side. This project will be combined with #16 in this list and will be categorized as a “KYTC Short-Term” project.
- 5) ***KY 74 at KY 2402 Signal Warrant Analysis*** – The project team determined that other improvement, such as drainage improvements, would benefit this intersection, but a signal would not. The signalized intersections on KY 74 from 24th to 15th Street are controlled by a coordinated signal system. Adding more signalized intersections may have an adverse impact on mainline capacity. The project team’s recommended improvements to the intersection include addressing drainage problems and increasing the radius for turning vehicles. This project will be categorized as a “KYTC Short-Term” project.
- 6) ***KY 74 at 19th, 20th, and 21st Streets Signal Warrant Analysis*** – The project team discussed the need for a protected-permissive phase at these KY 74 intersections. It was determined that a protective-permissive phase would not effectively without a dedicated turn lane. A protected-permissive phase can be considered as part of the recommendation listed in #4 and #16 at the 19th Street intersection.
- 7) ***KY 74 at 22nd Street Signal Warrant Analysis*** – The project team discussed the need for a signal at this intersection, but concluded that it would not meet signal warrants. This will not be included as a recommendation in the study.
- 8) ***KY 74 between 18th and 24th Streets, Traffic Calming*** – The project team suggested the use of sidewalk bulb-outs at intersections. The intersection is extremely wide. The use of bulb-outs may slow traffic down. Reduced crossing time may also improve the safety of the pedestrian. Since the signal system on KY 74 is dominated by pedestrian crossing times, shorter crossing times may improve the flow of traffic. Bulb-outs at the intersection of KY 74 and 20th Street and at KY 74 and 19th Street (as part of the 19th Street project listed in #4, #6, and #16) will be categorized as a “KYTC Short-Term” project.
- 9) ***KY 74 between 18th and 24th Streets, Stripe Parking*** – KYTC’s policy is to restripe the parking when the roadway is resurfaced. The project team agreed to exclude this recommendation from the study.

- 10) ***KY 74 (Downtown Business Area), Pavement Marking and Signing for Pedestrian Crossings*** - KYTC replaces the thermoplastic marking on a 5-year cycle. A visual inspection of the marking indicated that they were sufficient. The project team agreed to exclude this recommendation from the study.
- 11) ***15th Street Extension Maintenance*** – In the past FD39 funds were used to oversee improvements and maintenance to this roadway. This, however, was a single occurrence. The project team agreed that continuing to use this money for improvements should not be included in the study's recommendations.
- 12) ***KY 2079 at KY 2401 Maintenance*** – Don Breeding said he would have the maintenance crew trim the trees in the area if it is needed for sight distance. This project will be categorized as a "KYTC Short-Term" project.
- 13) ***US 25 E at the Mall Entrance, Signal Warrant Analysis*** – At the first Project Team meeting someone suggested that the signal may not be needed at this location. The project team decided not to include this as a study recommendation since it is still used by mall traffic and traffic from businesses across the road.
- 14) ***KY 441 at KY 2402, Intersection Improvements*** – This intersection is currently a 4-way stop that becomes congested during peak traffic periods. Adam said he would get turning movement traffic counts at this intersection to determine if a left-turn lane is needed for vehicles traveling east on KY 2402 who turn left onto KY 441. The traffic count may also indicate if there is a need for a right-turn lane for vehicles traveling west on KY 441 who want to continue on KY 441 traveling north. It was noted that this intersection also has drainage problems that may need to be addressed. This project will be categorized as a "KYTC Short-Term" project.
- 15) ***US 25E @ KY 74*** – The advisory council suggested the need to extend the right-turn lane on southbound US 25. The project team discussed this issue, but it would adversely affect access to several business and utilities. Right of way and utility costs would be very significant and there are alternate routes available, although not as direct, for traveling from southbound US 25E to westbound KY 74. This project will not be included in the study recommendations.
- 16) ***KY 2079 (19th St.) @ KY 74, Traffic Loops*** – This intersection is heavily used by coal trucks which continuously tear up traffic detections loops. The project team recommended concreting (white-topping) the intersection. Adding left turn-lanes on both KY 74 approaches was also recommended as part of the project to improve this intersection. See No. 4 above. This project will be categorized as a "KYTC Short-Term" project.
- 17) ***KY 2079 @ 22nd Street*** – Street parking close to the intersection made it difficult for the coal trucks to make the turn. The project team did not believe that "No Parking" signs near the intersection would help. It was discussed that crashes may be occurring here because the driver perceives this to be a 4-way stop and does not yield to through traffic. A sign warning drivers making a turn onto Chester Avenue that cross traffic does not stop may be beneficial. This project will be categorized as a "KYTC Short-Term" project.
- 18) ***KY 74 / KY 186 / KY159 Intersection*** – There is a crash history at this intersection with many of them being angles. The project team believes that this might be due to sight distance being blocked by the bridge and/or the guardrail

end treatments just west of the intersection. KY 186 which carries mostly truck traffic comes into the intersection at a skew. Adam said he would look at the intersection and see if there any improvements that could be made, such as moving back the guardrail, that would increase the sight distance.

Local

- 19) ***15th Street and 15th Street Extensions*** – 15th Street and 15th Street Extension are city streets. A local project was suggested to widen these streets to reduce congestion on these 15th Street as well as US 25. The district will prepare a cost estimate for the widening of 15th Street and 15th Street Extension to a 3-lane roadway. This project will be categorized as a “Local” project.
- 20) ***Pedestrian Bridge*** – An attendee at the Advisory Committee meeting asked about the need for a bridge from the city parking lot to the back of several businesses that front on KY 74 near 20th Street. There was a bridge in this location several years ago that provided access to a school. Currently, there is a bridge with sidewalks on 20th Street that crosses the creek near the parking lot. A cost estimate may be provided. This project will be categorized as a “Local” project.

ENVIRONMENTAL JUSTICE:

Lesli Gill, Cumberland Valley ADD, completed an Environmental Justice (EJ) report for the Middlesboro study area. She presented her findings. Although there were some concentrations of minority populations and populations of people over 65, they should not be adversely affected by this study’s project recommendations.

NEXT STEPS:

Jill will make a final list of project recommendations and will work with Adam and others from the district to determine cost estimates. Smaller projects may not need phased (D,R,U,C) cost estimates, and projects costing less than \$10,000 can be listed as such. The second Advisory Committee meeting will be held later this year or early next year.

END OF MINUTES

Appendix D

Advisory Committee

Meeting Minutes

MEETING MINUTES

Project: Middlesboro Small Urban Area Transportation Study

Purpose: Project Advisory Committee Meeting #1

Place: Middlesboro City Hall, Middlesboro, Ky.

Meeting Date: June 8, 2009, 10:00 a.m. EST

In Attendance:

Ruby Smith	Downtown Business Owner
Donna Smith	Downtown Business Owner
Paul Wilson	Bell County EMA
Judy F. Barton	Bell County Tourism
Joshua Wilkey	Downtown Middlesboro
Kassie Hauser	Downtown Middlesboro
Leeman Moyers	Middlesboro Street Department
Evelyn Farmer	Middlesboro City Council
Jeffrey Sharpe	Middlesboro Police Department
Randy Melton	Middlesboro Code Enforcement
Joseph E. Mosley	KYTC-D11 Project Development TEBM
Don Breeding	KYTC-D11 Project Delivery & Preservation
Christopher Harris	KYTC-D11 Planning
Joel Holcomb	KYTC-D11 Engineering Support
Lesli Gill	Cumberland Valley ADD
David Martin	KYTC-CO Planning
Thomas Witt	KYTC-CO Planning
Jill Asher	KYTC-CO Planning
Joseph Carter	KYTC-CO Planning

INTRODUCTIONS: Jill Asher opened the first Advisory Committee Meeting by asking meeting attendees to introduce themselves. A meeting agenda and other handouts were given to all meeting attendees.

STATUS OF STUDY: David Martin provided an overview of the Small Urban Area Transportation Study for the City of Middlesboro. Small Urban Area (SUA) transportation studies are conducted for cities with a population between 5,000 and 50,000, and this one is being done in-house by KYTC Central Office, Division of Planning. The study's focus is on short-term, low-cost improvements to local transportation issues on state roads within the study area. These improvements could include better signing, pavement markings, clearing brush for sight distance, drainage problems, traffic signal timing, and other possible quick-fix solutions to improve the existing transportation network. Long-term and local improvements could also be included and prioritized in the study.

Jill described the project area as including those areas in the incorporated limits of the City of Middlesboro and the area encircled on Exhibit 1 contained within the handouts.

OTHER PROJECTS: The Six-Year Plan projects in the study area were discussed. The KY 441 Study to construct a section of roadway from existing KY 441 to US 25 E is the only project in the study area included in the Six-Year Plan. A draft planning study has been completed, and there is currently approximately \$600,000 allocated to the design phase of this project. It is also the only project listed in the Unscheduled Projects List (UPL) in the study area.

Attendees of the meeting agreed that this project would be a great improvement to the transportation system in Middlesboro.

EXISTING CONDITIONS: Tables and maps of the study area displaying roadway conditions, current and future Average Daily Traffic (ADT) volumes, and crash data were provided to the advisory committee members. The information was reviewed on the state routes in the study area, and potential problem areas were identified by the data. The advisory committee members were asked to indicate problem areas and possible improvement alternatives to the transportation system on the maps provided at the meeting. The following is a list of improvements suggested by the committee:

- Widen KY 441 from KY 1599 to KY 3486 for a truck route around town. This should be done in addition to the project listed in the Six-Year Plan to connect KY 441 to US 25 E to remove truck traffic from downtown.
- Widen KY 441 from KY 2402 to US 25 E for turning lanes.
- There were several suggestions to alleviate the congestion at the intersection of KY 441 and KY 2402. They included a roundabout, a right turn lane or an exclusive right-turn lane for vehicles continuing on KY 441 as it turns north, or a 4-way stop.
- Widen 15th Street to 4-lanes to remove some congestion from US 25 E.
- Cut back brush on KY 2079 to provide better site distance for people traveling south on KY 2401 and entering the KY 2079/KY 2401 intersection.
- The following suggestions were made for KY 74 from 18th Street to 24th Street:
 - Study the feasibility of a road diet. Determine if two lanes with a middle two-way left-turn lane would be sufficient for future traffic volumes. Also look at adding bike lanes.
 - Look into traffic calming devices to slow down traffic on this section of KY 74 such as speed humps or restriping lane widths from 12 feet to 11 feet.
 - Stripe the parallel parking spots on KY 74.
 - Determine need for left turn lanes and/or protected-permissive phase for vehicles turning left.
 - Determine if the pedestrian cycles at traffic signals are long enough.
 - Sign and/or mark pedestrian crossings better at intersections.
- Determine if there is a need for a traffic signal at KY 74 and 22nd Street.
- Construct a walking bridge from the city parking lot to 20th Street.
- Construct pedestrian crosswalk near Bell County Tourism Commission building.
- Determine if there is a need for a traffic signal at KY 74 and KY 2402.

- Lengthen right turn lane for vehicles traveling south on US 25 E to west on KY 74.
- The traffic loops on 19th street are continuously torn up by coal trucks. There is a need to investigate other means of vehicle detection.
- There is a truck route that travels along KY 2079 onto KY 74 which requires trucks to make four 90 degree turns within near proximity. Many of these intersections have street parking on both sides of the street and do not allow a large enough turning radius for the trucks. No parking signs could be placed on KY 2079 in areas near the intersections that would provide more room for turning.

NEXT STEPS: Develop alternatives and recommendations for the suggested improvements for presentation at the next project team meeting and advisory committee meeting.

END OF MINUTES

MEETING MINUTES

Project:	Middlesboro Small Urban Area Transportation Study	
Purpose:	Project Advisory Committee Meeting #2	
Place:	Middlesboro City Hall, Middlesboro, KY	
Meeting Date:	March 29, 2010, 10:00 a.m. EST	
In Attendance:	Kirby Smith	Discover Downtown Middlesboro
	Donna Smith	Discover Downtown Middlesboro
	Judy Barton	Discover Downtown Middlesboro & Bell County Tourism
	Kassie Hauser	Discover Downtown Middlesboro
	Leeman Moyers	City of Middlesboro
	Evelyn Farmer	Middlesboro City Council
	Randy Melton	Middlesboro Stormwater
	J. C. Meredith	City of Middlesboro
	Edward Gibson	Middlesboro Resident
	Alice Harris	Discover Downtown Middlesboro & JRS Rest. Corp.
	Joseph E. Mosley	KYTC-D11 Project Development TEBM
	Don Breeding	KYTC-D11 Project Delivery & Preservation
	Christopher Harris	KYTC-D11
	Joel Holcomb	KYTC-D11 Engineering Support
	Lesli Gill	Cumberland Valley ADD
	Jill Asher	KYTC-CO Planning
	Scott Thomson	KYTC-CO Planning
	Tonya Higdon	KYTC-CO Planning
	Sreenu Gutti	KYTC-CO Planning

INTRODUCTIONS: Jill Asher opened the final Advisory Committee Meeting by asking meeting attendees to introduce themselves. A meeting agenda and other handouts were given to all meeting attendees.

STUDY PURPOSE: Jill reviewed the purpose of the Small Urban Area Transportation Study for the City of Middlesboro. Small Urban Area (SUA) transportation studies are conducted for cities with a population between 5,000 and 50,000, and this one is being done in-house by KYTC Central Office, Division of Planning. The study's focus is on short-term, low-cost improvements to local transportation issues on state roads within the study area. However, long-term alternatives were also considered in the study. There is no funding allocated for the recommended solutions at this time. Short-term projects which involve lower cost solutions may be able to be completed using maintenance funds or, possibly funds available through the Highway Safety Improvement Program if they are available. A Project Identification Form (PIF) will be completed for each long-term recommendation. The recommended project will be considered for the Unscheduled

Projects List (UPL) which is prioritized by the regional transportation committees and the KYTC District Offices.

PROGRESS TO DATE: The existing roadway conditions analysis was completed and presented at the last Advisory Committee meeting held in June 2009. The Advisory Committee and the Project Team identified issues and concerns of roadways within the study area. The project team evaluated alternatives for roadway improvements, and the KYTC District 11 Office estimated the cost for the recommendations.

PROJECT RECOMMENDATIONS: Included in the handouts were project sheets describing the recommended improvements and their cost estimate. All recommended projects were reviewed.

The following recommended KYTC Long-Term projects were discussed:

- KY 441 Widening and Curve Improvements
- KY 2079/KY 74 Intersection Improvements – Some committee members are concerned about the removal of parking that would be required to have left-turn lanes.
- Sidewalk along KY 441 from Wal-Mart to KY 2402

The following recommended KYTC Short-Term projects were discussed:

- KY 74 Traffic Study for Road Diet – It is a possibility that KYTC will request that the Kentucky Transportation Center (KTC) at the University of Kentucky to do a study to determine if a road diet is feasible for this roadway. KYTC has done road diets in the past in areas where ADTs were not too high and it was expected that there would be a reduction in crashes if a center turning lane was present. In the past, the restriping for a road diet has occurred when the road was repaved. This segment of KY 74 was last paved in 2002.
- KY 74/KY 2402 Intersection Improvements
- KY 2079/KY 2401 Maintenance – The maintenance crew will check to see if bushes need to be cut back.
- KY 2079/Chester Ave. – The District will look into placing “Cross Traffic Does Not Stop” sign.
- KY 74/KY 186/KY 1599 Intersection – An Advisory Committee member expressed concern over the safety at this intersection. There are also some drainage issues at this location. Raising the grade of the approaches to KY 74 may help the drainage issues if it does not adversely affect residents in the area.

It was stated that KYTC will provide guidance and planning level cost estimates for Local projects, but the local projects would be the responsibility of the local government to implement and fund. The following Local projects were discussed:

- KY 74 Curb Extensions – Curb extensions will reduce pedestrian travel time, but may not work in areas where a wider turning radius is needed, such as truck routes.
- 15th Street Widening
- Pedestrian Bridge

Some projects that were investigated, but not carried forward were also discussed. The following is a discussion of these projects:

- At a previous meeting it was recommended to add a two-way left-turn lane on KY 441 between KY 2079 and KY 2402. The project team discussed this issue and decided not to include it as a recommendation since there are few access points on this section of KY 441 that would require a two-way left-turn lane. If development continues along this segment of roadway, this issue may need to be readdressed.
- Traffic counts were done by the District at the all-way stop controlled intersection of KY 441 and KY 2402. Highway Capacity Software (HCS) was then used to determine the Level of Service (LOS) of the intersection. It has an LOS of B on all intersection legs with a maximum delay during peak traffic periods of less than 13 seconds. Although improvements such as turning lanes may be needed at this intersection in the future, the project team decided not to carry this recommendation forward at this time.
- Another proposed project was an extension of the right-turn lane on US 25E turning into KY 74. It was noted during a field visit that extending the turning lane would most likely improve the operation of the intersection, but there is very little right of way on the west side of US 25E, and there would be too many major impacts to utilities and entrances for this project to be feasible at this time.

PRIORTIZATION: Jill asked the Committee members to prioritize each category of projects. They were asked to rank the projects numerically with 1 being their highest priority.

The following are the results of the ranking done by the Advisory Committee.

KYTC Long-Term Projects

ID	Project Name	Ranking
1LT	KY 441 Widening and Curve Improvements	2
2LT	Cumberland Avenue/19th Street (KY 74 / KY 2079) Intersection Improvements	1
3LT	Sidewalk Along KY 441 from Wal-Mart to KY 2402	3

KYTC Short-Term Projects

ID	Project Name	Ranking
1S	Cumberland Avenue (KY74) Traffic Study for a Road Diet	2

2S	Cumberland Avenue/Hollywood Dr. (KY 74/KY 2402) Intersection Improvements	5
3S	KY 2079/KY 2401 - Maintenance	4
4S	KY 2079/Chester Avenue Signing	3
5S	KY 74/KY 186/KY 1599 Intersection Improvements	1

Local Projects

ID	Project Name	Ranking
1L	Cumberland Avenue (KY 74) Curb Extensions	2
2L	15th Street and 15th Street Extension Widening	1
3L	Pedestrian Bridge	3

NEXT STEPS: The next step of the study will be to complete the documentation. A final draft of the study should be available in late spring of this year. After its completion a copy of the study can be viewed by clicking District 11 on the map at http://www.planning.kytc.ky.gov/planning_studies.asp.

END OF MINUTES

Appendix E

Environmental Justice

Report

MIDDLESBORO SMALL URBAN AREA TRANSPORTATION STUDY

Environmental Justice Report



Prepared By:
Cumberland Valley Area Development District
P.O. Box 1740
London, KY 40743



Division of Planning

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Appendices

Appendix A: Census Tracts and Block Groups (Maps)

Population by Black or African American (Map 1)

Population by Asian (Map 2)

Population by Hispanic or Latino (Map 3)

Population by Poverty Level (Map 4)

Population by Persons 65 and Over (Map 5)

Population by Disabilities 5 and Over (Map 6)

Appendix B: Census Tracts and Block Groups (Table)

1.0 Introduction

This document assesses the community demographics involved in Small Urban Area Transportation Study for the City of Middlesboro. The Cumberland Valley Area Development District has analyzed and prepared the following document to identify any concentration of population that could be displaced or segmented as result. The data displayed in this report has been compiled from a number of sources including the U.S. Census Bureau, Kentucky State Data Center, Kentucky Transportation Cabinet (KYTC) Division of Planning, local elected officials, community leaders, and field observations of the study area. The information and results are intended to assist the Kentucky Transportation Cabinet in making informed and prudent transportation decisions in the study area, especially as it pertains to the requirements of Executive Order 12898¹, to ensure equal protection to all groups potentially impacted by the study.

This report includes maps and tables of statistical comparisons of the study area based on US Census tracts and block groups with regard to minority, low income, and aging populations for the United States, Kentucky, and Bell County. The Study area includes tracts and block groups directly in and around portions of the defined area.

2.0 Study Findings / Study Area

This Environmental Justice and Community Impact Report should be utilized as a component of the planning study being conducted by Kentucky Transportation Cabinet's Division of Planning, for the City of Middlesboro.

This study is intended to help define the location and purpose of the project and meet federal requirements regarding consideration of environmental issues as defined in the National Environmental Policy Act (NEPA).

The Middlesboro Small urban Area Transportation Study area contains 14 Block Groups within 4 Census Tracts. The Census Tracts and Block Groups are listed below. (*Appendix A* includes maps). Detailed data of Census Tracts and Block Groups are located in *Appendix B* of this document.

Bell County:

Census Tract 9605

Block Group: 1, 2

Census Tract 9606

Block Group: 1, 2, 3, 4, 5

Census Tract 9607

Block Group: 1, 2, 3, 4

Census Tract 9608

Block Group: 1, 2, 3

¹ Executive Order 12898 signed February 11, 1994 states "...each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations..."

3.0 Study Findings / Population by Race

The defined study area within Middlesboro encompasses portions of the following Census Tracts: 9605, 9606, 9607, 9608. Bell County's population, by race percentages, is lower than the national and state averages. All of the Census Tracts within the study area are below or comparable with state and national averages however, there are several Block Groups that warrant further discussion. Block Group 1 within Census Tract 9606 is where the highest concentration occurs at 20.77%, which is much higher than the remaining Block Groups. This occurs within Census Tract 9607 as well. Block Group 1 at 13.21% and 3 at 14.72% represent a percentage that is much higher than the surrounding block groups.

4.0 Study Findings / Population by Poverty

The defined study area within Middlesboro encompasses portions of the following Census Tracts: 9605, 9606, 9607, and 9608. Bell County's population below poverty level exceeds the state and national levels. Although the census tracts defined in the study have higher levels of population below poverty that are higher than state and national levels they are comparable to each other. However, there are two Block Groups that have a much higher percentage than the remaining Block Groups. They include Census Tract 9606 Block Group 1 at 51.09% and Census Tract 9607 Block Group 3 at 36.16%.

Census Tract 9606 has the highest percentage of the population below poverty level in the Bell County study area at 32.46 percent. That percent is almost three times the national average. Block groups 2, 3, 4, and 5 range from 23.73 percent to 34.21 percent, which is comparable to the regional averages. Block group 1 (51.09%) has a higher average of population below the poverty level. A subsequent review of poverty data within affected Census divisions should be undertaken to insure that these groups are not disproportionately affected by any projects.

5.0 Study Findings / Population by Persons 65 and Over

The study area within Middlesboro encompasses portions of the following Census Tracts: 9605, 9606, 9607, and 9608. The aging characteristics and percentages for Bell County are similar to other Census Tracts in the county, the state, and the nation. However there are some elevated percentages of 65 and over age groups in two Census Tracts. Census Tract 9607 Block Group 2 and 4 and Census Tract 9608 Block Group 3 show an elevated percentage in the number of people 65 and over. Census Tract 9607 Block Group 4 shows potential higher levels of aging population, 20.68 percent. This Census Tract is located between Census Tract 9608 Block Group 3, which is 21.73 percent, and Census Tract 9607 Block Group 2, which is 25.08 percent. After discussions with other community members, it appears that the higher percentages are the result of older

sections of the City of Middlesboro. It is anticipated that the implementation of projects would not have a disproportionate affect on the population of persons age 65 and over residing in the study area.

6.0 Study Findings / Population by Disabilities 5 and Over

The study area within Middlesboro encompasses portions of the following Census Tracts: 9605, 9606, 9607, and 9608. Bell County's population of person's over 5 with disabilities exceeds the state and national levels. Although the census tracts defined in the study have higher levels of population of person's over 5 with disabilities higher than state and national levels they are comparable to the regional percentages.

It should also be noted that these percentages are certainly comparable to many surrounding counties in this section of eastern Kentucky. Discussions with local officials and community members resulted in the conclusion that concentrations of persons with disabilities are located within the study area; however, it is not anticipated that the implementation of projects would not have a disproportionate affect on the population of persons over 5 with disabilities residing in the study area. Nonetheless, future project development efforts should be sensitive to this issue.

7.0 Conclusion

Based on data obtained from the U.S. Census Bureau for income, race, and age, discussions with local officials and field observations; it appears there is a small concentration of populations over 65 years of age in Middlesboro. The concentrations identified in Middlesboro should not be affected.

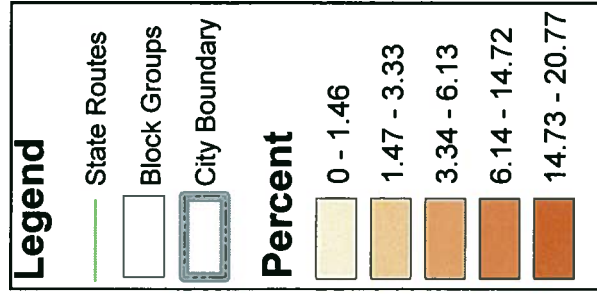
Analysis of the minority population data showed several of the block groups as having an identified concentration of some sort. Some were significant while some were only minor. The more significant concentrations identified were noted in the narrative analysis. All areas within this study should be given full consideration in the planning process to achieve the goals put forth by the U.S. Department of Transportation. The concentrations identified should not be adversely affected by improvements.

The elevated percentages in the populations below the poverty level might be indicative of concentrations throughout the study area. However, based on the economic status of this rural depressed county, these percentages are not uncommon for this area.

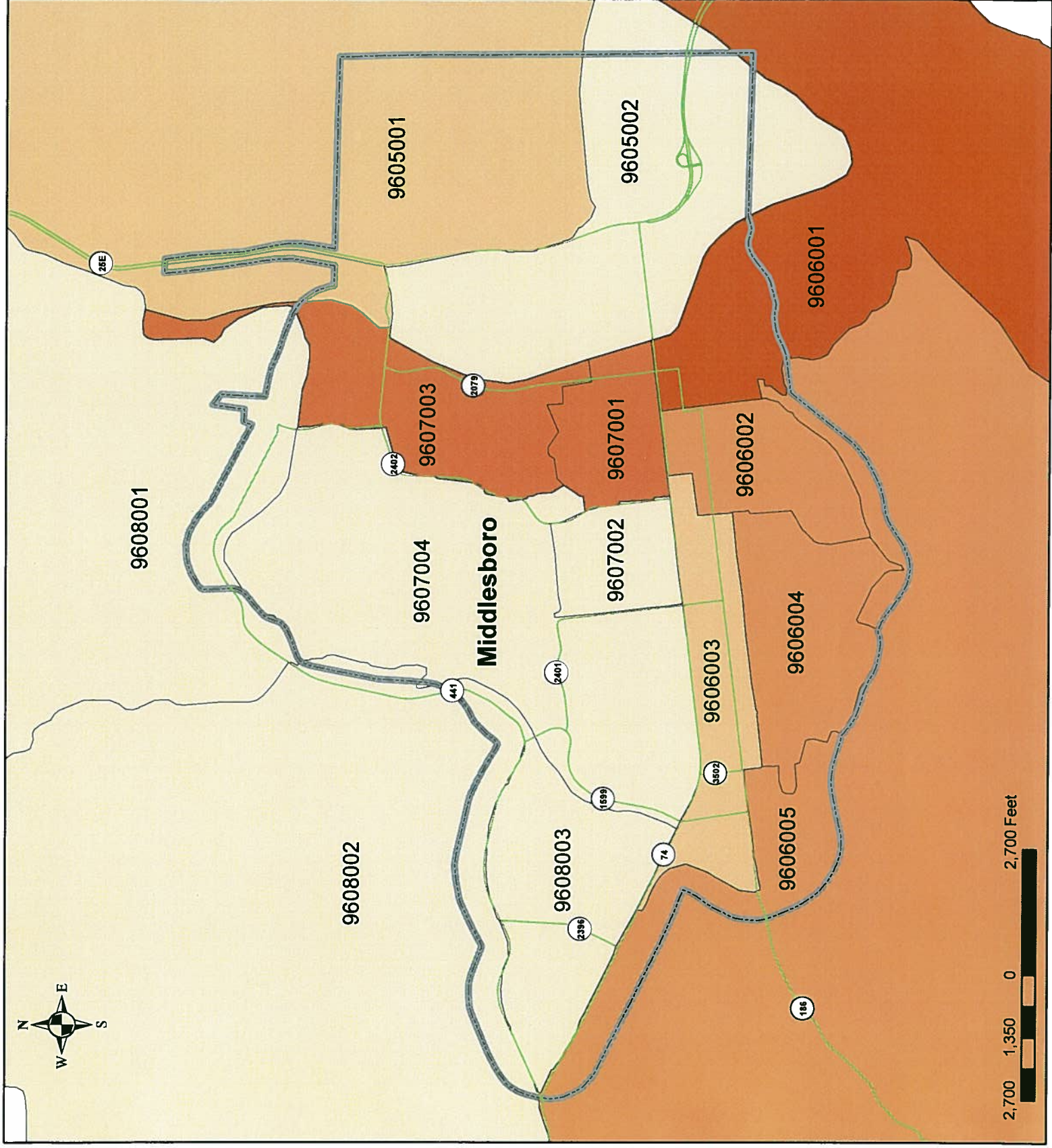
Although the percentage of persons over 5 with disabilities is higher than state and national percentages within the study area, they are comparable in percentage to each other as well as surrounding counties of this section of eastern Kentucky and are not uncommon for this area.

Appendix A Map 1

Population by
Black
or
African
American



KENTUCKY
TRANSPORTATION
CABINET



Appendix A Map 2

Population by Asian

Legend

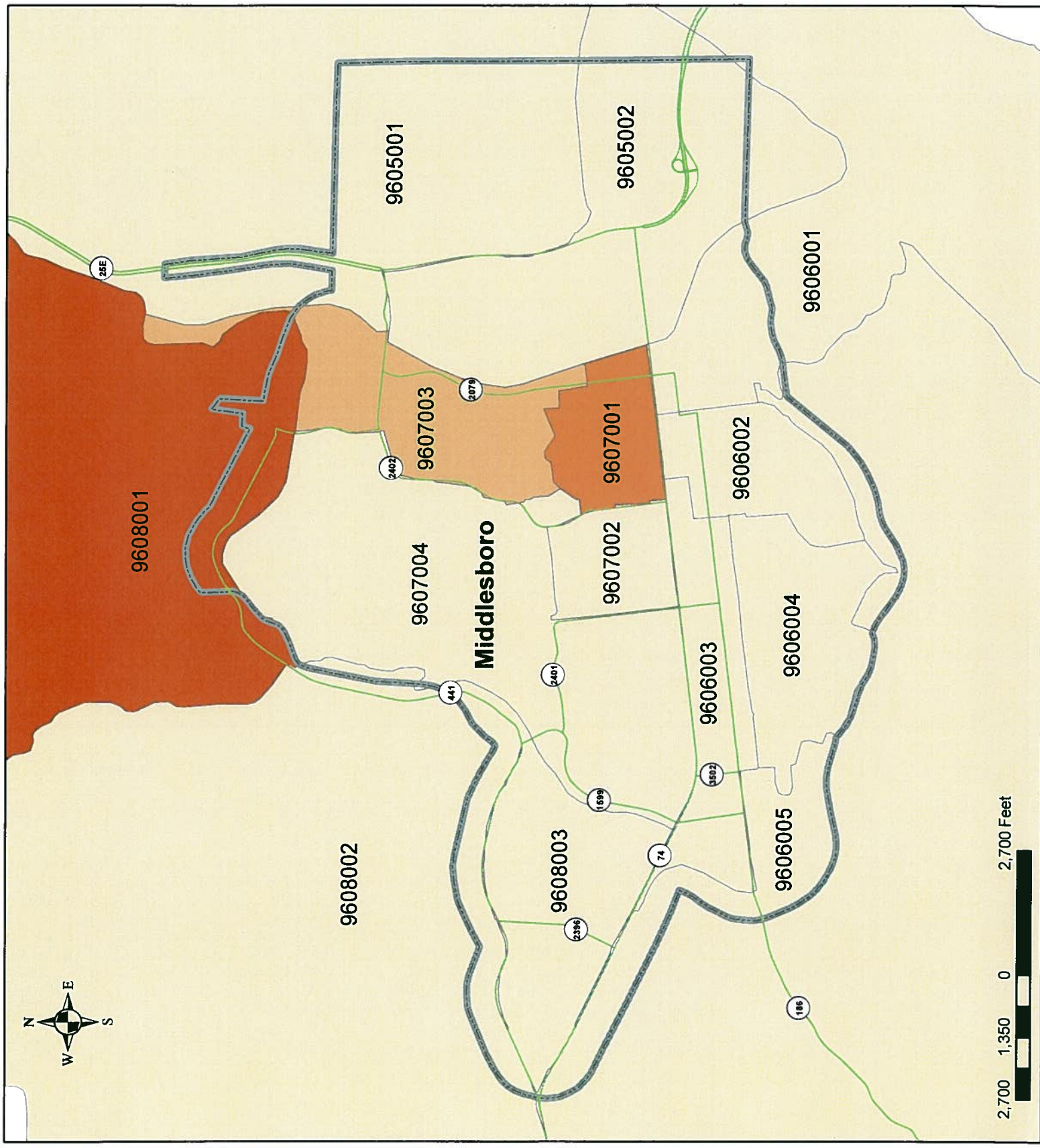
- State Routes
- Block Groups
- City Boundary

Percent

0
0.001 - 0.64
0.65 - 2.40
2.41 - 2.81

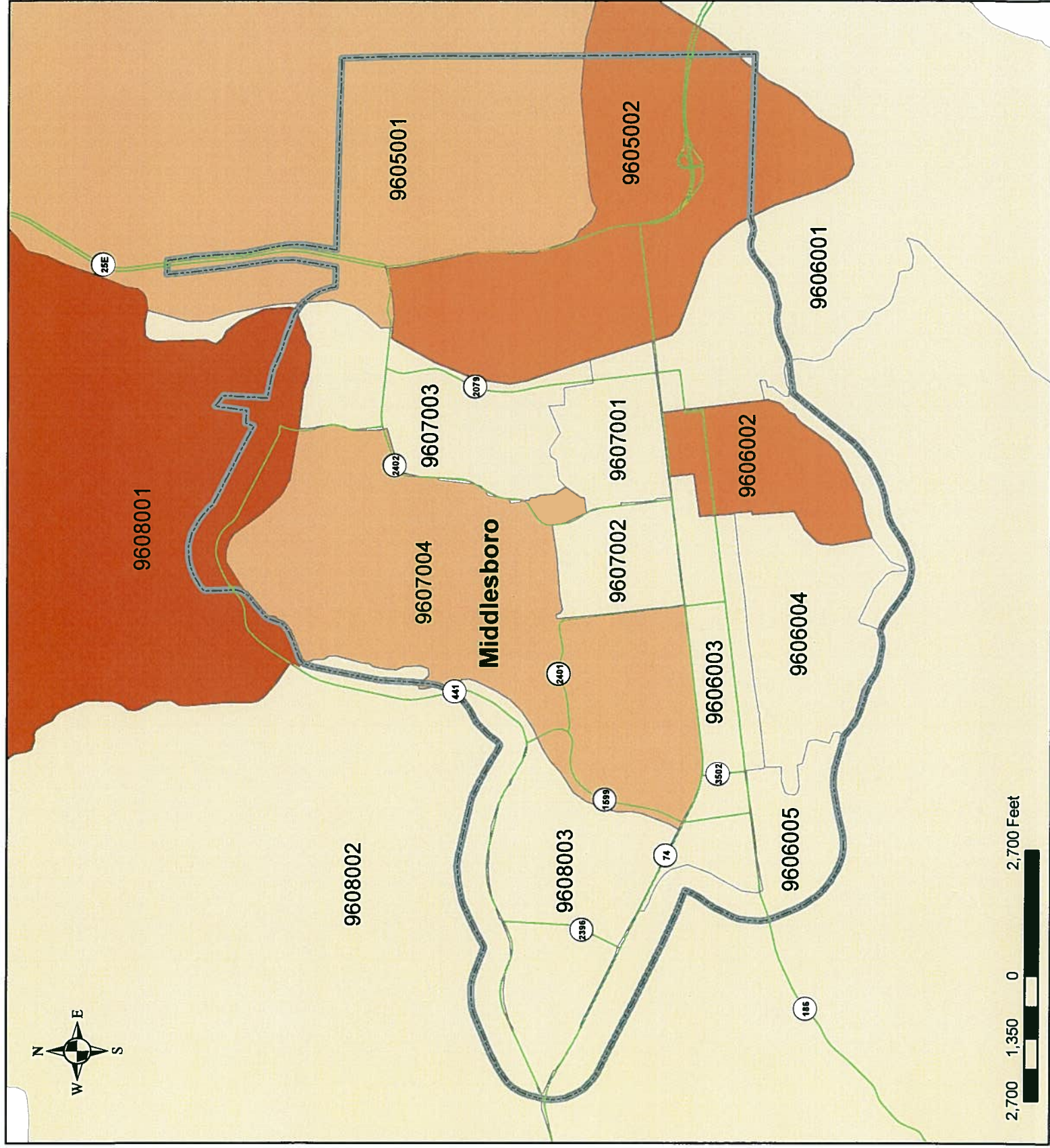
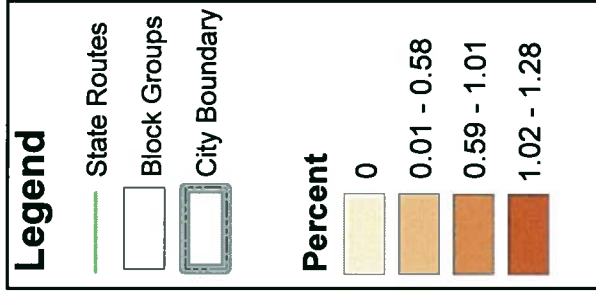


KENTUCKY
TRANSPORTATION
CABINET



Appendix A Map 3

Population by Hispanic or Latino



Appendix A Map 4

Population by Poverty Level

Legend

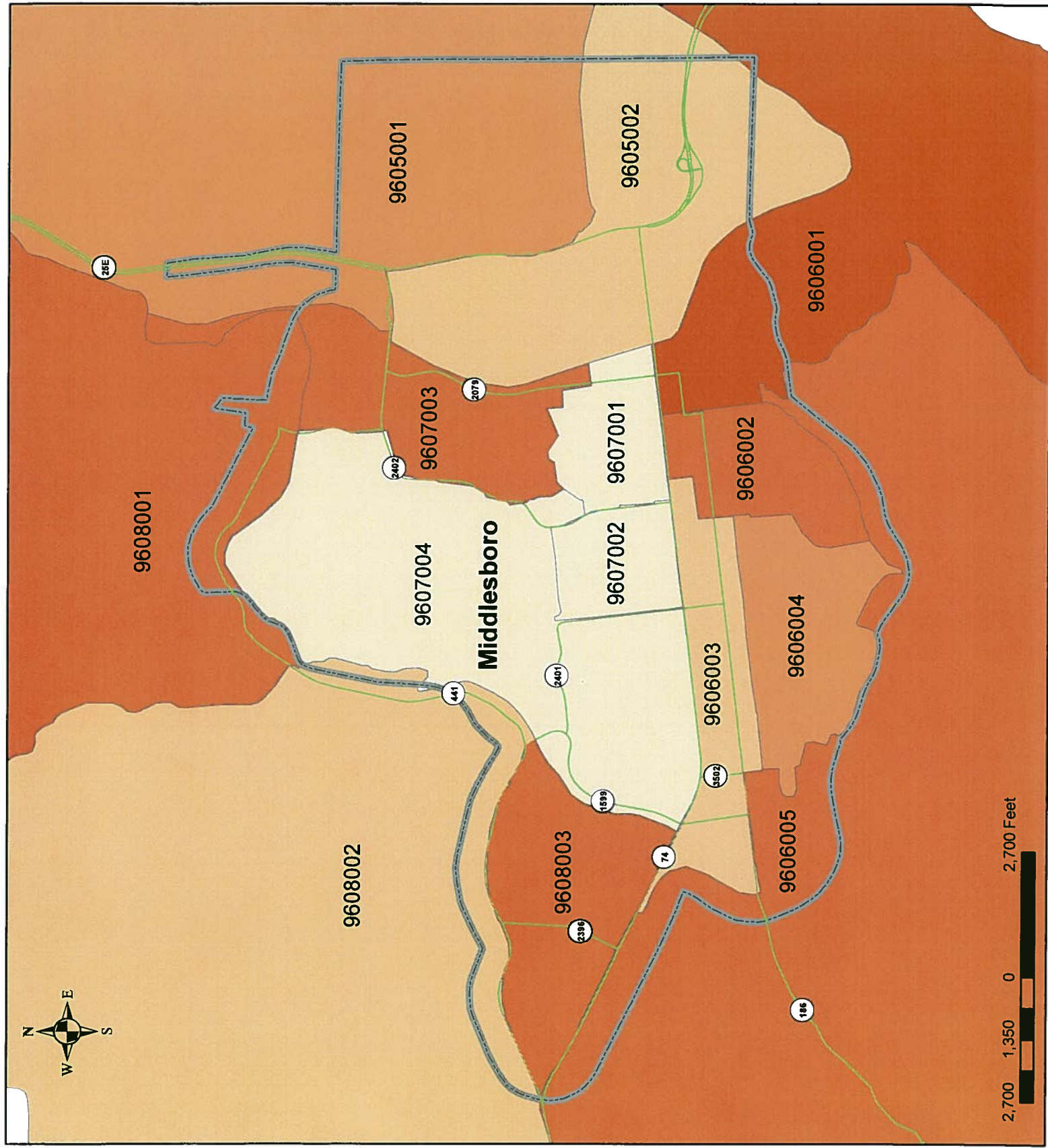
- State Routes
- Block Groups
- City Boundary

Percent

13.49 - 16.06
16.07 - 23.73
23.74 - 29.47
29.48 - 36.16
36.17 - 51.09



KENTUCKY
TRANSPORTATION
CABINET



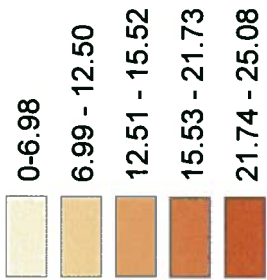
Appendix A Map 5

Population by Persons 65 and Over

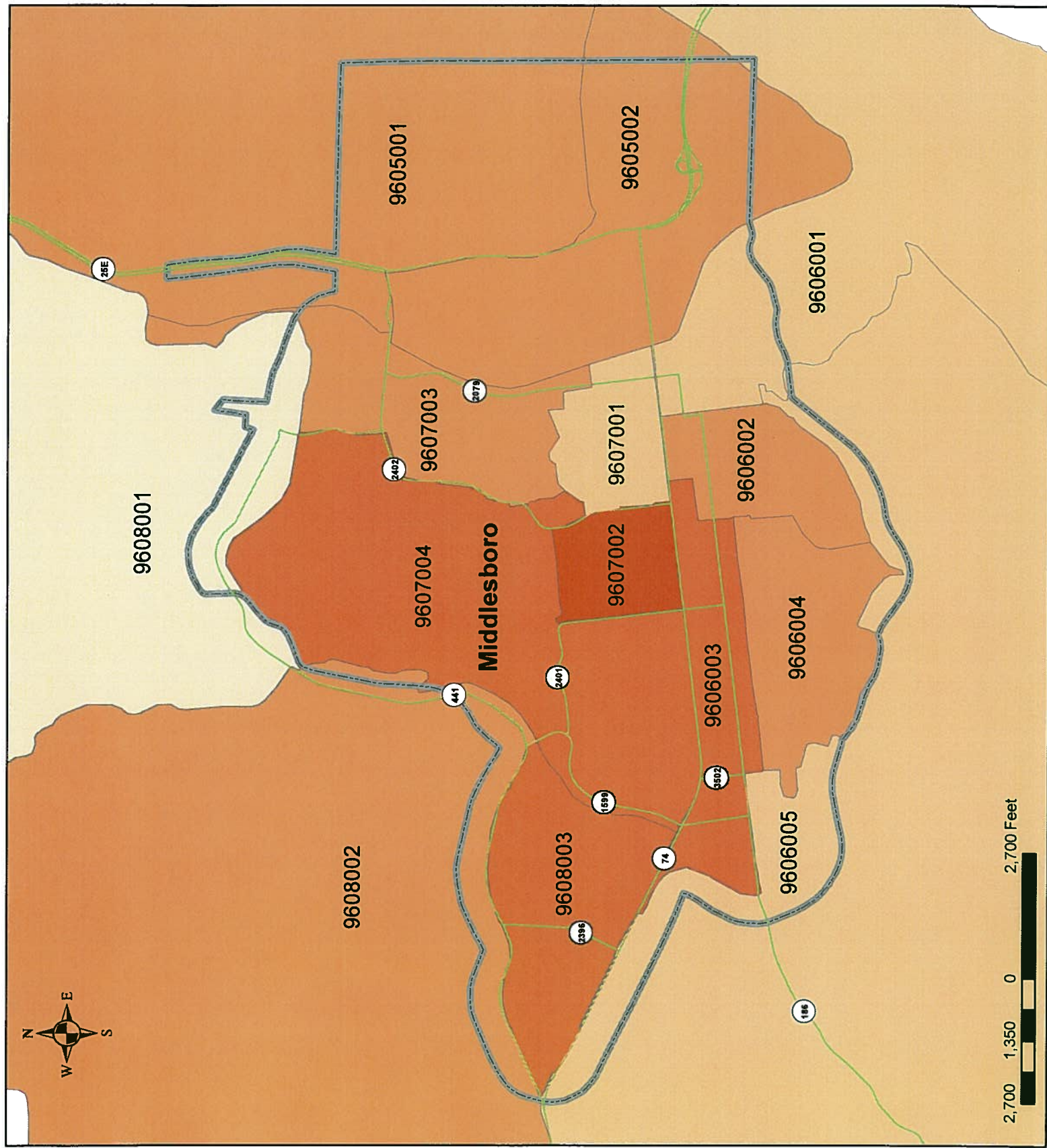
Legend

- State Routes
- Block Groups
- City Boundary

Percent



KENTUCKY
TRANSPORTATION
CABINET



Appendix A Map 6

Population by Disabilities 5 and Over

Legend

State Routes

Block Groups

City Boundary

Percent

50.14 - 54.86

54.87 - 62.73

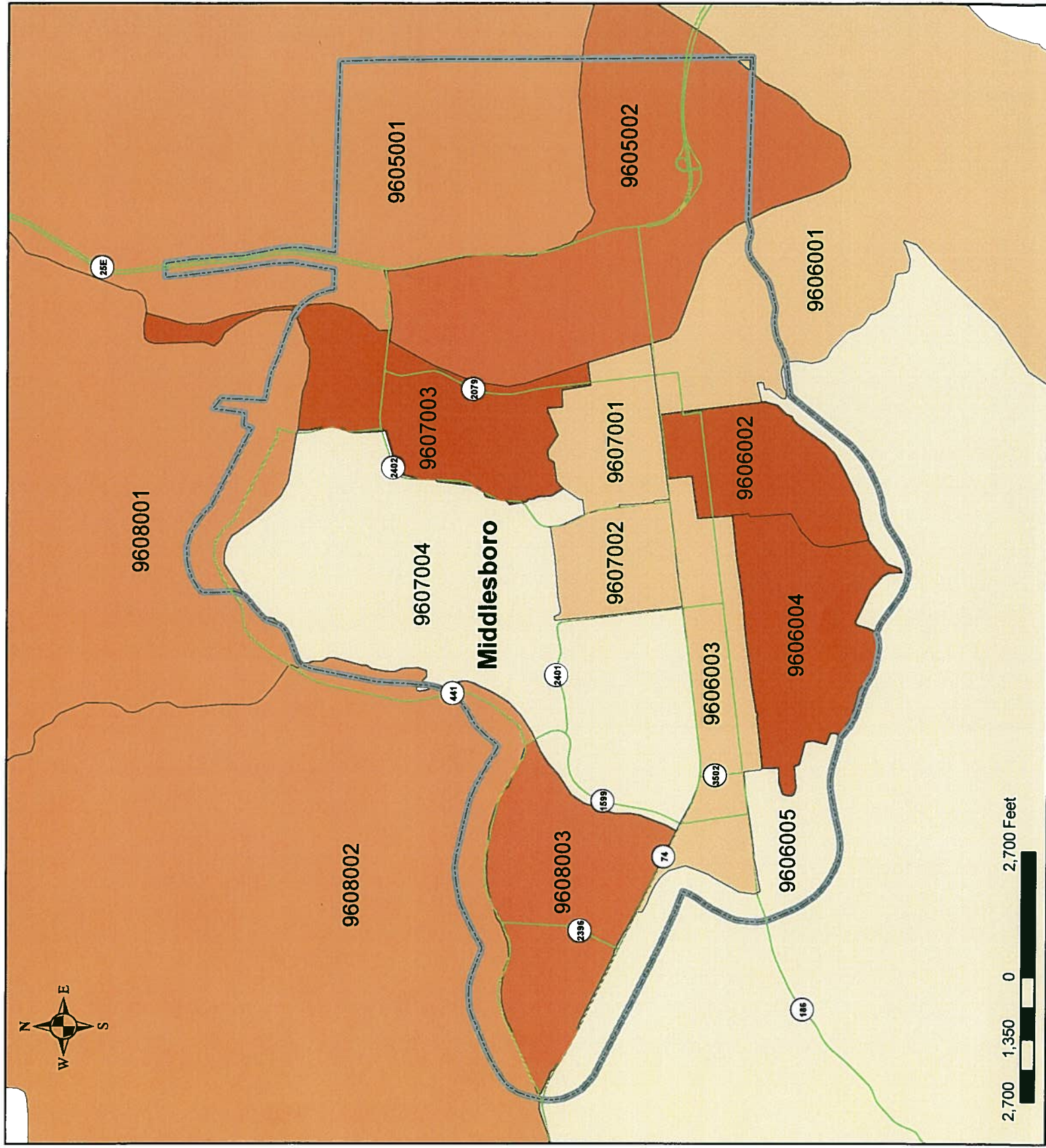
62.74 - 67.79

67.80 - 79.37

79.38 - 82.38



KENTUCKY
TRANSPORTATION
CABINET



Appendix B

Region	Total Population	White Alone	Percent White Alone	Black or African American Alone	Percent Black or African American Alone	American Indian and Alaska Native Alone	Percent American Indian and Alaska Native Alone	Asian Alone	Percent Asian Alone	Native Hawaiian and Other Pacific Islander Alone
United States	281,421,906	211,353,725	75.10%	34,361,740	12.21%	2,447,989	0.87%	10,171,820	3.61%	378,782
Kentucky	4,041,769	3,639,168	90.04%	293,915	7.27%	9,080	0.22%	28,994	0.72%	1,155
Bell County	30,060	28,875	96.06%	745	2.48%	30	0.10%	65	0.22%	13
Census Tract 9605	2,450	2,356	96.16%	65	2.65%	4	0.16%	0	0.00%	0
Block Group 1	1,561	1,500	96.09%	52	3.33%	0	0.00%	0	0.00%	0
Block Group 2	889	856	96.29%	13	1.46%	4	0.45%	0	0.00%	0
Census Tract 9606	4,874	4,467	91.65%	333	6.83%	0	0.00%	0	0.00%	13
Block Group 1	597	473	79.23%	124	20.77%	0	0.00%	0	0.00%	0
Block Group 2	948	873	92.09%	44	4.64%	0	0.00%	0	0.00%	0
Block Group 3	982	952	96.95%	30	3.05%	0	0.00%	0	0.00%	0
Block Group 4	947	873	92.19%	58	6.12%	0	0.00%	0	0.00%	0
Block Group 5	1,400	1,296	92.57%	77	5.50%	0	0.00%	0	0.00%	13
Census Tract 9607	2,974	2,772	93.21%	169	5.68%	0	0.00%	18	0.61%	0
Block Group 1	583	492	84.39%	77	13.21%	0	0.00%	14	2.40%	0
Block Group 2	654	654	100%	0	0.00%	0	0.00%	0	0.00%	0
Block Group 3	625	519	83.04%	92	14.72%	0	0.00%	4	0.64%	0
Block Group 4	1,112	1,107	99.55%	0	0.00%	0	0.00%	0	0.00%	0
Census Tract 9608	3,745	3,628	96.88%	0	0.00%	10	0.27%	35	0.93%	0
Block Group 1	1,247	1,189	95.35%	0	0.00%	0	0.00%	35	2.81%	0
Block Group 2	1,490	1,446	97.05%	0	0.00%	10	0.67%	0	0.00%	0
Block Group 3	1,008	993	98.51%	0	0.00%	0	0.00%	0	0.00%	0

Source: www.census.gov

Summary File 3 (SF3)

Detailed Tables: P6-Race, P7-Hispanic or Latino by Race,

P8-Sex by Age, P87-Poverty Status in 1999 by Age, P41-Disability

Appendix B

Region	Percent Native Hawaiian and Other Pacific Islander Alone	Some Other Race Alone	Percent Some Other Race Alone	Two or More Races	Percent Two or More Races	Hispanic or Latino	Percent Hispanic or Latino	Persons 65 and Over	Percent Persons 65 and Over	Persons Below Poverty Level	Percent Persons Below Poverty Level
United States	0.13%	15,436,924	5.49%	7,270,926	2.58%	35,238,481	12.52%	34,978,972	12.43%	33,899,812	12.05%
Kentucky	0.03%	22,116	0.55%	47,341	1.17%	56,414	1.40%	503,668	12.46%	621,096	15.37%
Bell County	0.04%	97	0.32%	235	0.78%	138	0.46%	4,027	13.40%	9,105	30.29%
Census Tract 9605	0.00%	18	0.73%	7	0.29%	18	0.73%	354	14.45%	638	26.04%
Block Group 1	0.00%	9	0.58%	0	0.00%	9	0.58%	221	14.16%	460	29.47%
Block Group 2	0.00%	9	1.01%	7	0.79%	9	1.01%	133	14.96%	178	20.02%
Census Tract 9606	0.27%	0	0.00%	61	1.25%	9	0.18%	712	14.61%	1,582	32.46%
Block Group 1	0.00%	0	0.00%	0	0.00%	0	0.00%	65	10.89%	305	51.09%
Block Group 2	0.00%	0	0.00%	31	3.27%	9	0.95%	143	15.08%	306	32.28%
Block Group 3	0.00%	0	0.00%	0	0.00%	0	0.00%	195	19.86%	233	23.73%
Block Group 4	0.00%	0	0.00%	16	1.69%	0	0.00%	134	14.15%	259	27.35%
Block Group 5	0.27%	0	0.00%	14	1.00%	0	0.00%	175	12.50%	479	34.21%
Census Tract 9607	0.00%	7	0.24%	8	0.27%	5	0.17%	553	18.60%	569	19.13%
Block Group 1	0.00%	0	0.00%	0	0.00%	0	0.00%	62	10.63%	88	15.09%
Block Group 2	0.00%	0	0.00%	0	0.00%	0	0.00%	164	25.08%	105	16.06%
Block Group 3	0.00%	7	1.12%	3	0.48%	0	0.00%	97	15.52%	226	36.16%
Block Group 4	0.00%	0	0.00%	5	0.45%	5	0.45%	230	20.68%	150	13.49%
Census Tract 9608	0.00%	39	1.04%	33	0.88%	16	0.43%	505	13.48%	1050	28.04%
Block Group 1	0.00%	16	1.28%	7	0.56%	16	1.28%	87	6.98%	400	32.08%
Block Group 2	0.00%	23	1.54%	11	0.74%	0	0.00%	199	13.36%	326	21.88%
Block Group 3	0.00%	0	0.00%	15	1.49%	0	0.00%	219	21.73%	324	32.14%

Source: www.census.gov

Summary File 3 (SF3)

Detailed Tables: P6-Race, P7-Hispanic or Latino by Race,

P8-Sex by Age, P87-Poverty Status in 1999 by Age, P41-Disability

Appendix B

Region	Disabilities 5 and Over	Percent Disabilities 5 and Over
United States	89,142,962	31.68%
Kentucky	1,686,789	41.73%
Bell County	21,659	72.05%
Census Tract 9605	1,741	71.06%
Block Group 1	1,052	67.39%
Block Group 2	689	77.50%
Census Tract 9606	3,238	66.43%
Block Group 1	371	62.14%
Block Group 2	781	82.38%
Block Group 3	616	62.73%
Block Group 4	768	81.10%
Block Group 5	702	50.14%
Census Tract 9607	1,858	62.47%
Block Group 1	340	58.32%
Block Group 2	394	60.24%
Block Group 3	514	82.24%
Block Group 4	610	54.86%
Census Tract 9608	2,629	70.20%
Block Group 1	819	65.68%
Block Group 2	1,010	67.79%
Block Group 3	800	79.37%

Source: www.census.gov

Summary File 3 (SF3)

Detailed Tables: P6-Race, P7-Hispanic or Latino by Race,

P8-Sex by Age, P87-Poverty Status in 1999 by Age, P41-Disability

Appendix F

LOS Analysis of

KY 441/KY 2402

Intersection

KENTUCKY TRANSPORTATION CABINET
DIVISION OF PLANNING
SPECIAL MANUAL CLASSIFICATION OR INTERSECTION MOVEMENT COUNT CARD

County BELL Route KY 441 + 2402

Machine # _____ Station # _____ AM or PM AM

8 Digit Site Code

<u>0</u> C	<u>0</u> C	<u>7</u> C	<u>0</u> A	<u>1</u> A	<u>0</u> S	<u>0</u> S	<u>1</u> S
County #			Alpha Code		Station #		

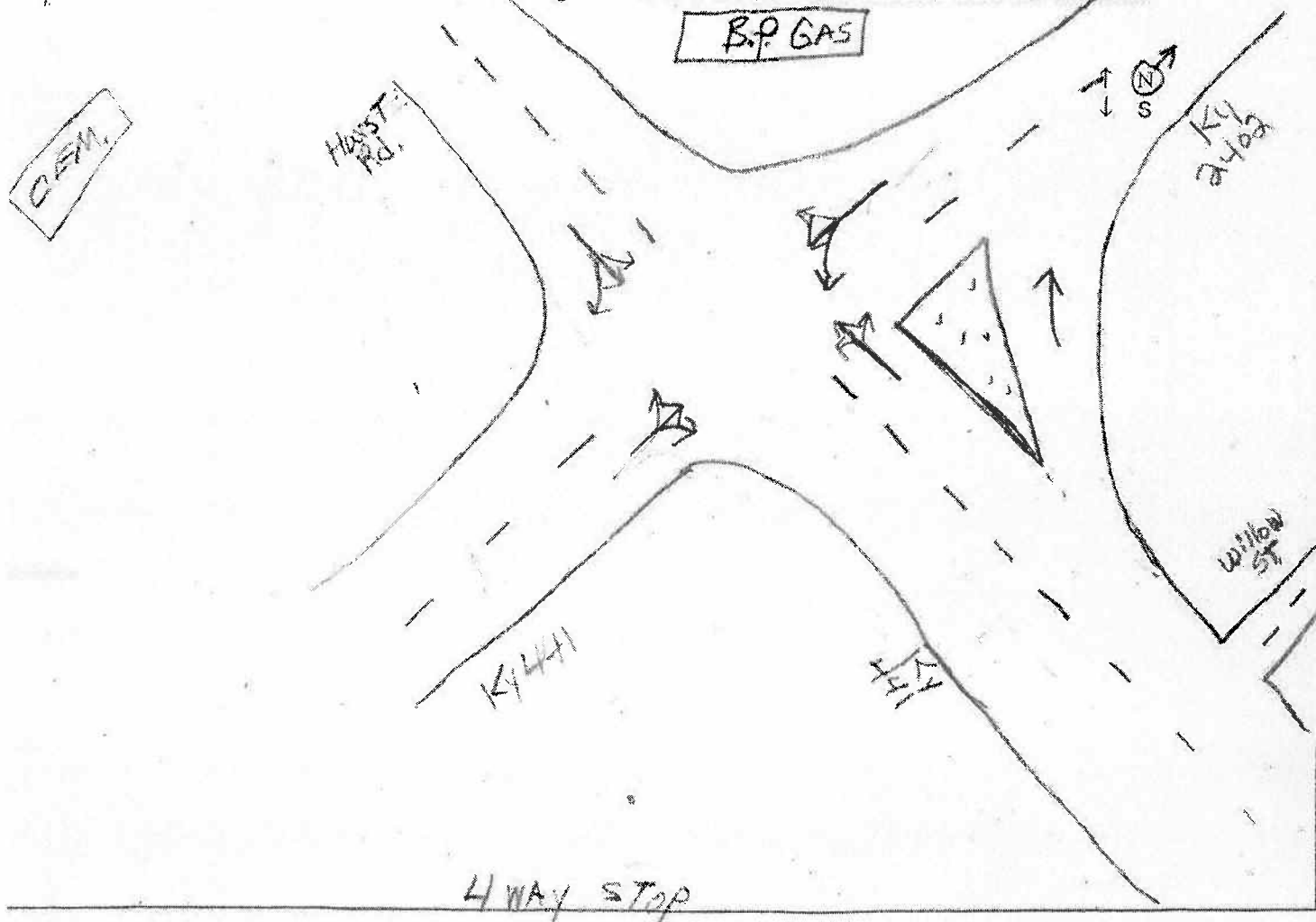
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Date 11-16-09 Begin Time 6:30 End Time 12:30

Field Technician Bobb Bowling

SITE DRAWING

(detailed drawing showing each lane and movement counted with this machine)

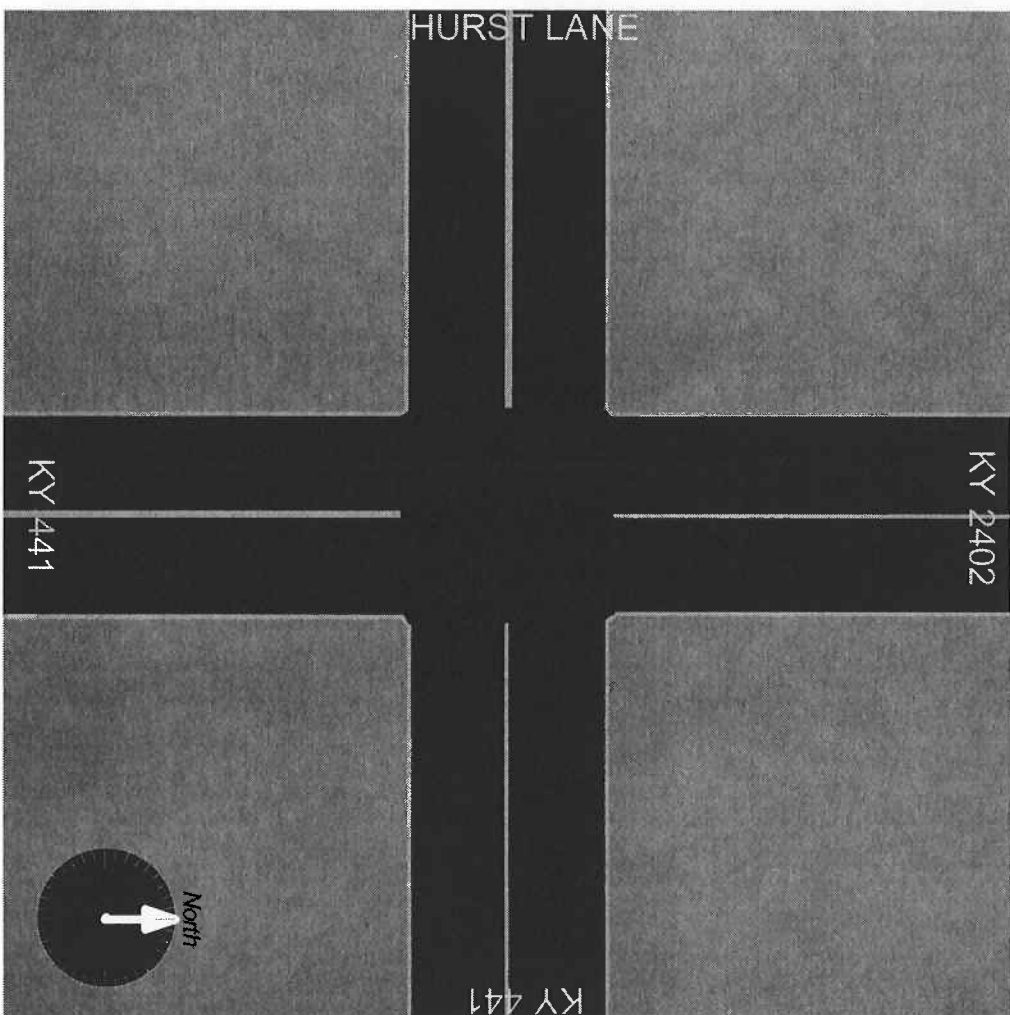


File Name : BELL2402441AM
Site Code : 00701001
Start Date : 11/16/2009
Page No : 1

Groups Printed- Unshifted - Bank 1																							
KY 2402 From North						KY 441 From East						KY 441 From South						HURST LANE From West					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total		
06:30	3	19	0	0	22	11	0	1	0	12	2	14	5	0	21	1	0	3	0	4	59		
06:45	4	26	1	0	31	16	6	5	0	27	0	32	7	0	39	0	2	1	0	3	100		
Total	7	45	1	0	53	27	6	6	0	39	2	46	12	0	60	1	2	4	0	7	159		
07:00	2	32	1	0	35	32	13	2	0	47	0	21	5	0	26	1	5	1	0	7	115		
07:15	4	28	1	0	33	50	4	5	0	59	0	45	9	0	54	1	3	3	0	7	153		
07:30	9	68	4	0	81	31	15	2	0	48	0	59	14	0	73	6	3	4	0	13	215		
07:45	11	48	0	0	59	30	10	4	0	44	1	63	14	0	78	1	10	1	0	12	193		
Total	26	176	6	0	208	143	42	13	0	198	1	188	42	0	231	9	21	9	0	39	676		
08:00	6	49	1	0	56	21	9	5	0	35	2	58	12	0	72	4	4	1	0	9	172		
08:15	4	50	2	0	56	19	3	1	0	23	0	56	14	0	70	3	2	1	0	6	155		
08:30	9	42	5	0	56	20	7	6	0	33	1	37	17	0	55	4	6	0	0	10	154		
08:45	1	37	3	0	41	26	10	1	0	37	1	43	17	0	61	0	4	1	0	5	144		
Total	20	178	11	0	209	86	29	13	0	128	4	194	60	0	258	11	16	3	0	30	625		
09:00	1	28	2	0	31	24	6	3	0	33	1	57	14	0	72	2	5	3	0	10	146		
09:15	4	33	0	0	37	23	4	3	0	30	2	37	9	0	48	2	6	1	0	9	124		
09:30	4	25	1	0	30	13	4	2	0	19	3	32	16	0	51	2	4	3	0	9	109		
09:45	5	21	1	0	27	24	5	4	0	33	1	36	12	0	49	2	5	0	0	7	116		
Total	14	107	4	0	125	84	19	12	0	115	7	162	51	0	220	8	20	7	0	35	495		
10:00	4	37	2	0	43	14	6	7	0	27	4	44	20	0	68	3	7	0	0	10	148		
10:15	5	38	0	0	43	20	7	2	0	29	1	29	12	0	42	0	3	6	0	9	123		
10:30	5	33	0	0	38	14	8	2	0	24	0	33	11	0	44	1	8	1	0	10	116		
10:45	5	37	2	0	44	26	8	2	0	36	1	39	16	0	56	3	11	3	0	17	153		
Total	19	145	4	0	168	74	29	13	0	116	6	145	59	0	210	7	29	10	0	46	540		
11:00	4	23	1	0	28	25	6	3	0	34	2	25	14	0	41	2	2	2	0	6	109		
11:15	10	26	3	0	39	21	4	2	0	27	2	41	24	0	67	0	3	2	0	5	138		
11:30	13	46	2	0	61	17	8	0	0	25	3	44	16	0	63	3	7	0	0	10	159		
11:45	6	28	2	0	36	26	10	2	0	38	2	40	23	0	65	3	8	2	0	13	152		
Total	33	123	8	0	164	89	28	7	0	124	9	150	77	0	236	8	20	6	0	34	558		
12:00	15	57	0	0	72	24	9	1	0	34	3	38	21	0	62	3	6	2	0	11	179		
12:15	8	47	2	0	57	28	8	1	0	37	6	41	24	0	71	1	8	0	0	9	174		
Grand Total	142	878	36	0	1056	555	170	66	0	791	38	964	346	0	1348	48	122	41	0	211	3406		
Approach %	13.4	83.1	3.4	0		70.2	21.5	8.3	0		2.8	71.5	25.7	0		22.7	57.8	19.4	0				
Total %	4.2	25.8	1.1	0	31	16.3	5	1.9	0	23.2	1.1	28.3	10.2	0	39.6	1.4	3.6	1.2	0	6.2			
Unshifted	142	878	36	0	1056	555	170	66	0	791	38	964	346	0	1348	48	122	41	0	211	3406		
% Unshifted	100	100	100	0	100	100	100	100	0	100	100	100	100	0	100	100	100	100	0	100	100		
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Kentucky Transportation Cabinet

File Name : BELL2402441AM
Site Code : 00701001
Start Date : 11/16/2009
Page No : 3



KENTUCKY TRANSPORTATION CABINET
DIVISION OF PLANNING
SPECIAL MANUAL CLASSIFICATION OR INTERSECTION MOVEMENT COUNT CARD

County BELL Route Ky 441 + 2402

Machine # _____ Station # _____ AM or PM AM

8 Digit Site Code

<u>0</u> C	<u>0</u> C	<u>7</u> C	<u>0</u> A	<u>1</u> A	<u>0</u> S	<u>0</u> S	<u>1</u> S
County #			Alpha Code		Station #		

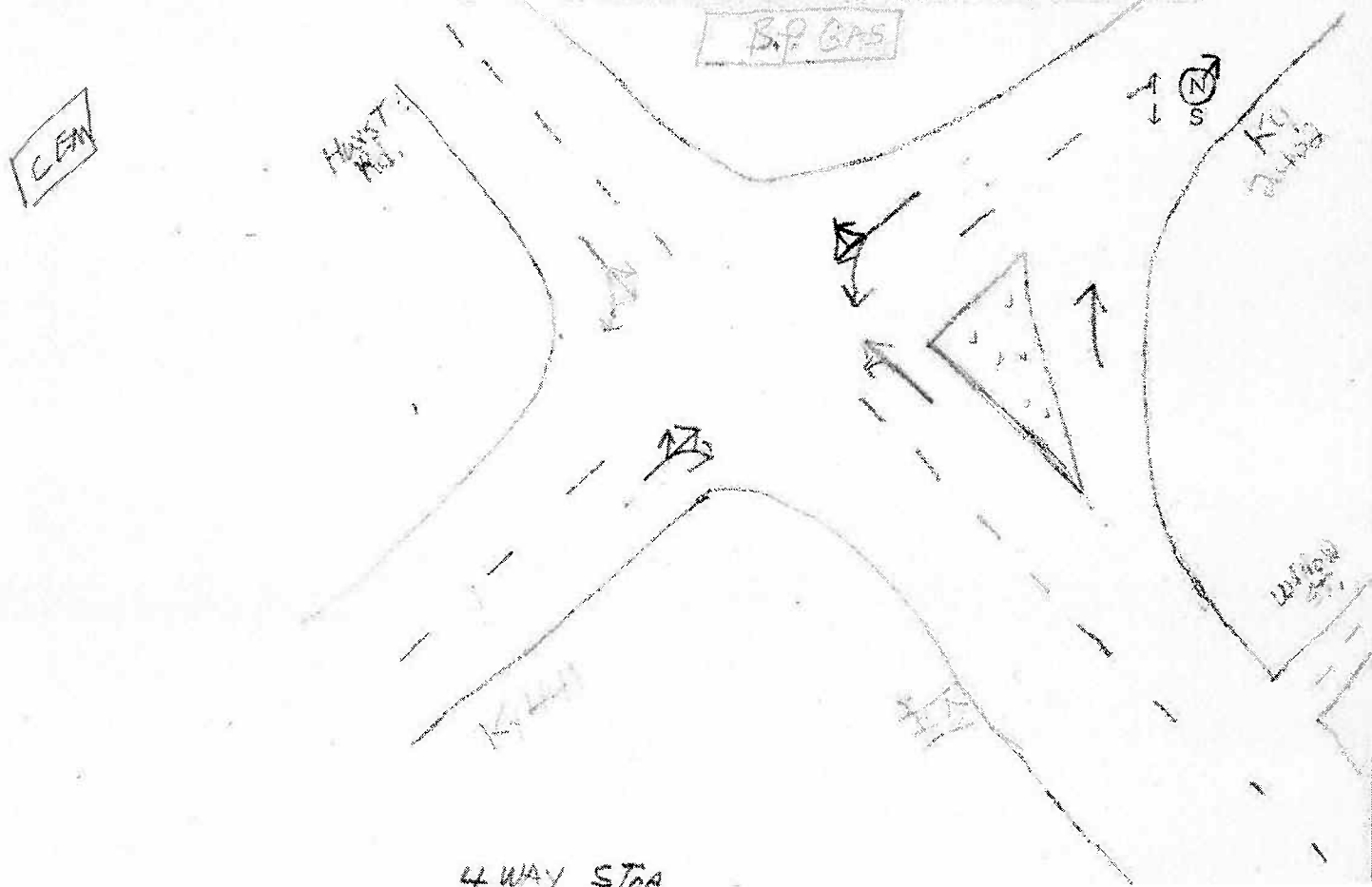
Latitude N _____ Longitude W _____

Date 11-17-09 Begin Time 12:30 End Time 6:30

Field Technician Bob B. O'G...

SITE DRAWING

(detailed drawing showing each lane and movement counted with this machine)

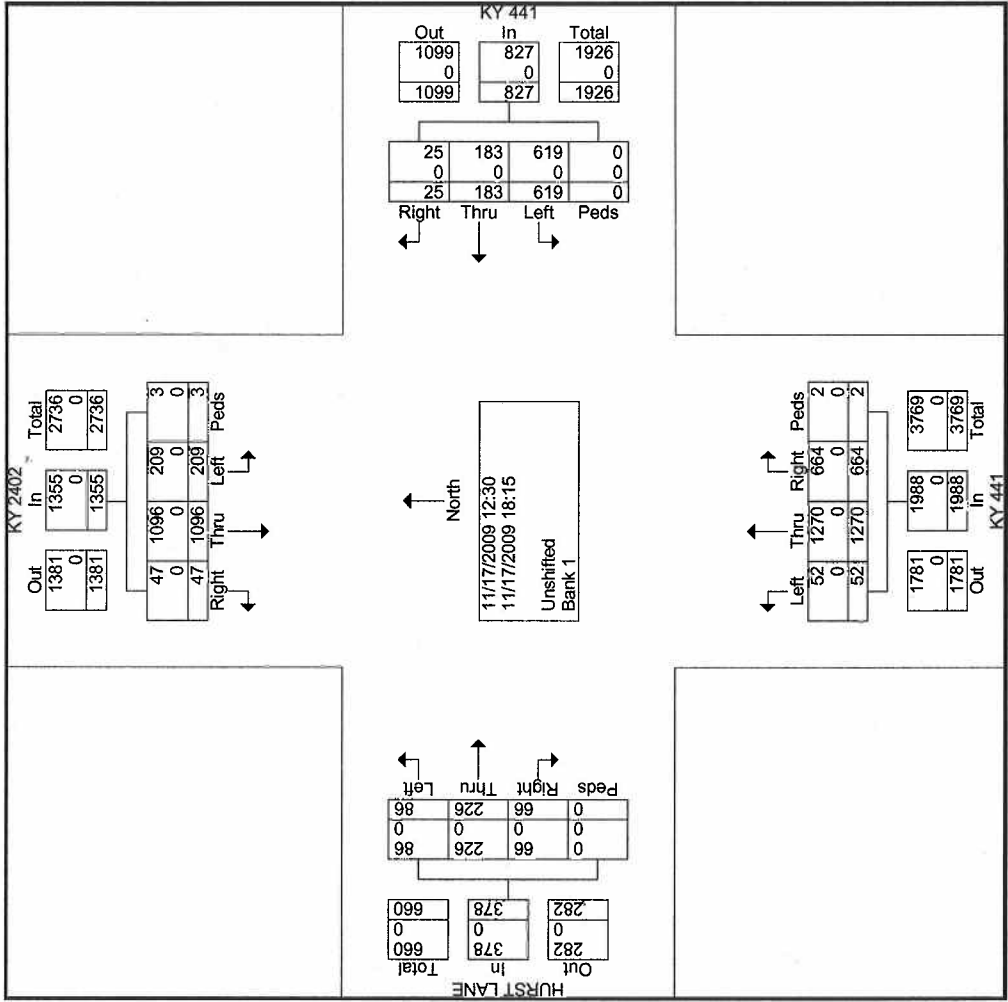


Kentucky Transportation Cabinet

File Name : BELL2402441PM
 Site Code : 00701001
 Start Date : 11/17/2009
 Page No : 1

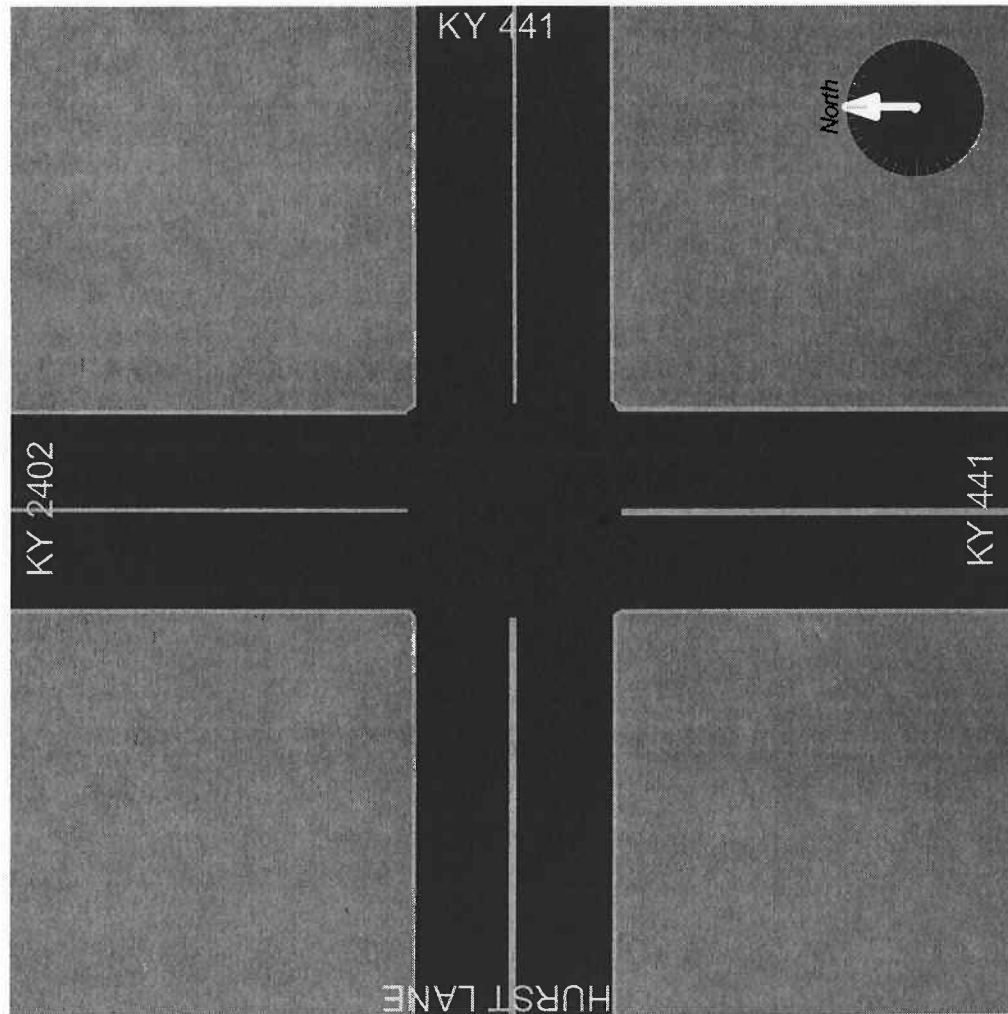
Groups Printed- Unshifted - Bank 1

Start Time	KY 2402						KY 441						HURST LANE					
	From North						From East						From South					
	Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total		Left	Thru	Right	Peds	App. Total	Int. Total
12:30	11	44	1	0	56		21	7	2	0	30		3	53	30	0	86	19
12:45	5	41	7	0	53		33	5	1	0	39		1	35	19	0	55	15
Total	16	85	8	0	109		54	12	3	0	69		4	88	49	0	141	34
13:00	8	50	2	0	60		22	6	0	0	28		2	55	18	0	75	19
13:15	3	39	2	0	44		20	11	1	0	32		3	60	32	0	95	20
13:30	7	44	4	1	56		23	10	3	0	36		2	58	21	0	81	17
13:45	10	49	2	0	61		24	10	1	0	35		1	51	25	0	77	12
Total	28	182	10	1	221		89	37	5	0	131		8	224	96	0	328	68
14:00	6	46	2	0	54		24	10	1	0	35		4	44	23	0	71	17
14:15	7	37	2	0	46		27	12	1	0	40		2	36	28	0	66	17
14:30	7	37	4	0	48		21	9	3	0	33		0	61	24	0	85	12
14:45	6	57	0	0	63		21	7	1	0	29		2	54	28	0	84	13
Total	26	177	8	0	211		93	38	6	0	137		8	195	103	0	306	59
15:00	7	64	4	0	75		21	7	1	0	29		4	57	23	0	84	20
15:15	8	48	1	0	57		31	7	2	0	40		3	49	25	1	78	18
15:30	13	66	3	0	82		43	7	1	0	51		2	59	26	0	87	23
15:45	15	49	1	0	65		29	10	0	0	39		2	69	26	0	97	21
Total	43	227	9	0	279		124	31	4	0	159		11	234	100	1	346	82
16:00	10	55	1	0	66		33	5	3	0	41		6	59	33	0	98	21
16:15	5	57	2	0	64		26	6	2	0	34		1	81	34	0	116	23
16:30	8	73	1	0	82		23	6	0	0	29		2	50	34	0	86	14
16:45	13	43	2	0	58		30	10	1	0	41		4	53	35	0	92	9
Total	36	228	6	0	270		112	27	6	0	145		13	243	136	0	392	67
17:00	4	38	1	0	43		44	11	1	0	56		1	51	36	0	88	23
17:15	17	43	0	0	60		15	8	0	0	23		1	47	37	0	85	8
17:30	12	31	3	0	46		22	2	0	0	24		0	53	30	0	83	16
17:45	11	28	1	0	40		14	5	0	0	19		2	43	18	0	63	8
Total	44	140	5	0	189		95	26	1	0	122		4	194	121	0	319	55
18:00	7	29	1	2	39		26	4	0	0	30		1	53	32	1	87	9
18:15	9	28	0	0	37		26	8	0	0	34		3	39	27	0	69	4
Grand Total	209	1096	47	3	1355		619	183	25	0	827		52	1270	664	2	1988	378
Approch %	15.4	80.9	3.5	0.2			74.8	22.1	3	0			2.6	63.9	33.4	0.1		
Total %	4.6	24.1	1	0.1	29.8		13.6	4	0.5	0	18.2		1.1	27.9	14.6	0	43.7	8.3
Unshifted	209	1096	47	3	1355		619	183	25	0	827		52	1270	664	2	1988	378
% Unshifted	100	100	100	100	100		100	100	100	0	100		100	100	100	0	100	100
Bank 1	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0
% Bank 1	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0



Kentucky Transportation Cabinet

File Name : BELL2402441PM
Site Code : 00701001
Start Date : 11/17/2009
Page No : 3



KY 441 Intersection peak hour

HCS+: Unsignalized Intersections Release 5.2

Phone:
E-Mail :

Fax:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst: KYTC
Agency/Co.: KYTC
Date Performed: 11/20/2009
Analysis Time Period:
Intersection: KY441/KY2402/Hurst Lane
Jurisdiction: D11
Units: U. S. Customary
Analysis Year: 2009
Project ID: Middlesboro SUA Study
East/West Street: KY 2402 & KY 441
North/South Street: Hurst Lane & KY 441

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	36	228	6	13	243	136	12	46	9	112	27	6
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LT R	
PHF	1.00		1.00		1.00		1.00 1.00	
Flow Rate	270		392		67		139 6	
% Heavy Veh	9		9		9		9 0	
No. Lanes	1		1		1		2	
Opposing-Lanes	1		1		2		1	
Conflicting-Lanes	2		2		1		1	
Geometry group	2		2		4a		5	
Duration, T	0.25 hrs.							

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	270		392		67		139	6
Left-Turn	36		13		12		112	0
Right-Turn	6		136		9		0	6
Prop. Left-Turns	0.1		0.0		0.2		0.8	0.0
Prop. Right-Turns	0.0		0.3		0.1		0.0	1.0
Prop. Heavy Vehicle	0.1		0.1		0.1		0.1	0.0
Geometry Group	2		2		4a		5	
Adjustments Exhibit 17-33:								
hLT-adj	0.2		0.2		0.2		0.5	
hRT-adj	-0.6		-0.6		-0.6		-0.7	
hHV-adj	1.7		1.7		1.7		1.7	

hadj, computed 0.2 KY 441 Intersection peak hour -0.0 0.1 0.6 -0.7

Worksheet 4 - Departure Headway and Service Time

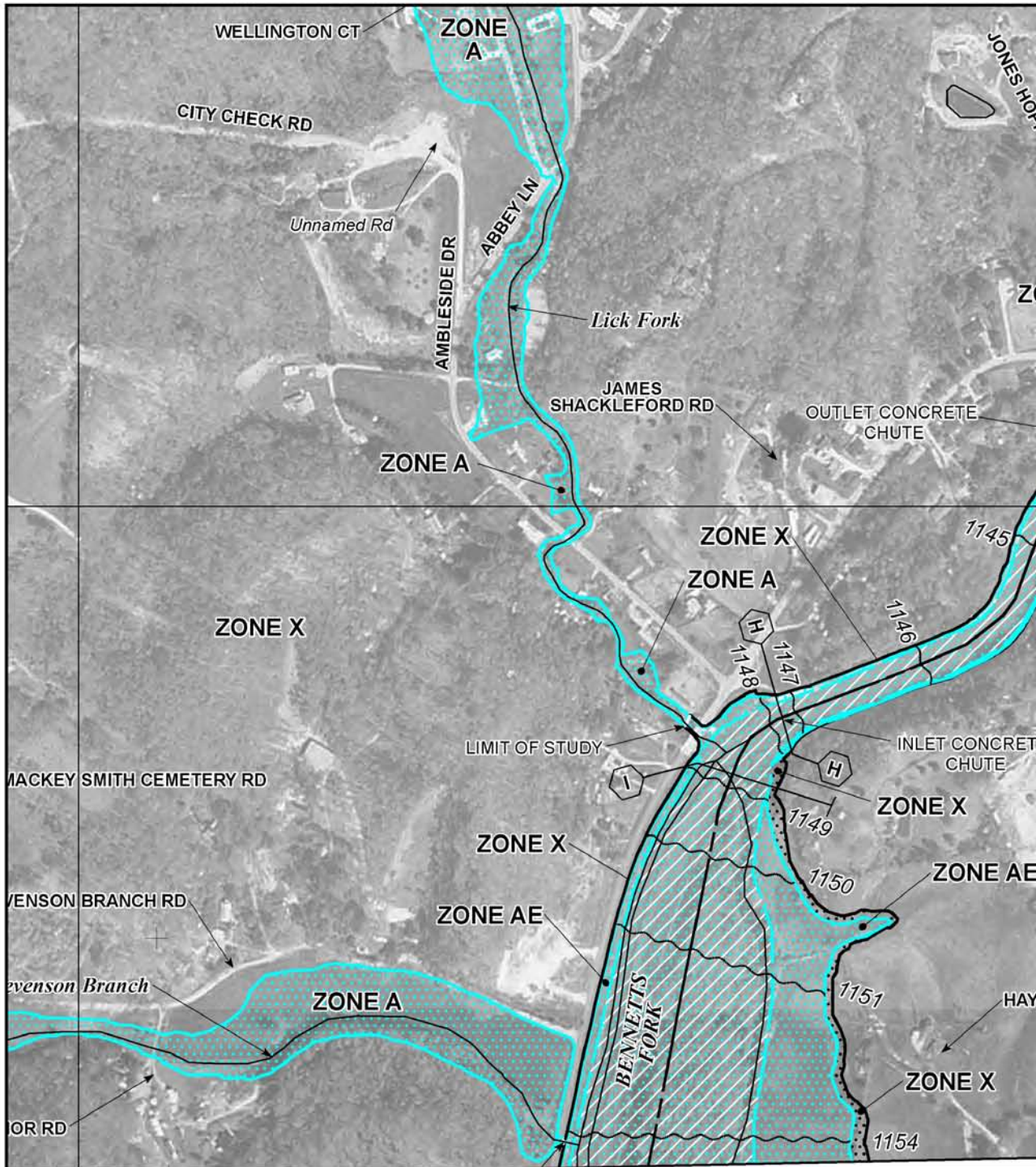
	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	270		392		67		139	6
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.24		0.35		0.06		0.12	0.01
hd, final value	5.34		4.98		6.21		6.90	5.63
x, final value	0.40		0.54		0.12		0.27	0.01
Move-up time, m		2.0		2.0		2.0		2.3
Service Time	3.3		3.0		4.2		4.6	3.3

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	270		392		67		139	6
Service Time	3.3		3.0		4.2		4.6	3.3
Utilization, x	0.40		0.54		0.12		0.27	0.01
Dep. headway, hd	5.34		4.98		6.21		6.90	5.63
Capacity	520		642		317		389	256
Delay	11.87		13.71		10.02		12.09	8.38
LOS	B		B		B		B	A
Approach:								
Delay		11.87		13.71		10.02		11.94
LOS		B		B		B		B
Intersection Delay	12.57							
Intersection LOS					B			

Appendix G

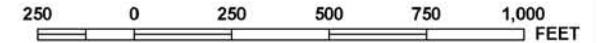
FIRM Maps of Study Area



Insurance Program at 1-800-638-6620.



MAP SCALE 1" = 500'



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0238D

FIRM

FLOOD INSURANCE RATE MAP

BELL COUNTY, KENTUCKY

AND INCORPORATED AREAS

PANEL 238 OF 360

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BELL COUNTY	210010	0238	D
MIDDLESBORO, CITY OF	215190	0238	D

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

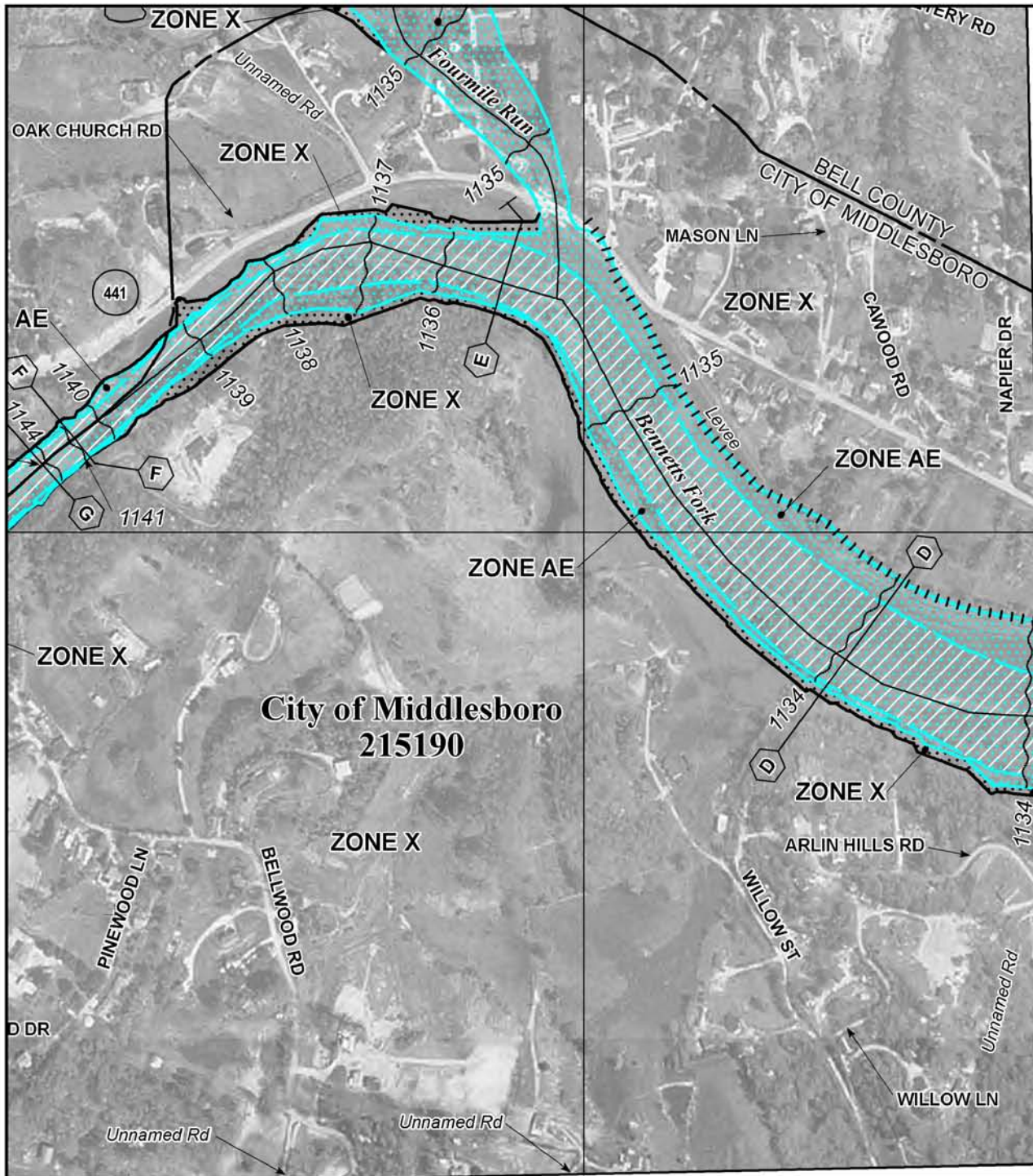


MAP NUMBER
21013C0238D

EFFECTIVE DATE
SEPTEMBER 29, 2006

Federal Emergency Management Agency

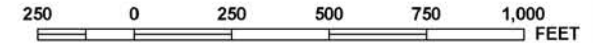
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



Insurance Program at 1-800-638-6620.



MAP SCALE 1" = 500'



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0238D

FIRM

**FLOOD INSURANCE RATE MAP
BELL COUNTY,
KENTUCKY
AND INCORPORATED AREAS**

PANEL 238 OF 360

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BELL COUNTY	210010	0238	D
MIDDLESBORO, CITY OF	215190	0238	D

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

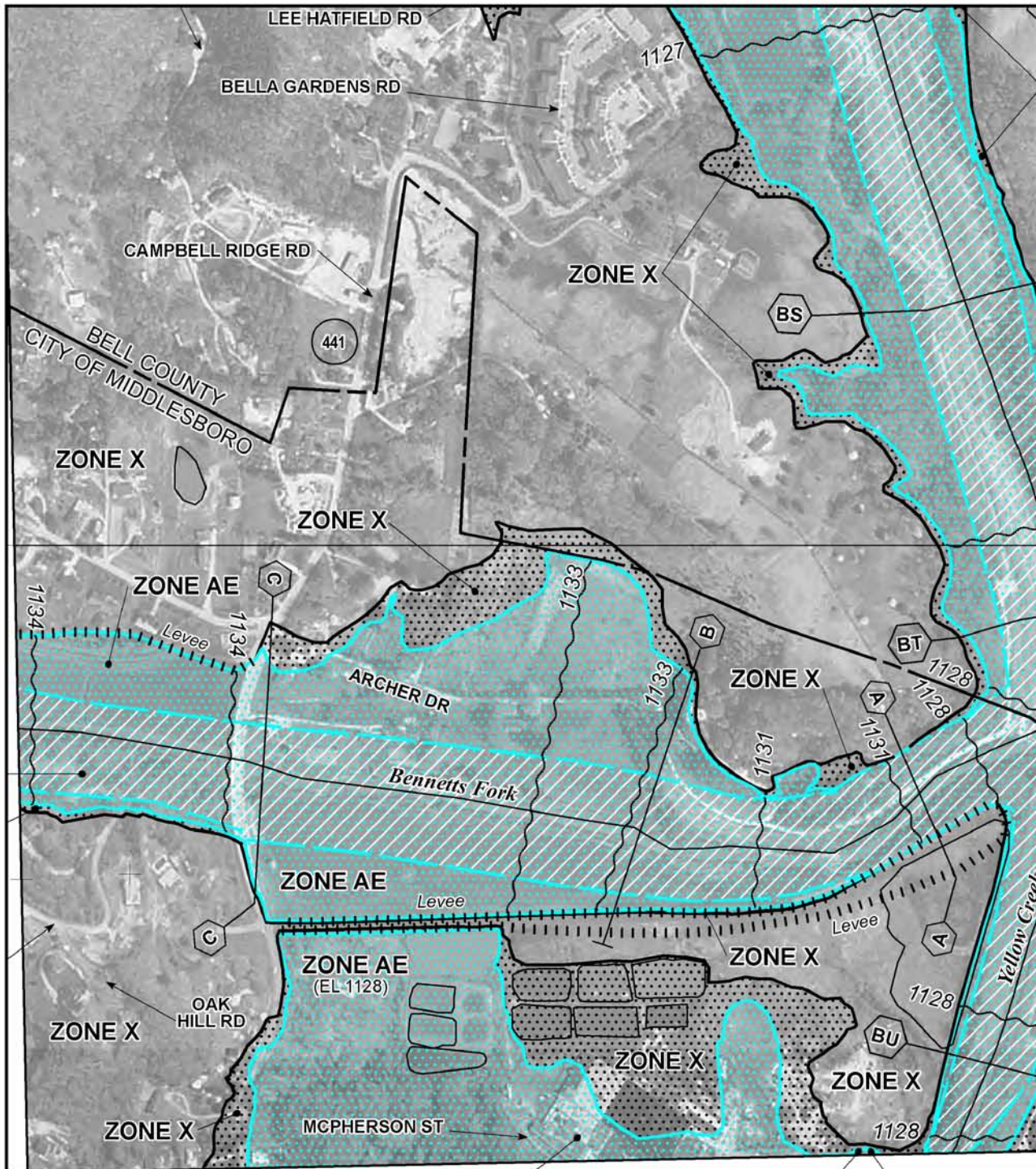


**MAP NUMBER
21013C0238D**

**EFFECTIVE DATE
SEPTEMBER 29, 2006**

Federal Emergency Management Agency

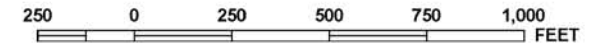
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



Insurance Program at 1-800-638-6620.



MAP SCALE 1" = 500'



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0239D

FIRM

FLOOD INSURANCE RATE MAP
BELL COUNTY,
KENTUCKY
AND INCORPORATED AREAS

PANEL 239 OF 360

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BELL COUNTY	210010	0239	D
MIDDLESBORO, CITY OF	215190	0239	D

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

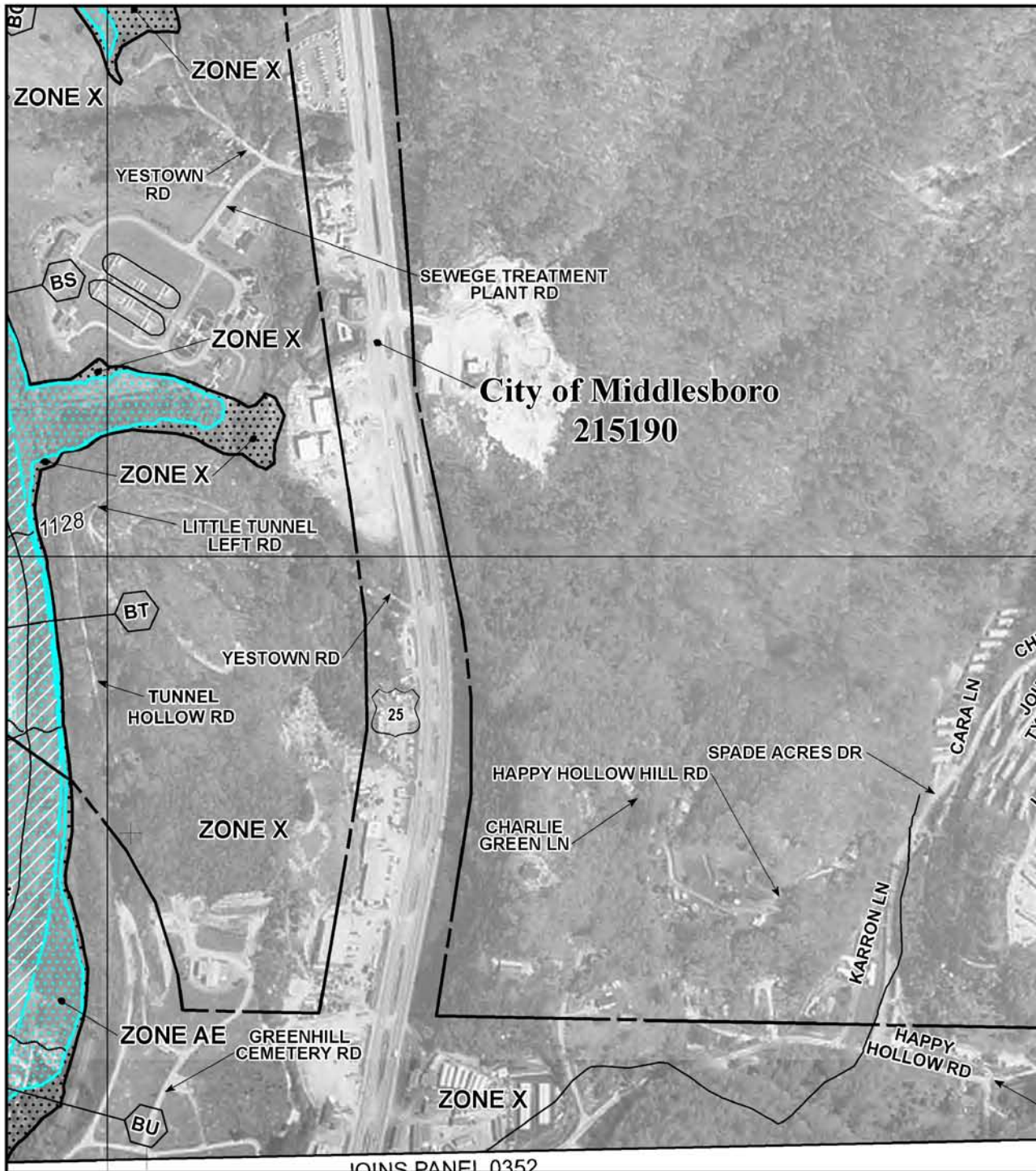


MAP NUMBER
21013C0239D

EFFECTIVE DATE
SEPTEMBER 29, 2006

Federal Emergency Management Agency

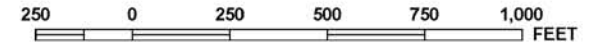
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



Insurance Program at 1-800-638-6620.



MAP SCALE 1" = 500'



NFIP

PANEL 0239D

FIRM

**FLOOD INSURANCE RATE MAP
BELL COUNTY,
KENTUCKY
AND INCORPORATED AREAS**

PANEL 239 OF 360

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BELL COUNTY	210010	0239	D
MIDDLESBORO, CITY OF	215190	0239	D

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.



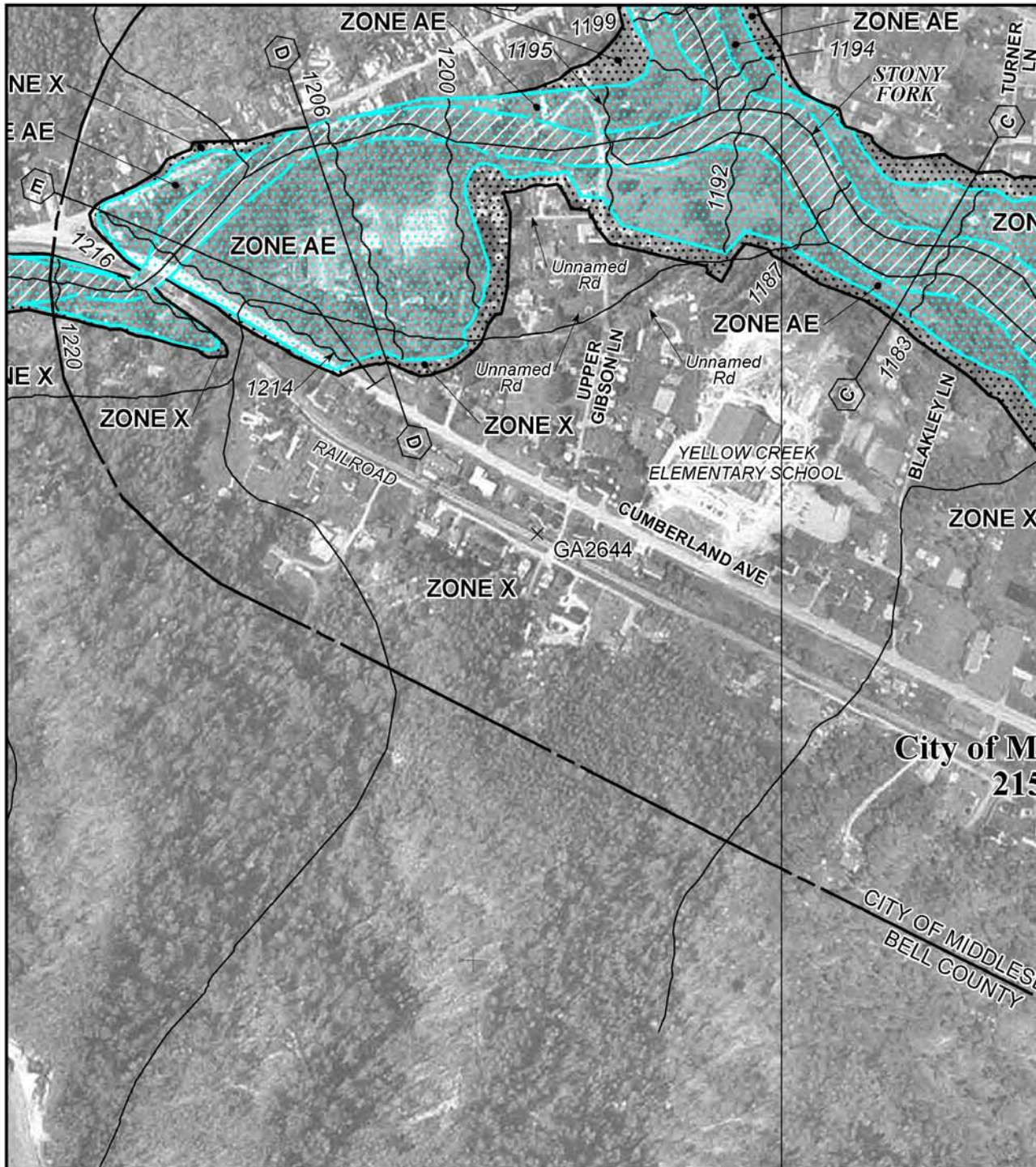
**MAP NUMBER
21013C0239D**

**EFFECTIVE DATE
SEPTEMBER 29, 2006**

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

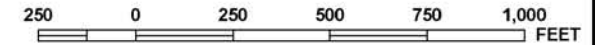
JOINS PANEL 0352



Insurance Program at 1-800-638-6620.



MAP SCALE 1" = 500'



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0332D

FIRM

FLOOD INSURANCE RATE MAP

BELL COUNTY, KENTUCKY

AND INCORPORATED AREAS

PANEL 332 OF 360

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BELL COUNTY	210010	0332	D
MIDDLESBORO, CITY OF	215190	0332	D

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

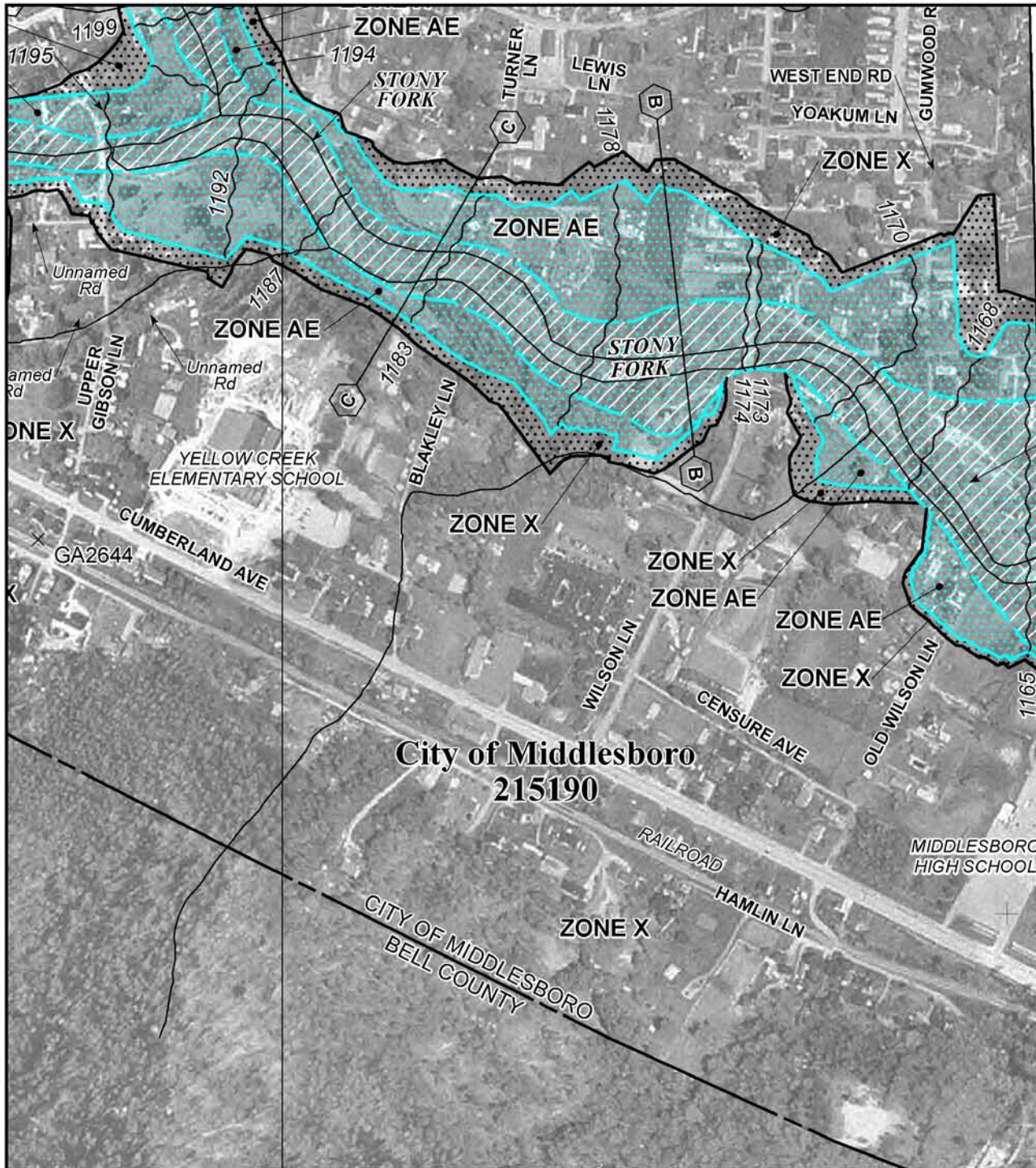


MAP NUMBER
21013C0332D

EFFECTIVE DATE
SEPTEMBER 29, 2006

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



Insurance Program at 1-800-638-6620.



MAP SCALE 1" = 500'

250 0 250 500 750 1,000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0332D

FIRM

FLOOD INSURANCE RATE MAP
BELL COUNTY,
KENTUCKY
AND INCORPORATED AREAS

PANEL 332 OF 360

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BELL COUNTY	210010	0332	D
MIDDLESBORO, CITY OF	215190	0332	D

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

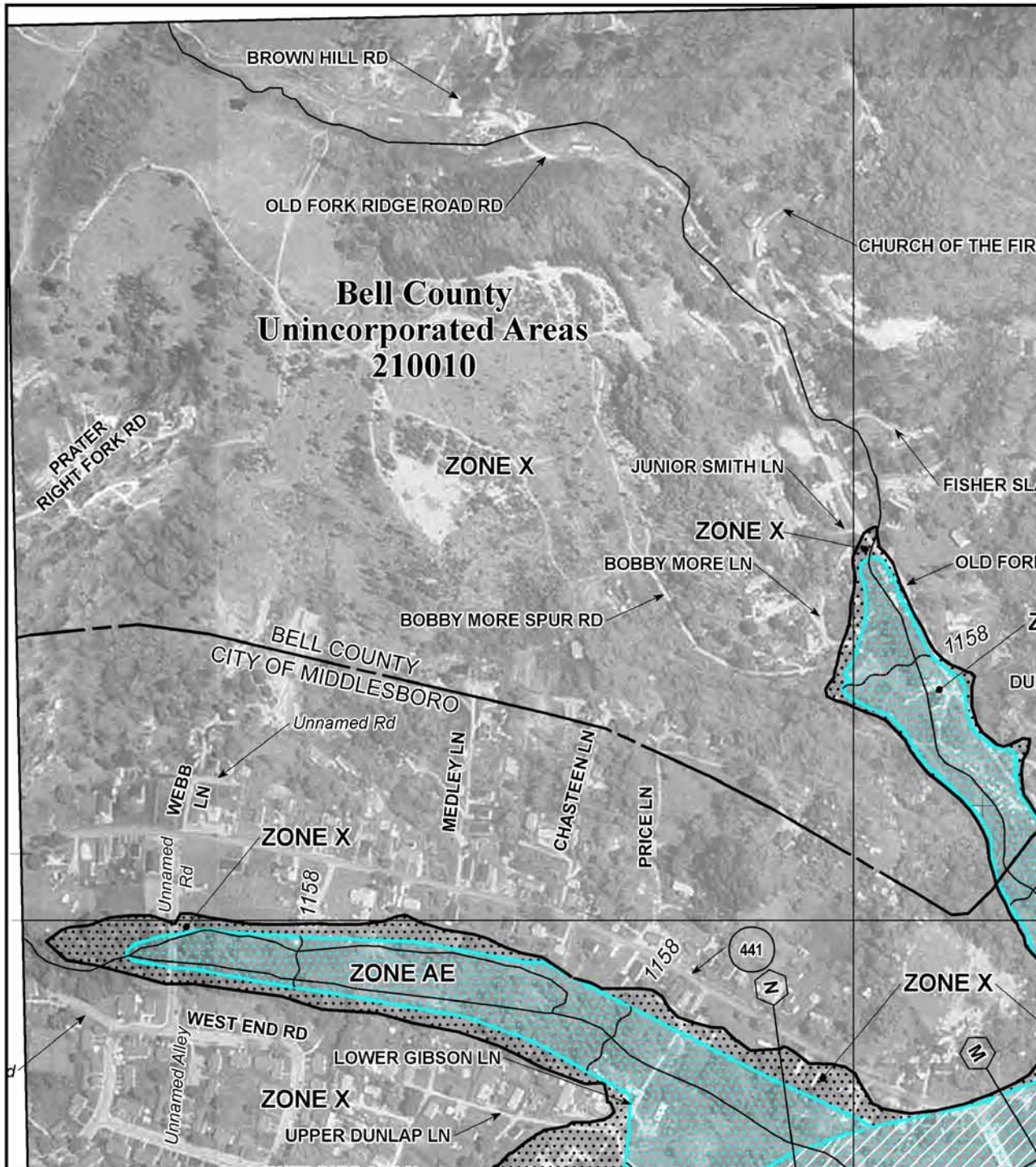


MAP NUMBER
21013C0332D

EFFECTIVE DATE
SEPTEMBER 29, 2006

Federal Emergency Management Agency

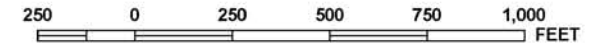
This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



Insurance Program at 1-800-638-6620.



MAP SCALE 1" = 500'



NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0351D

FIRM

FLOOD INSURANCE RATE MAP
BELL COUNTY,
KENTUCKY
AND INCORPORATED AREAS

PANEL 351 OF 360

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BELL COUNTY	210010	0351	D
MIDDLESBORO, CITY OF	215190	0351	D

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

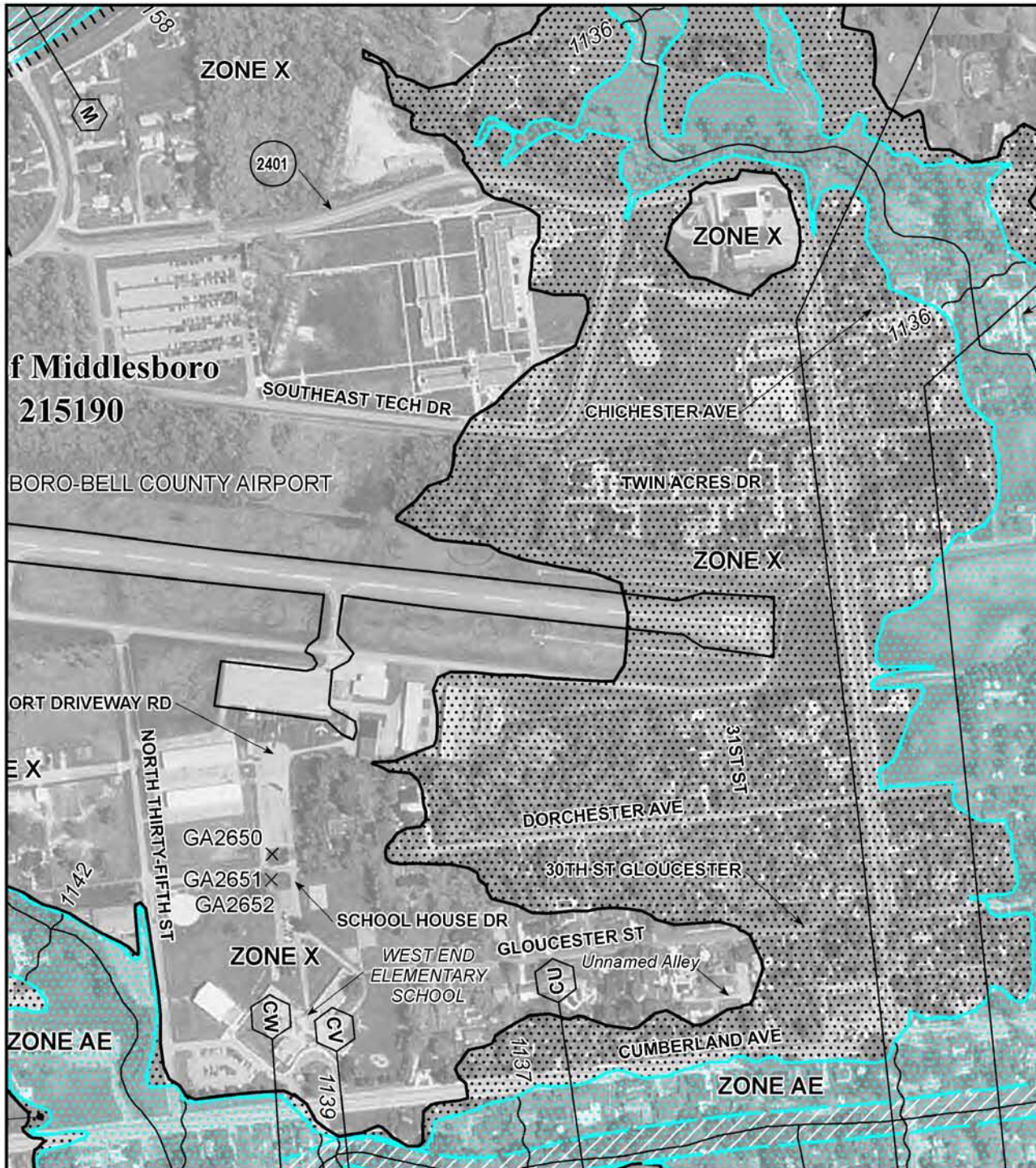


MAP NUMBER
21013C0351D

EFFECTIVE DATE
SEPTEMBER 29, 2006

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



Insurance Program at 1-800-638-6620.



MAP SCALE 1" = 500'

250 0 250 500 750 1,000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0351D

FIRM

**FLOOD INSURANCE RATE MAP
BELL COUNTY,
KENTUCKY
AND INCORPORATED AREAS**

PANEL 351 OF 360

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BELL COUNTY	210010	0351	D
MIDDLESBORO, CITY OF	215190	0351	D

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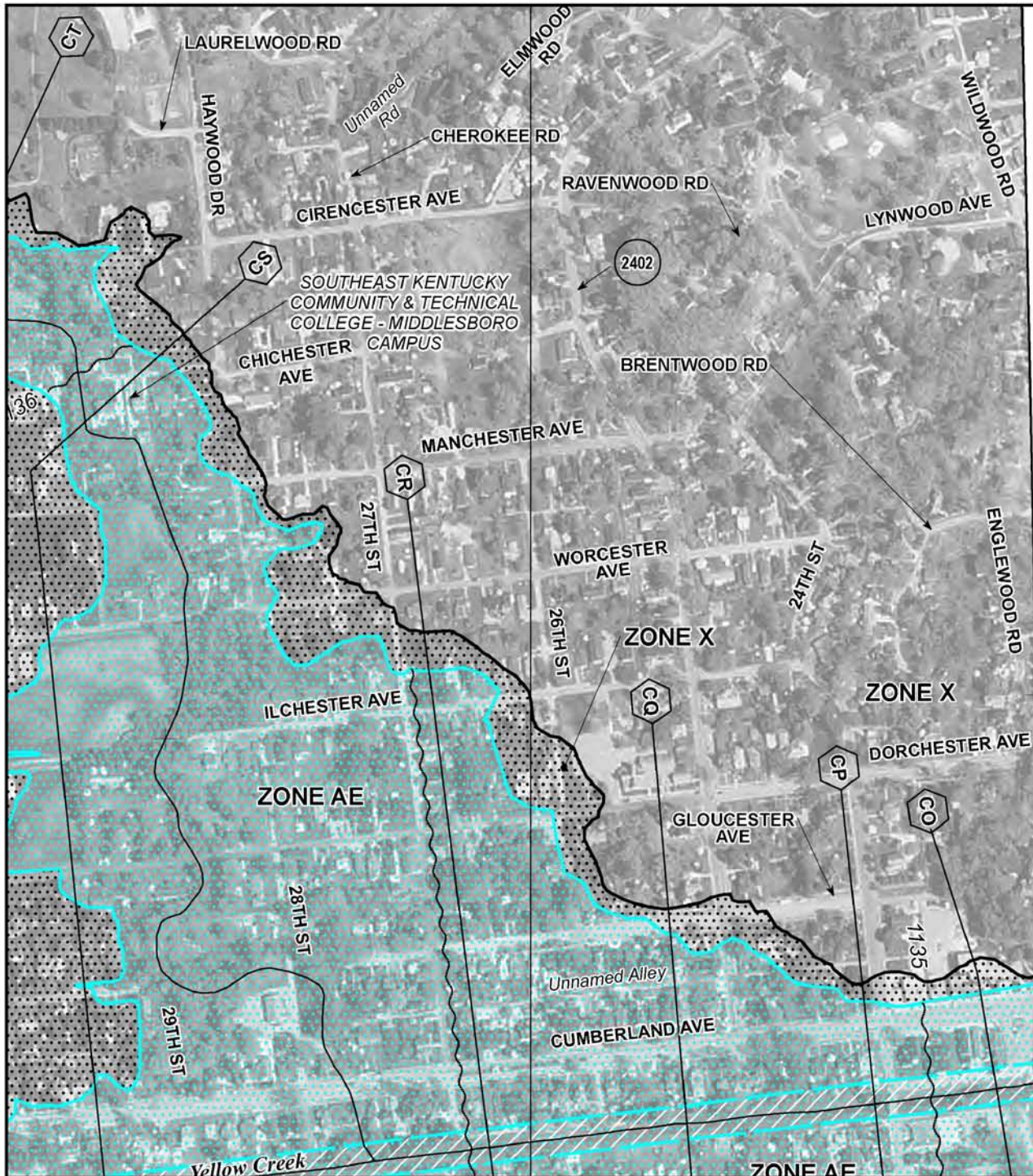


**MAP NUMBER
21013C0351D**

**EFFECTIVE DATE
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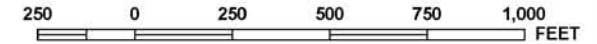
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Insurance Program at 1-800-638-6620.



MAP SCALE 1" = 500'



NFIP

PANEL 0351D

FIRM

**FLOOD INSURANCE RATE MAP
BELL COUNTY,
KENTUCKY
AND INCORPORATED AREAS**

PANEL 351 OF 360

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

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MIDDLESBORO, CITY OF	215190	0351	D

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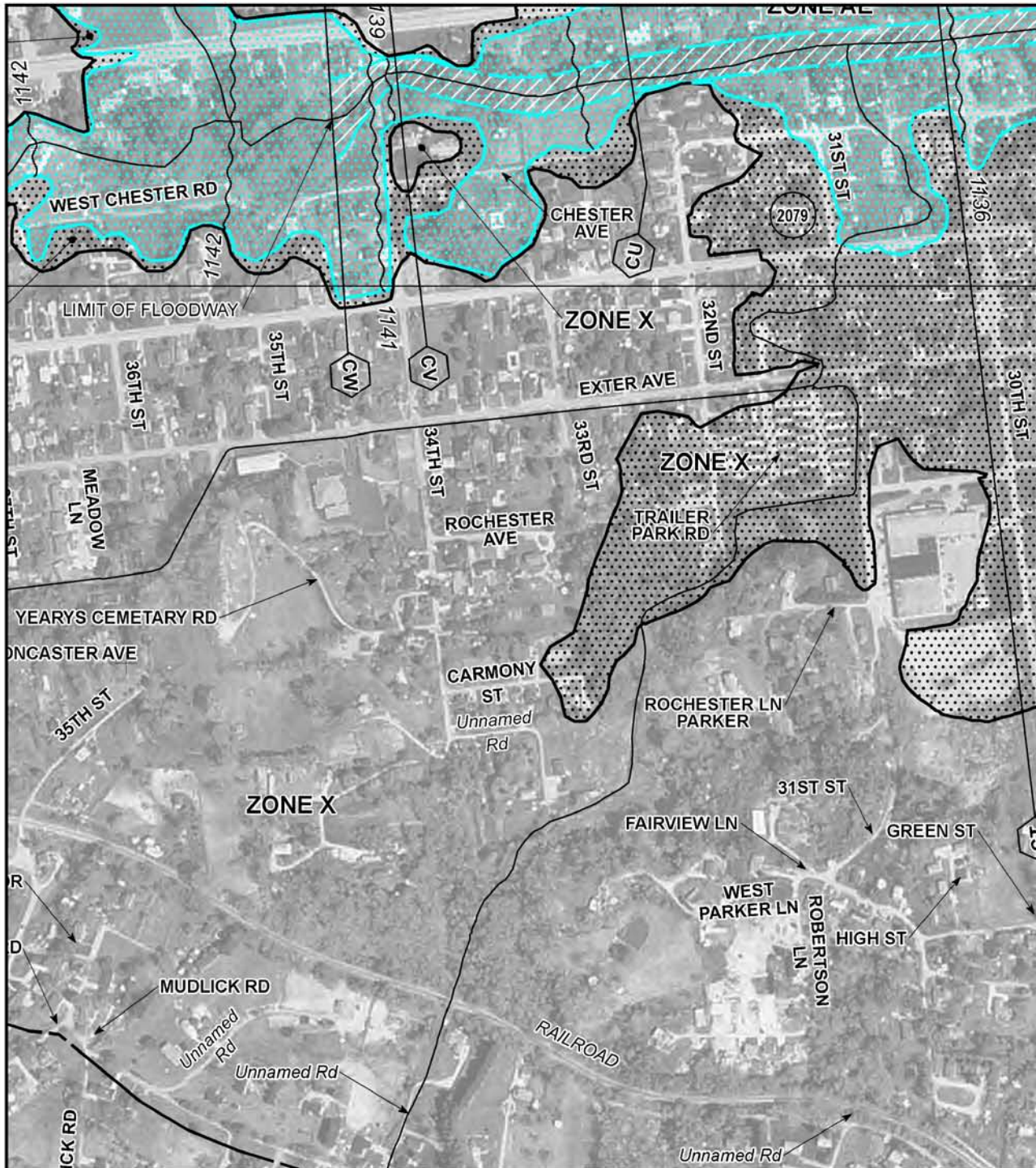


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**EFFECTIVE DATE
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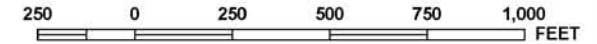
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NFIP

PANEL 0351D

FIRM

FLOOD INSURANCE RATE MAP
BELL COUNTY,
KENTUCKY
AND INCORPORATED AREAS

PANEL 351 OF 360

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

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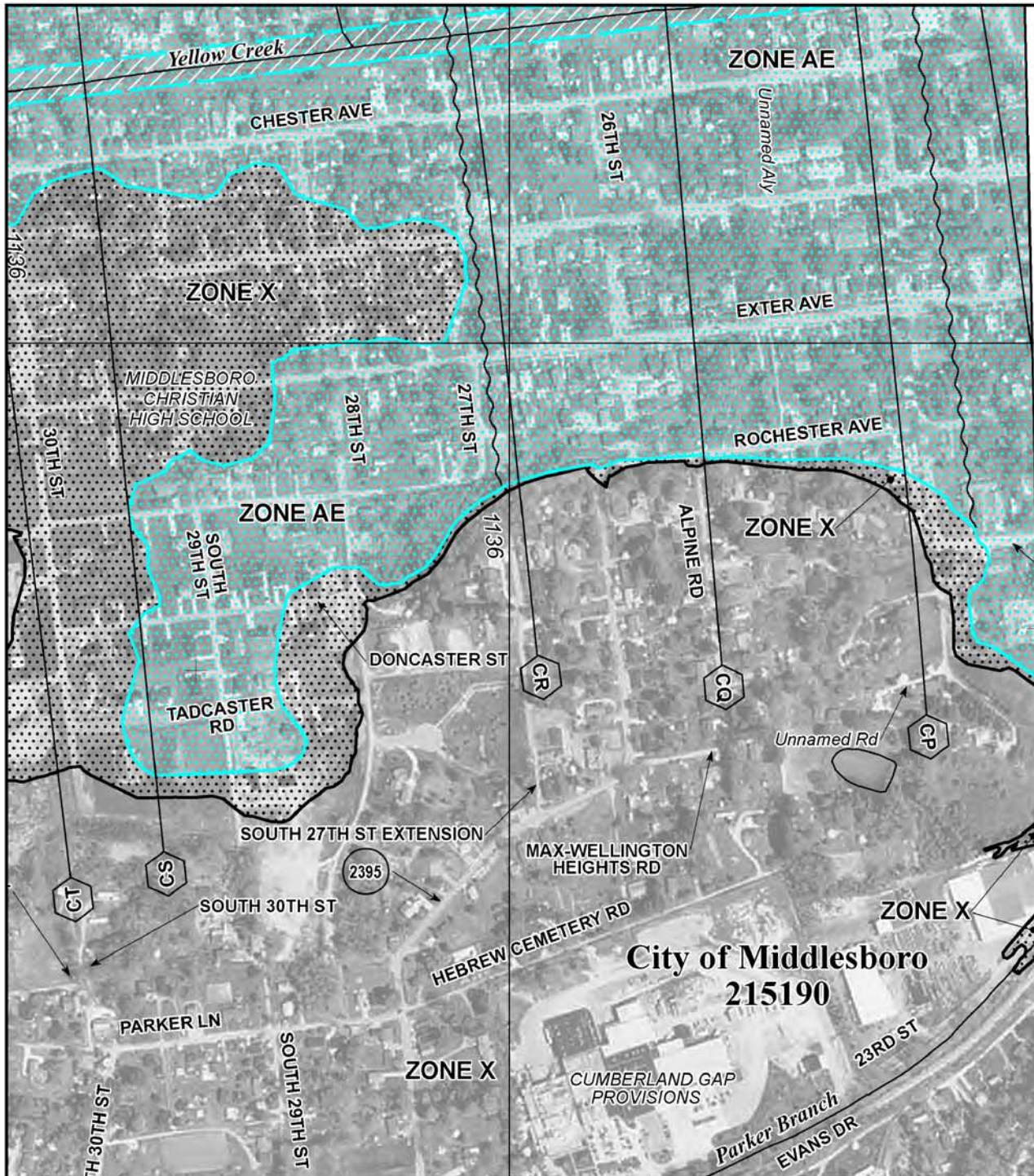


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21013C0351D

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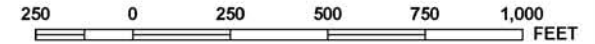
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NFIP

PANEL 0351D

FIRM

FLOOD INSURANCE RATE MAP
BELL COUNTY,
KENTUCKY
AND INCORPORATED AREAS

PANEL 351 OF 360

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

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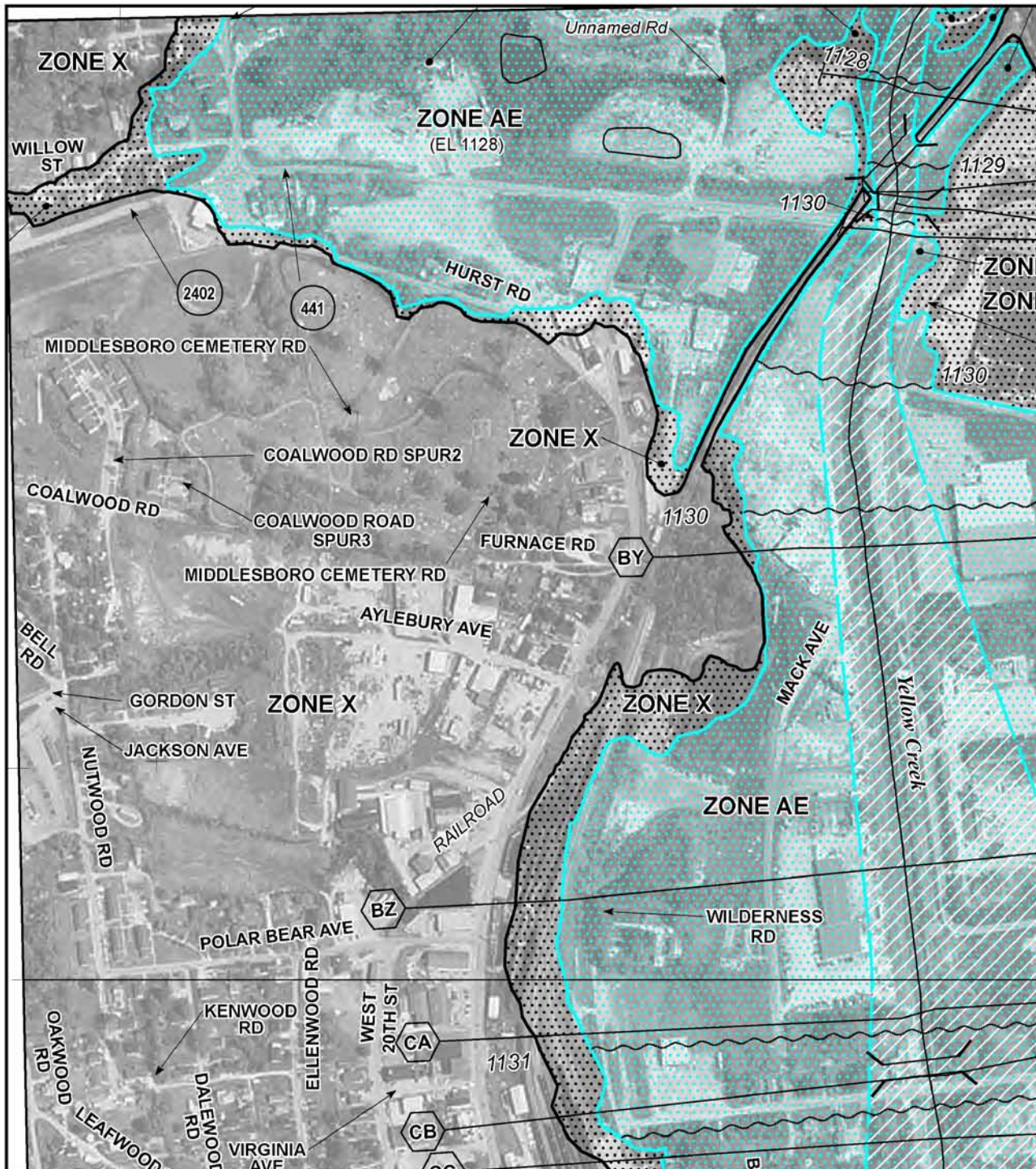


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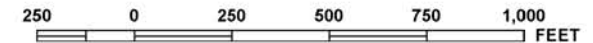
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MAP SCALE 1" = 500'



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NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0352D

FIRM

FLOOD INSURANCE RATE MAP

BELL COUNTY, KENTUCKY

AND INCORPORATED AREAS

PANEL 352 OF 360

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BELL COUNTY	210010	0352	D
MIDDLESBORO, CITY OF	215190	0352	D

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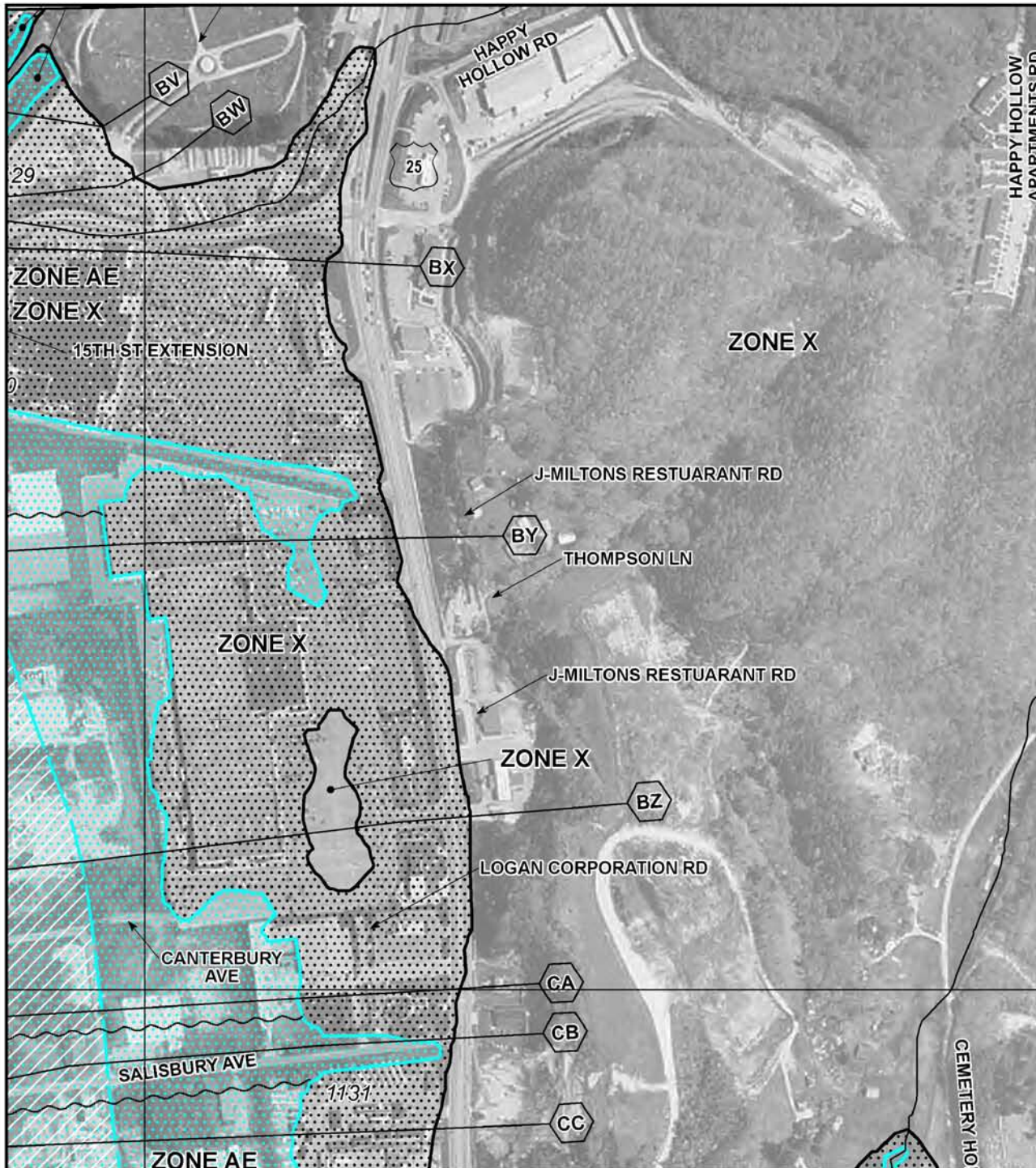


MAP NUMBER
21013C0352D

EFFECTIVE DATE
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Federal Emergency Management Agency

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Insurance Program at 1-800-638-6620.



MAP SCALE 1" = 500'

250 0 250 500 750 1,000 FEET

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0352D

FIRM

**FLOOD INSURANCE RATE MAP
BELL COUNTY,
KENTUCKY
AND INCORPORATED AREAS**

PANEL 352 OF 360

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

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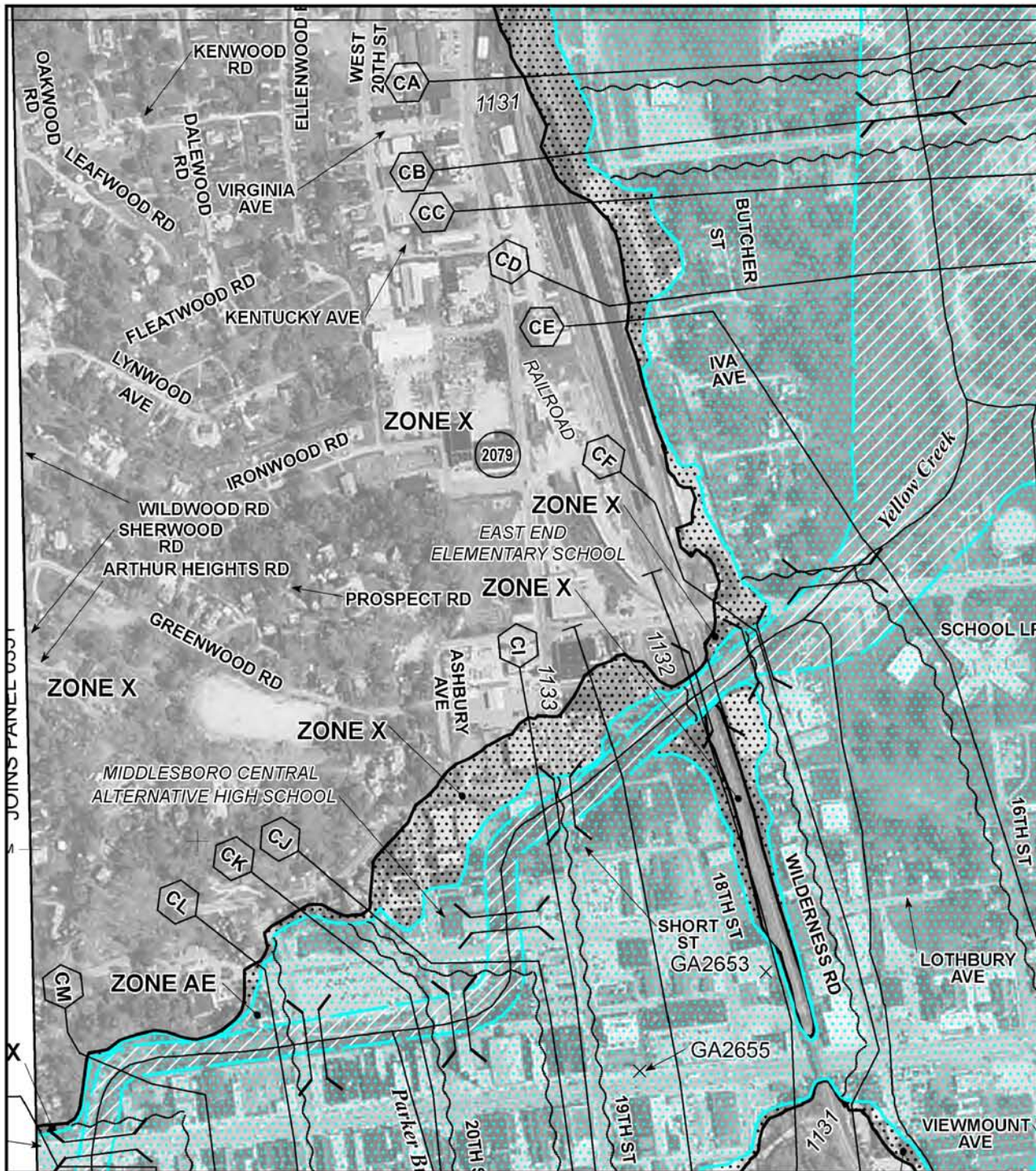


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NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0352D

FIRM

FLOOD INSURANCE RATE MAP

BELL COUNTY, KENTUCKY

AND INCORPORATED AREAS

PANEL 352 OF 360

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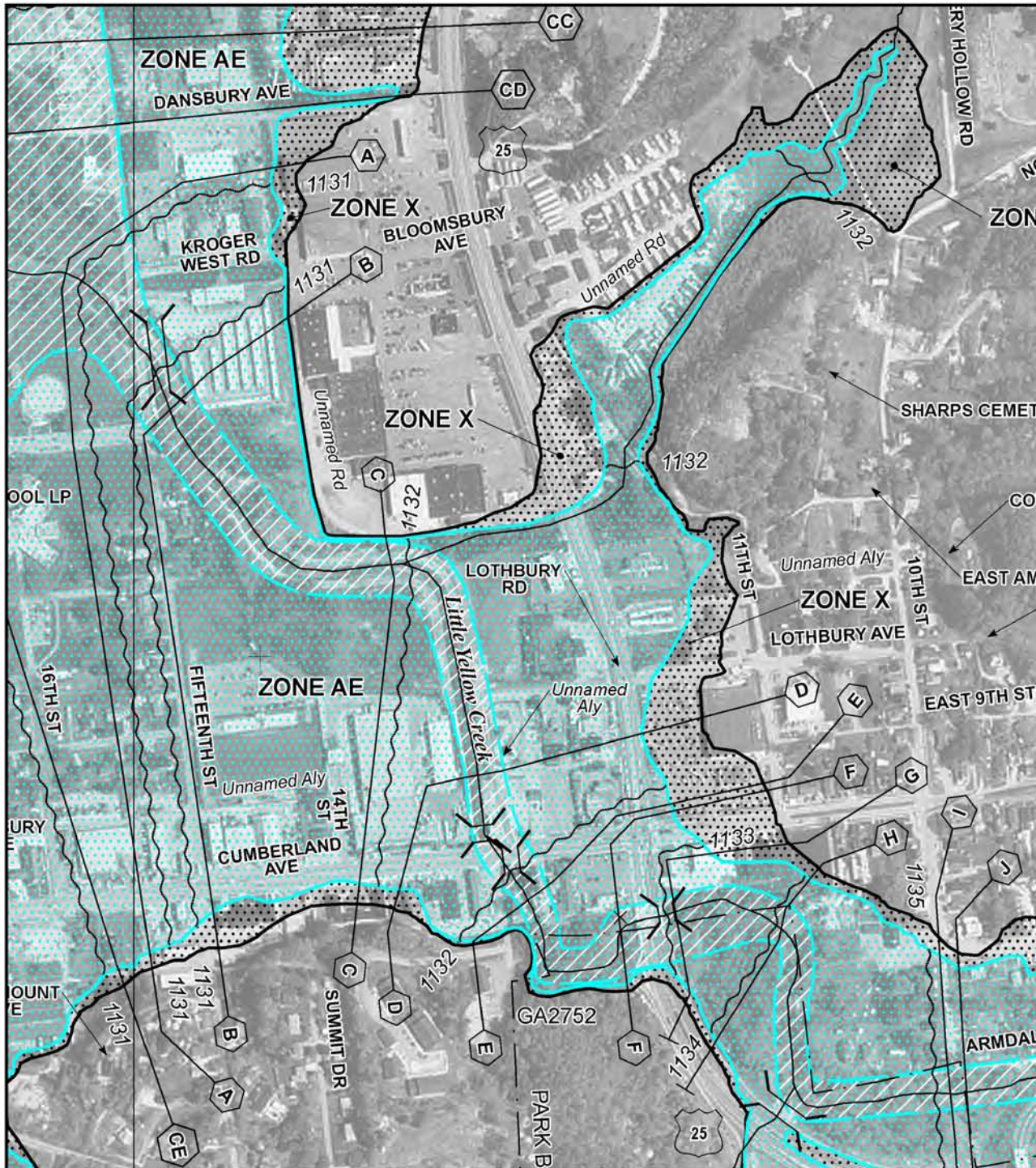


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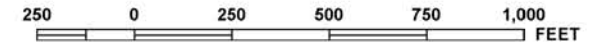
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PANEL 0352D

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FLOOD INSURANCE RATE MAP

BELL COUNTY, KENTUCKY

AND INCORPORATED AREAS

PANEL 352 OF 360

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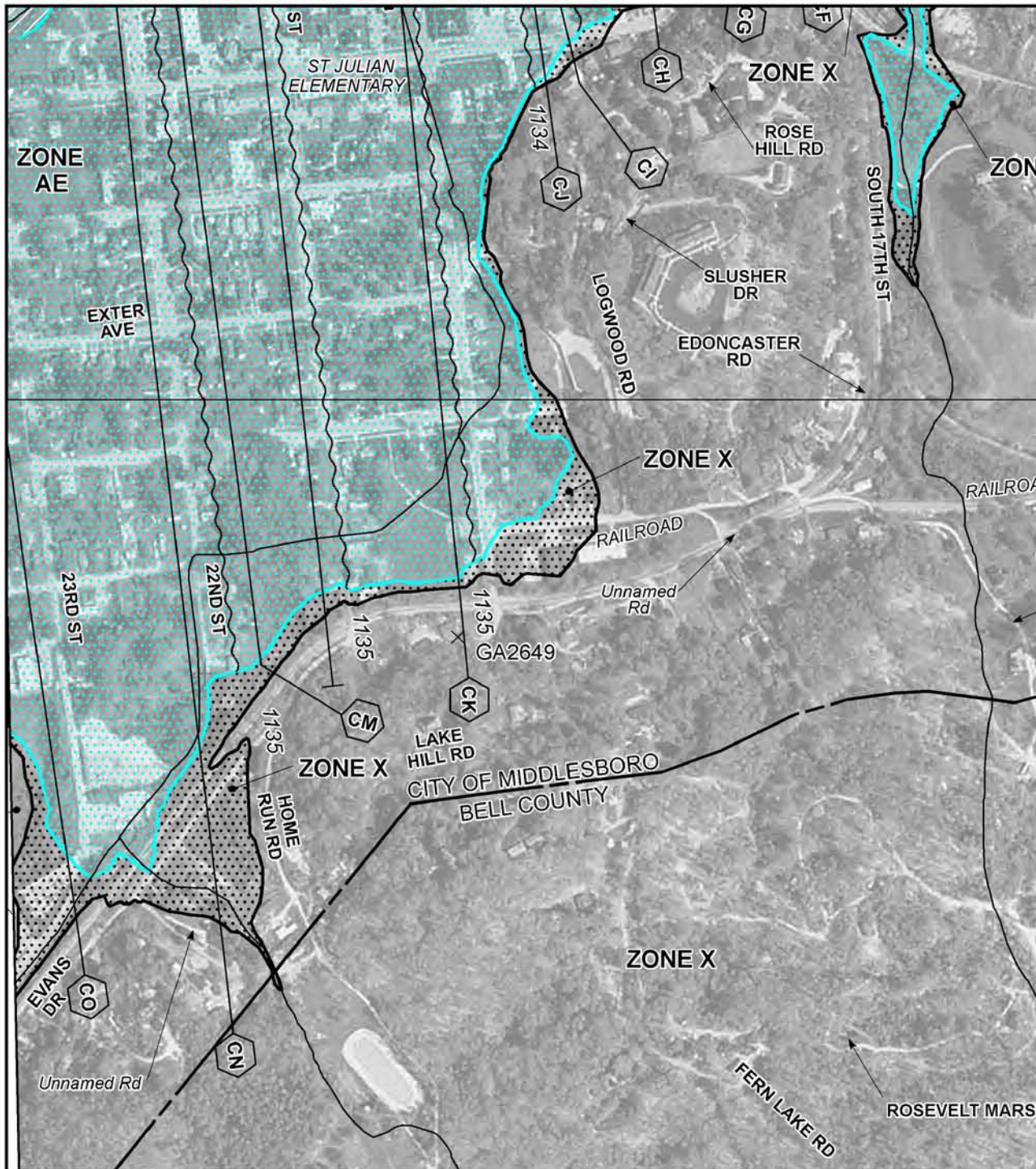


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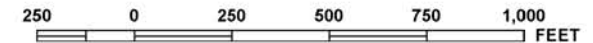
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FLOOD INSURANCE RATE MAP
BELL COUNTY,
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PANEL 352 OF 360

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