

EXECUTIVE SUMMARY
PROGRAMMING STUDY
KY 121, GRAVES COUNTY
RECONSTRUCT FROM 400 FEET SOUTH OF HARRIS LANE
TO THE INTERSECTION WITH KY 945
ITEM NO. 01-8100.00

The Kentucky Transportation Cabinet has undertaken this planning study to evaluate the need, and make recommendations for the reconstruction of KY 121 in Graves County. The project begins approximately one mile north of the Julian M. Carroll Purchase Parkway and the northwest urban limits of the city of Mayfield. The project then extends to the north approximately three miles to the intersection with KY 945. The project is identified in the 2003-2008 Six-Year Highway Plan as Item No. 01-8100.00. The termini in the original project description were modified during the course of this study to account for related reconstruction projects and recent milepoint changes to KY 121. The existing KY 121 corridor is a two-lane roadway through rolling terrain with 11-foot travel lanes and two-foot shoulders. The posted speed limit is 55 mph.



Looking south on KY 121 at intersection with KY 1276

Traffic Volumes

For year 2002, the highest volume of traffic, 5,000 vehicles per day with 14.5 percent trucks, was identified on the southernmost segment, between 400 feet south of Harris Lane and the intersection of KY 1276. The next highest volume of traffic, 3,970 vehicles per day with 14.5 percent trucks, was identified in the next segment to the north, between KY 1276 and KY 440. The northernmost segment between KY 440 and KY 945 carried the least traffic volume, 2,960 vehicles per day, but had the highest percentage of trucks, 17.0 percent. All three of these segments comprising the entire study corridor are operating at Level of Service “D.”

Future year (2030) traffic volumes were calculated based on an annual growth rate of 2.4 percent. The highest projected traffic volume for the year 2030 is 9,710 vehicles per day between the project’s southern terminus and KY 1276. The next highest projected traffic volume, 7,710 vehicles per day, is in the next segment to the north, between KY 1276 and KY 440. The lowest projected traffic volume for the study corridor, 5,750 vehicles per day, is in the northernmost segment, between KY 440 and KY 945. The study corridor is expected to remain at Level of Service “D” into the year 2030 if no improvements are made.

Purpose and Need

The Purpose and Need for this project are summarized as follows:

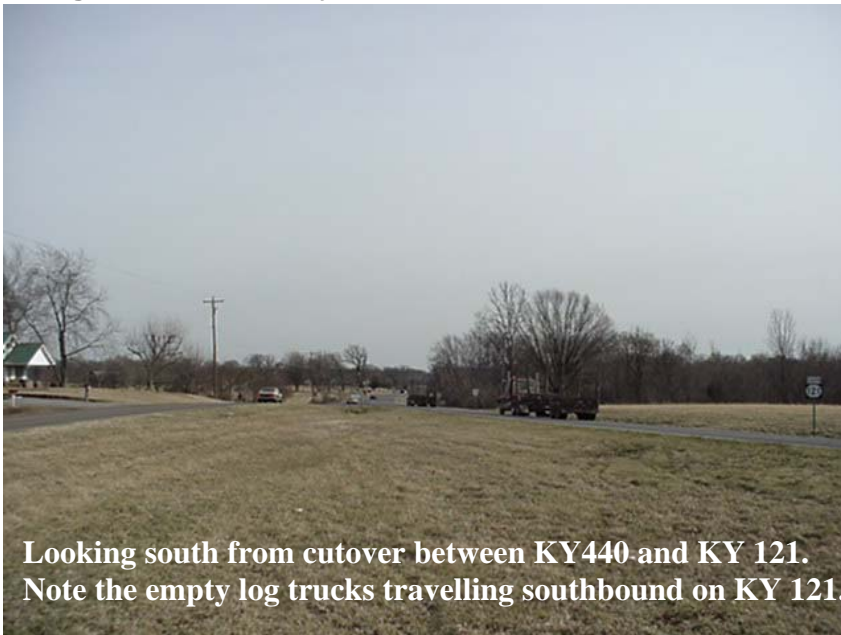
- **The proposed project is needed to improve safety on KY 121.**

While historical crash rates are less than critical along the study corridor, the combination of traffic from three area schools, increased dimension trucks, two-foot shoulders, and intersections with less than optimal sight distance make safety improvements the primary goal of this study.

- **Reconstruction is needed to address factors that will increase the average travel speed and decrease the percent time-spent following.**

The study corridor is located in a predominantly rural area in rolling terrain with clusters of residential dwellings and private driveway access along both sides of KY 121. South of the study corridor, urban five lane improvements have relieved congestion on KY 121 between the Julian M. Carroll (Purchase) Parkway to just north of the Graves County High School entrance. Reconstruction of KY 1830 is in the Right-of-Way acquisition phase and includes three-lane improvements on KY 121 from immediately north of the Graves County High School entrance to just beyond the KY 1830 intersection (400 feet south of Harris Lane). While capacity is not a problem on the study corridor, several factors contribute to a reduction in average travel speeds that bring the Level of Service down to “D.” Those factors include 11-foot lane and two-foot shoulder widths, a relatively high number of access points, and between 59 and 75 percent no-passing zones. Percent time-spent following is not an issue at the present, but becomes an issue at the higher projected traffic volumes within a couple of years, resulting in Level of Service “D.” Factors contributing to the higher percent time-spent following are the directional distribution (assumed a 57/43 percent split) combined with the percentage of no-passing zones (59-75 percent).

- **An improved KY 121 is needed to accommodate increased truck use and promote regional connectivity.**



Looking south from cutover between KY440 and KY 121.
Note the empty log trucks travelling southbound on KY 121.

KY 121 is the main truck route between Mayfield and Wickliffe, with both cities generating trucks on the corridor. Trucking companies in the area have expressed concern with lane and shoulder widths on KY 121. KYTC Highway Information System (HIS) data show 11-foot lanes and two-foot shoulders throughout the corridor. Truck percentages on KY 121 in 2002 were 14.5 percent on the segment

immediately south of the KY 440 intersection, and had increased to 15.4 percent by 2004. KY 121 is a designated “AAA” weight class highway allowing 80,000 pound gross vehicle

weights and is a state designated truck route on the National Truck Network (NN) allowing the use of increased dimension vehicles (102 inch wide trailers, versus 96 inches).

Concerns and Issues Considered During the Study

- A high school and new elementary school are located on KY 121 just south of the project study area. A middle school is also located in this general area on KY 1830.
- Continental General Tire, one of the areas largest employers and traffic generators, stopped production at its Mayfield plant in December 2004 resulting in the loss of over 800 jobs. The plant is located immediately east of the project study area at the KY 1276/US 45 intersection.
- There are plans for a major regional industrial park to be developed in the Folsomdale-Viola area north of Mayfield on US 45. Initial funding for land acquisition has been delivered. Employment estimates start at 1000 in 2008 rising to 4000 in 2017.
- An I-69 corridor is in the planning phase. It is expected this corridor will follow the existing Julian M. Carroll Purchase Parkway.
- An I-66 corridor is planned for the region. While the location of the proposed I-66 corridor has not been decided, there is no impact expected to this study segment of KY 121.
- The KY 1830 reconstruction project has moved forward with right-of-way acquisition. The utilities and construction phases are scheduled for 2005. A portion of this project includes intersection improvements at KY 121 as well as three-laning a segment of KY 121 immediately south of the project study area.
- Environmental concerns include numerous wetlands and streams, at least three potential threatened plant and animal species, 40 to 50 percent prime farmland soils, four possible hazardous materials contamination sites, and one cemetery within the project study area.

Proposed Improvement Alternatives

The following seven alternatives were developed for the possible reconstruction of KY 121:

- **Alternative 1, No-build** - This alternative involves making no improvements to KY 121 and does not address any of the project needs.
- **Alternative 2, Spot improvements** – The realignment of the skewed KY 440 intersection is the most pressing need on the study corridor. The northern study terminus was extended to the KY 945 intersection since it also is on a skew and would possibly be affected by any improvements made at the KY 440 intersection. KY 1276 also intersects KY 121 on a skew. Statistically there are no crash problems at any of these intersections, however, as traffic density increases, the potential for angle collisions with high speed-differentials and involving increased dimension vehicles would also be expected to increase.
- **Alternative 3, Two-lane reconstruction** – Two-lane improvements, shoulder and lane widening, would improve safety and the ability to handle trucks on KY 121 but would not do anything significant to improve level of service.
- **Alternative 4, Three-lane reconstruction** – At current or projected traffic levels, no significant operational improvements are expected by adding a two-way left-turn lane (TWLTL). A TWLTL might be considered if there was a crash problem, especially a problem with rear-end crashes.
- **Alternative 5, Two-lane reconstruction on four-lane right-of-way** – This recommendation would likely involve going off alignment due to the additional right-of-

way needed for the median, but would still fall within the project study corridor. This improvement would have the same advantages as the two-lane improvements noted above, with the added benefit of being able to provide additional capacity if needed in the future. The disadvantage would be the additional right-of-way costs.

- **Alternative 6, Four-lane reconstruction** – Four lane improvements would involve either a.) a four-lane rural divided section, or b.) a four-lane urban section with a TWLTL. Either would improve the current LOS from “D” to “A,” and would accommodate increases in traffic, improving the projected 2030 LOS from LOS “D” to “A.” The downside is that these improvements may be more than are needed given the current traffic levels and the uncertainty of projected future traffic levels. A combination of improvements, beginning on the east end of the study corridor with an urban section, and then switching to a rural section further west is also a consideration.



Looking north from intersection with KY 1830.

- **Alternative 7, Super-two reconstruction on five-lane right-of-way** – This alternative would involve purchasing the right-of-way for future five-lane improvements and reconstructing a two-lane highway with full shoulders. This alternative would have the same benefits as the two-lane improvements noted above with the advantage of being able to accommodate future increases in traffic if needed. The disadvantage is the same as that for the two-on-four case, that it

would require additional right-of-way. However, the right-of-way requirements would be less for the super-two compared to the two-on-four case and have a better chance to stay on the existing alignment.

Recommendations

It is recommended to make those improvements that address the immediate safety concerns on the corridor by providing full-width shoulders and realigning the major intersections at KY 440, KY 945 and KY 1276. While, four or five lane improvements are not being recommended at this time, it is recommended to allow for such improvements in the future should they become justified, and purchase the additional right-of-way early, before development continues and property values and right-of-way costs increase. **Therefore, the recommendation of this study is Alternative 7, Super-two on five-lane right-of-way. Refer to Exhibit ES1.** If traffic increases beyond projections, the additional right-of-way purchased can accommodate further improvements when needed. Full width shoulders are recommended due to the fact that this route is on the National Truck Network, designated by the state to carry increased dimension vehicles. **Improvements to realign the skewed intersections on the KY 121 study segment are also recommended in the following priority order: KY 440, KY 945, KY 1276. It is recommended that these intersection improvements be implemented in the short term, followed by the Alternative 7 recommended improvements.** While there are no immediate crash problems on the roadway, having existing and new schools immediately south of the project study area demand that an increased emphasis be placed on safety

Recommended Alternative – 7
 Two-Lane on Five-Lane Right-of-Way
 Project Length: 3.072 mi.
 Preliminary Cost Estimate:

Design	\$ 1,250,000
Right-of-Way	\$ 5,500,000
Utility Relocation	\$ 2,000,000
Construction	\$ 7,500,000
Total	\$ 16,250,000

Short Term Recommendation:
 Alternative 2 – Spot Improvements
 Intersections at: KY 440, KY 945 and KY 1276
 Preliminary Cost Estimate:

Design	\$ 325,000
Right-of-Way	\$ 500,000
Utility Relocation	\$ 600,000
Construction	\$ 1,400,000
Total	\$ 2,825,000

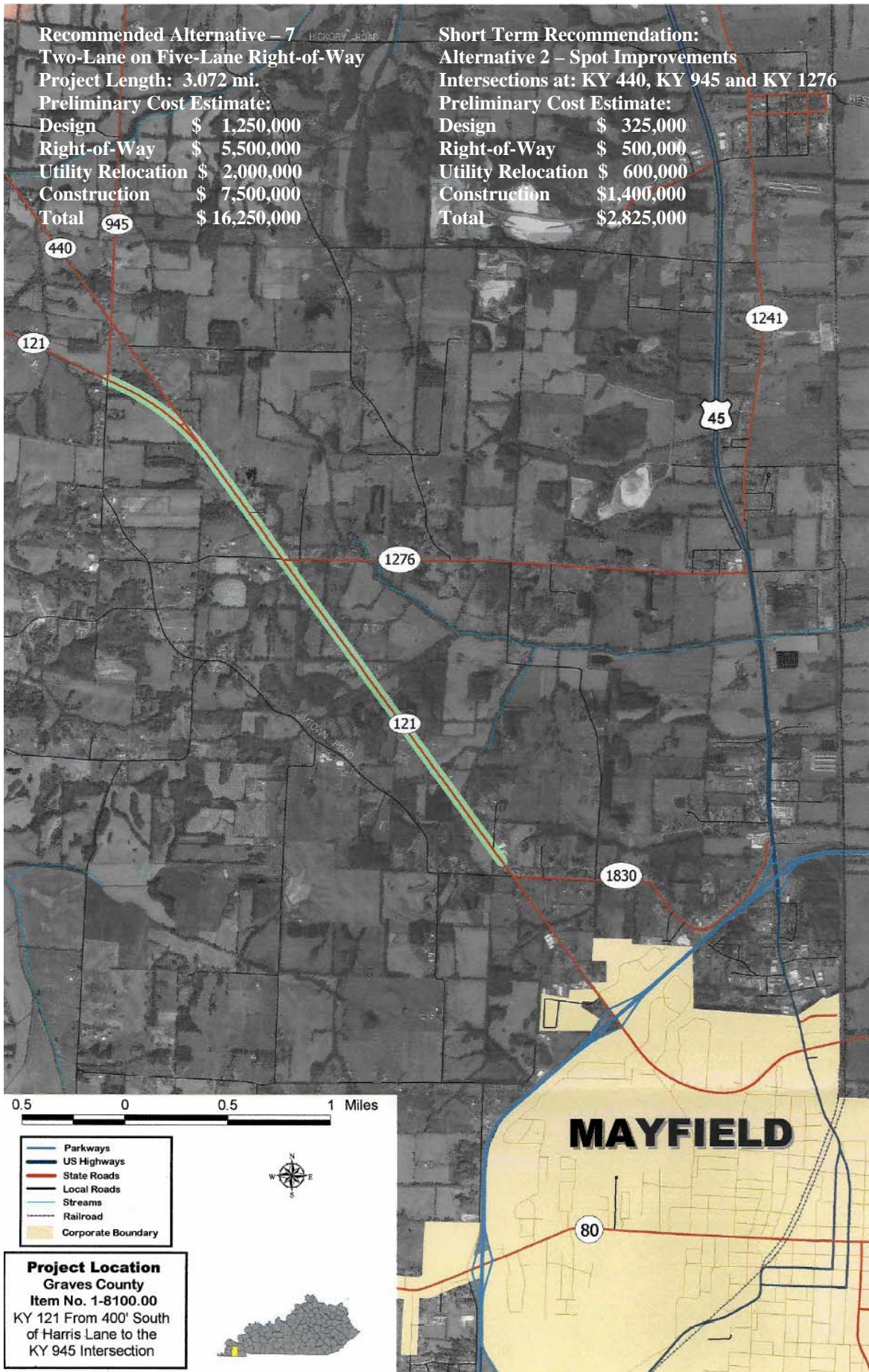


Exhibit ES1

while considering improvement alternatives. School bus safety will also benefit from wider shoulder and lane widths. Bicycle and pedestrian needs should also be addressed in future project phases. Turning lanes at the major intersections are also recommended.

Phase Costs

The only phase funded for this project was the planning phase listed in the FY 2003-2008 Six-Year Highway Plan. No other phases were scheduled or had funds allocated. The following table summarizes each of the alternatives and estimates for their respective costs.

	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6a	Alternative 6b	Alternative 7
Phase	Spot Improvements	Two-Lane	Three-Lane	Two-Lane on Four-Lane R/W	Four-Lane Rural	Four-Lane Urban	Two-Lane on Five-Lane R/W
Design	325,000	1,000,000	1,500,000	2,000,000	2,000,000	1,750,000	1,250,000
Right-of-Way	500,000	4,000,000	4,000,000	7,000,000	7,000,000	5,500,000	5,500,000
Utility Relocation	600,000	1,500,000	1,500,000	2,000,000	2,000,000	2,000,000	2,000,000
Construction	1,400,000	7,000,000	8,000,000	8,000,000	13,000,000	10,000,000	7,500,000
Total	2,825,000	13,500,000	15,000,000	19,000,000	24,000,000	19,250,000	16,250,000

Alternative 1, No-Build, has no associated costs.

Alternative 2, Spot improvements, are detailed in the following table:

Spot Improvements - KY 121 Intersections at:				
Phase	KY 440	KY 945	KY 1276	Total
Design	150,000	75,000	100,000	325,000
Right-of-Way	300,000	100,000	100,000	500,000
Utility Relocation	300,000	100,000	200,000	600,000
Construction	750,000	250,000	400,000	1,400,000
Total	1,500,000	525,000	800,000	2,825,000

Additional Information

The following KYTC Division of Planning Staff may be contacted if additional information is needed on the KY 121 Planning Study:

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- Jim Wilson, P.E. Team Leader, Strategic Corridor Planning Team
- Steve Ross, P.E. Project Manager, Strategic Corridor Planning Team

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**PROGRAMMING STUDY
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RECONSTRUCT FROM 400 FEET SOUTH OF HARRIS LANE
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I. INTRODUCTION

A. Study Purpose

The purpose of this programming study was to evaluate the need to reconstruct KY 121 from 400 feet south of Harris Lane, MP 14.095, to the intersection of KY 945, MP 17.167.

The project was identified in the Kentucky Transportation Cabinet's (KYTC) FY 2003-2008 Six-Year Highway Plan as Item No. 01-8100.00.

Through this programming study, the Kentucky Transportation Cabinet (KYTC) is able to ensure that future project improvements effectively address the identified transportation needs and that background information is provided that can be utilized to provide documentation that meets the federal requirements of the National Environmental Policy Act (NEPA).

B. Study Objectives and Tasks

The primary objectives of this study were to:

- Define improvement needs;
- Develop improvement recommendations

The primary tasks involved in this study were:

- Establishing a project team to provide direction and review for the study. This team included representation from the various phases of project development from the Highway District office as well as the Area Development District, the Environmental Overview consultant representatives, Central Office Highway Design, and representatives from Central Office Planning;
- Initiating early coordination with resource agencies and local officials;
- Reviewing the project description and identifying logical termini;
- Developing a draft statement of project goals;

- Identifying existing conditions including geometrics, capacity, accidents, and other issues that are influencing the project.
- Developing future year traffic projections;
- Identifying preliminary environmental concerns;
- Identifying environmental justice concerns;
- Addressing, in general terms, the project design criteria;
- Developing recommendations for improvements including cost estimates and priorities as needed.

C. Programming and Schedule

Only the planning phase of this project was listed in the FY 2003–2008 Six-Year Highway Plan, with \$200,000 committed funds for FY 2003. No other design, right-of-way, utilities or construction phases were scheduled in the FY 2003–2008 Six-Year Highway Plan or the 2005-2010 Recommended Six-Year Highway Plan.

II. PROJECT LOCATION, EXISTING CONDITIONS, AND TRAFFIC

A. Project Location

The project is located in Graves County, just outside the northwest urban limits of Mayfield, Kentucky. The project begins 400 feet south of Harris Lane on KY 121 at MP 14.095, and extends north to the intersection of KY 945 at MP 17.167 for a total project length of 3.072 miles. The project study area is shown in **Exhibit 1 in Appendix A**.

This project location description was revised from that listed in the 2003-2008 Six-Year Highway Plan, originally described as beginning at the Graves County High School Entrance and extending north to the KY 440 intersection. At the beginning of the study, construction had begun to convert the south end of the study segment from a two-lane to a five-lane urban, curb and gutter section, extending just north of the Graves County High School entrance. Also, KY 1830 reconstruction was in the Design phase at the start of this study, and included plans to three-lane the segment of KY 121 beginning at the five-lane section just north of the high school entrance. Those plans extended north beyond KY 1830 to a point 400 feet south of Harris Lane. The study team selected this location as the southern terminus of the project study. The northern terminus was extended beyond the intersection of KY 440 since potential improvements at that location would most likely involve the intersection immediately to the north, KY 945, due to the close proximity.

This segment of KY 121 is rolling with tangent horizontal alignment except for a single curve on the north end of the segment between KY 440 and

KY 945. There is a high school, a middle school and a planned elementary school just south of the southern terminus of the project study area. The Julian M. Carroll (Purchase) Parkway is located approximately one mile south of the study area and defines the outer urban limits of Mayfield. The Jackson Purchase Medical Center is located just within this boundary. The land use characteristics immediately south of the study area are predominantly commercial in an urban setting, however, beginning at the southern terminus and extending north through the study area, it is more rural with a mix of residential and agricultural land uses. There are several groups of houses having immediate driveway access to KY 121. Generally, the houses are not too closely spaced and have relatively deep setbacks from the road.

Photographs of the project area are shown in **Appendix B**.

B. Existing Highway Features

Data on existing conditions was taken from the Cabinet's Highway Information System (HIS) Database. This data was checked, verified, and /or updated through field surveys, as appropriate. Detailed summary data can be referenced in **Table 1, Appendix C**.

The KY 121 study segment has two 11 foot lanes with two-foot shoulders. The horizontal alignment is tangent except for one horizontal curve between KY 440 and KY 945. The vertical alignment is rolling. There was a sight distance problem noted at the intersection of KY 440 where a skewed horizontal alignment exists in combination with a crest vertical curve. There are two other intersections with state maintained routes in the study area with skewed horizontal alignment, KY 1276 and KY 945. None of the intersections in the study area are signalized. The posted speed limit is 55 mph with 41 percent passing sight distance. There are no bridges on this segment of KY 121. The study route was last surfaced in 1998. The average right-of-way width is 70 feet.

C. Highway Systems

Classification and system information for KY 121 is summarized in **Table 2, Appendix C**. The study portion of KY 121 is functionally classed as a Rural Minor Arterial and designated on the state system as a State Secondary. The study segment of KY 121 is not included in the National Highway System but is state designated on the National Truck Network (NN) allowing increased dimension vehicles (102 inches wide; 13 feet 6 inches high; semi-trailers up to 53 feet long; trailers up to 28 feet long – not to exceed two trailers per truck) to operate. This segment of KY 121 is

truck designated as “AAA” allowing a maximum gross weight of 80,000 pounds. KY 121 is the most direct truck route between Mayfield and Wickliffe.

D. Crash Analysis

Crash data was collected for the three-year time period from January 1, 2000 through December 31, 2002 from the Kentucky State Police (KSP) Collision Report Analysis for Safer Highways (CRASH) database. Roadway segments greater than 0.1 mile and spot locations, less than or equal to 0.1 mile, were analyzed to determine a Critical Rate Factor (CRF). The CRF is the ratio of the actual crash rate compared to the critical crash rate for roads of similar functional class in Kentucky. The critical crash rate is determined by a statistical calculation based on the average crash rate for roads of similar functional class in Kentucky. A Critical Rate Factor greater than or equal to 1.0 indicates a segment or spot where crashes may not be occurring randomly, with a probability of 0.995. This is the methodology described in the Kentucky Transportation Center’s Analysis of Traffic Accident Data in Kentucky (1998-2002).

Crash analysis data are summarized in **Table 3, Appendix C**. Statistics for types of crash are summarized in **Table 4, Appendix C**. Crash segments, numbers and critical rates are shown in **Table 5 Appendix C and Exhibit 2, Appendix A**. The locations of the injury and fatal crashes are also shown in this figure. There were a total of 27 crashes in the study corridor for the three years evaluated. Of this number, five resulted in injuries, one involved a fatality and the remaining 21 were property damage only (PDO). Ten of the crashes were the result of a collision with an animal, seven were rear end crashes, six were run-off-the-road crashes and the remaining four were due to other causes. The fatal crash occurred on KY 121 approximately midway between KY 1830 and KY 1276. In this fatal crash, two vehicles were traveling on KY 121 in opposite directions. The northbound vehicle was turning left into a residential driveway and was hit in the passenger side door by the southbound vehicle. This was the only crash analyzed in the three year time period that occurred at dusk. Two of the injury crashes and one of the property- damage-only crashes cited occurred on KY 1276 within 0.125 mile of the intersection with KY 121. One of these injury crashes was a “collision with fixed object” and the other was described as “other collision on shoulder.” No crash segments or spots had Critical Rate Factors greater than or equal to 1.0. The highest Critical Rate Factor identified was 0.608 for the segment between KY 1276 and KY 440. For this segment, there were no fatal, four injury and six PDO crashes, including the three crashes on KY 1276 at or near the KY 121 intersection.

E. Traffic

An analysis of the traffic and operational conditions on KY 121 was included in this study. A Level of Service (LOS) analysis was conducted for both existing and future conditions using Highway Capacity Analysis Software. Level of Service is a qualitative measure defined in the Highway Capacity Manual to describe traffic conditions. Individual levels of service characterize these conditions in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. Six levels of service are defined and are given letter designations, from A to F, with LOS A representing free flow conditions and LOS F representing severe congestion or gridlock. Typically, a minimum of LOS D is acceptable in urban areas and LOS C in rural areas. The Highway Capacity Manual (latest edition: HCM 2000), published by the Transportation Research Board (TRB), provides guidelines on the analytical procedures for estimating LOS for highways.

1. Existing Traffic Volumes and Levels of Service (2002)

The KYTC Highway Information System (HIS) was used to provide the existing traffic volumes and truck percentages (Year 2002) for three segments of KY 121 from 400 feet south of Harris Lane to the intersection with KY 945. The highest volume of traffic, 5,000 vehicles per day with 14.5 percent trucks, was identified on the southernmost segment, between 400 feet south of Harris Lane and the intersection of KY 1276. The next highest volume of traffic, 3,970 vehicles per day with 14.5 percent trucks, was identified in the next segment to the north, between KY 1276 and KY 440. The northernmost segment carried the least traffic volume, 2,960 vehicles per day, but had the highest percentage of trucks, 17.0 percent. All three of these segments comprising the entire study corridor are currently operating at Level of Service D. The “D” rating is due to the average travel speed being reduced to below 45 mph (between 43.5 and 44.7 mph) by a combination of narrow lanes and shoulders, access points, no passing zones, grades and heavy vehicles. The highest volume/capacity ratio of the three segments was only 0.25. The percent time spent following was below 65 percent (between 58.9 and 62.6 percent), good for LOS C had the average travel speed been higher. Existing traffic volumes, truck percentages and Levels of Service are depicted on the map in **Exhibit 3 of Appendix A**. As noted above, Level of Service D generally represents acceptable operating conditions in an urban environment, but unacceptable in a rural setting.

2. Future Traffic Volumes and Levels of Service (2030)

Future year (2030) traffic volumes were calculated based on an annual growth rate of 2.4 percent. This is the average growth rate calculated for

a Rural Minor Arterial in Kentucky as reported in the 2002 Traffic Forecasting Report, Division of Multimodal Programs, Kentucky Transportation Cabinet. Truck percentages were assumed to be the same as existing for the purpose of calculating Levels of Service. The highest projected traffic volume for the year 2030 is 9,710 vehicles per day between 400 feet south of Harris Lane and KY 1276. The next highest projected traffic volume, 7,710 vehicles per day, is in the next segment to the north, between KY 1276 and KY 440. The lowest projected traffic volume for the study corridor, 5,750 vehicles per day, is in the northernmost segment, between KY 440 and KY 945. With no improvements, the entire study corridor is expected to maintain a Level of Service of D into the year 2030. The average travel speed for year 2030 calculated for the three segments on the study corridor is between 40.2 and 42.5 mph, which corresponds to LOS D. The percent time-spent following is between 66.0 and 76.8 percent for the three segments for year 2030, corresponding to LOS D. The volume/capacity ratios for the three segments were between 0.29 and 0.43, projected for year 2030. These future year Levels of Service with no improvement are shown in **Exhibit 4, Appendix A**. Reconstructing the study corridor as an improved two-lane roadway would achieve an improved Level of Service C, but only for two years. Then, the projected increase in traffic would reduce the LOS back to D where it would remain into the year 2030. Reconstructing as a four-lane roadway would achieve Level of Service A which would be maintained into the year 2030, given the 2.4 percent projected traffic growth rate.

F. Programmed Highway Improvements

In addition to this planning study, there are several projects in the general study area that are planned and programmed in the FY 2003-2008 Six-Year Highway Plan. These projects are outlined in **Table 6 in Appendix C** with their respective phase costs and schedules. They include a new southern bypass around Mayfield, KY 303; new routes KY 80 and KY 121 paralleling existing KY 121 immediately southeast of Mayfield; major widening of US 45 immediately north of Mayfield; and reconstruction of KY 1830 between KY 121 and US 45 just north of Mayfield and immediately adjacent to the study area.

III. INITIAL PROJECT TEAM MEETING

The first project team meeting was held on February 13, 2003 in the KYTC District 1 conference room in Paducah, Kentucky. The purpose of the meeting was to discuss the purpose, goals and objectives of the study and to share information about known issues and concerns that will need to be addressed as the project moves forward. A copy of the minutes from that

meeting is included in **Appendix D**. Items presented at the meeting include:

- The project was originally described in the Six-Year Highway Plan, FY2003-2008, beginning on KY 121 at the Graves County High School Entrance, and ending at the intersection with KY 440. Due to existing construction on the south end of this study segment and proposed reconstruction of KY 1830 to include a portion of KY 121 near its intersection with KY 1830, this southern terminus was changed to a point immediately north of the described construction activity to a point 400 feet south of Harris Lane. The northern terminus also was changed and moved north to the intersection of KY 945 due to the likelihood that any improvements to the intersection at KY 440 would also affect the intersection at KY 945.
- Prior studies conducted involving the project study area include:
 - KY 121 Corridor Planning Study, Existing Conditions Technical Memorandum 1997
 - Mayfield Urban Area Transportation Study, February 1999
 - KY 121 Corridor Planning Study, Final Report, February 2000The 1997 and 2000 study reports looked at the entire route between Mayfield and Wickliffe. The No. 1 priority identified in the 2000 report was the segment currently under consideration between the Julian M. Carroll (Purchase) Parkway and the intersection of KY 440. Two-lane improvements on four-lane right-of-way were recommended for that priority segment. Improving the KY 440 intersection was listed as Priority No. 2 in that report.
- No high crash segments or spots are located within the revised termini of the project study area.
- The segment within the study corridor with the highest traffic numbers is between the Julian M. Carroll (Purchase) Parkway and KY 1830, and is therefore already being addressed by the KY1830 and KY121 Bypass improvements previously discussed. AADT is 5,000 between KY 1830 and KY 1276 with 14.5 percent trucks. AADT is 3,970 for the remainder of the corridor to KY 440 with 14.5 percent trucks. The corridor is operating now at LOS D. If no improvements are made, it will continue to operate at LOS D into the year 2030 given a 2.4 percent growth rate. The best that could be achieved by reconstructing with a two-lane section would be LOS C. But, if the corridor experiences a 2.4 percent growth rate, it would be less than two years before it would return to LOS D. 2.4 percent is the average annual growth rate calculated for a Rural Minor Arterial in the state of Kentucky, as reported in the 2002 Traffic Forecasting Report, Division of Multimodal Programs, Kentucky Transportation Cabinet.
- Exhibits show a tangent horizontal alignment, and rolling vertical alignment through the study corridor. If the northern terminus is extended just beyond the KY 440 intersection to KY 945, this additional

length will include one horizontal curve. There was also a sight distance problem noted with the crest vertical curve at the KY 440 intersection.

- KY 121 is on the National Truck Network and is the only viable connector for freight movement between Mayfield and Wickliffe. Comments solicited from local trucking companies by the Purchase ADD indicate there is a problem with narrow lane and shoulder widths through this corridor. HIS data show eleven-foot lanes and two-foot shoulders.
- Noteworthy is a plan to develop a major Industrial Park to boost the region's economy, just north of Mayfield in the Folsomdale-Viola area along US 45. This would be a world-class, as large as 2,500 acre facility, capable of supporting a large national, or international firm. The Industrial Park would provide economic development benefits to a multi-county region. It is not known whether this plan will go forward, but, sentiment is, it is a likely possibility. Once begun, the Industrial Park might begin to see tenants within six to ten years.
- A list of questions prepared by KYTC Environmental Analysis was presented to meeting attendees for review, with the intent to obtain accurate, reliable information regarding real estate availability and value. Stacey Courtney of the Purchase ADD agreed to gather the information.
- The team consensus was that there did not appear to be a viable ITS solution for the identified problems and issues. The team also agreed that current bicycle and pedestrian guidelines will be followed, especially given the proximity of existing, and planned schools in the area.
- Benefits of the proposed project – Goals and Objectives
 - Primary Goal - Improve Safety.
The following factors influenced the team's decision to make improving safety the primary goal of the study:
 - ✓ Skewed intersections with reduced sight distance
 - ✓ Narrow shoulders
 - ✓ Several schools near the project area
 - ✓ Close proximity to a large industrial employer
 - ✓ Relatively high percentage of trucks

The project team selected the following secondary goals:

- Relieve congestion, improve capacity and level of service.
Much has already been done to relieve congestion on KY 121 at the Julian M. Carroll (Purchase) Parkway, south of the study corridor. For the segment currently under consideration, two-lane improvements would increase the level of service from D to C. Once achieved, this level of service could only be maintained for two years before falling back to D. Four-lane improvements,

however, achieve level of service A for year 2030 traffic projections. While the study corridor is located in a predominantly rural area, there are segments with residential dwellings and private driveway access continuous along both sides of KY 121. Other section alternatives need to be explored before finalizing any recommendations.

- Accommodate increased truck use and promote regional connectivity.

Both Wickliffe and Mayfield are home to companies that generate substantial numbers of trucks that travel along the study corridor. Questionnaires completed by trucking agencies, solicited by the Purchase ADD, point to problems with narrow lanes and shoulders. HIS data show eleven-foot lanes and two-foot shoulders through the corridor. KY 121 is on the National Truck Network and is the primary connector between Mayfield and Wickliffe. A Regional Industrial Park proposed north of Mayfield along US 45, if completed, would have a significant impact on traffic levels and truck percentages in the study corridor.

- The team did not see the likelihood that it would recommend that the functional class of this segment of KY 121 change from Rural Minor Arterial.
- Traffic is projected to be as high as 9,700 ADT through most of the study corridor by the year 2030 given an average growth rate of 2.4% per year. It was pointed out during the meeting that there are plans for a new elementary school on KY 121 immediately south of the study area with a planned enrollment of 500 children. 25% of these students are estimated to live north of the study area and will generate additional traffic through the study corridor.
- The speed limit through the study corridor is currently 55 miles per hour. The team agreed that a 55 mph design speed is appropriate for reconstruction. If during the course of this study it is determined that a significantly different roadway section is called for, a lower design speed may be necessary.
- Two-Lane - It was noted that the highest LOS attainable for an improved two-lane section given the current traffic is LOS C. At a growth rate of 2.4% per year, this LOS could only be maintained for approximately two years before it would revert back to LOS D and remain at D through the year 2030.
- Four-Lane - It was noted that for four-lane improvements, LOS A would be achieved for year 2030 traffic projections.
- The team agreed that KY 1276/KY 121 intersection improvements should be included in the study recommendations. It was noted that 2002 ADT on KY 1276 was 1,130 on the west end, at KY 121, and 1,450 on the east end, at US 45. The KY 1276/US 45 intersection is where Continental General Tire is located, one of the area's major employers and traffic generators.

- No intersections within the study corridor are signalized. There are no plans to signalize KY 1830 at KY 121 but KY 1830 will be signalized at US 45.
- There is a new elementary school planned on KY 121 to be located immediately north of the existing High School entrance.
- KY 945 intersects KY 440 and KY 121 immediately north of the KY 121/KY 440 intersection and will be included in plans to improve this intersection. There is a water tank located to the east of the KY 121/KY 440 junction. The intersection improvement plan included in the 2000 study would have some turning movement storage issues to be resolved. Also, the actual vertical alignment at this intersection (crest vertical curve) creates sight distance problems that cannot be visualized in the two-dimensional plan view depicted in the 2000 report. The intersection may need to be cut down to correct deficiencies.
- Access is currently by permit, and, by team consensus, should remain so.
- Our standard letter and distribution list will be used for agency coordination. Stacey Courtney will supply additional names from the Purchase ADD's list of contacts.
- There are no Public Information Meetings or Officials Meetings planned for this study. Public involvement will be handled through agency coordination. Depending on the agency responses received, further public involvement could be added.

IV. ENVIRONMENTAL AND SOCIOECONOMIC OVERVIEW

A. Environmental Overview and Footprint

Qk4, under contract to assist the Division of Planning, developed an Environmental Overview and Footprint for this project. A copy of the Environmental Overview and Footprint are included in **Appendix E**. The following are the major findings of the environmental overview:

1. Topography and Geology

The project study area is located in the Jackson Purchase region of western Kentucky. Soil types in the study area consist of loess, alluvium, and unconsolidated coastal plain sediments susceptible to rapid erosion. The main drainage features in the study area are the West Fork of Mayfield Creek, Mayfield Creek and Key Creek. The topography consists of rolling hills, small stream valleys and dissected upland. Forested wetlands have been converted to cropland.

2. Culturally Sensitive Locations

- 2 cemeteries: Mount Zion Baptist Church Cemetery and one unnamed cemetery
- 1 church: New Hope Church
- Jackson Purchase Medical Center
- Graves County High School
- Gateway Academy High School
- County War Memorial Fairgrounds

3. Historic, Archaeological, and Cultural Resources

There are no National Register of Historic Places, NRHP, listings for historic sites in the study area. Three building sites were identified with potential to meet NRHP criteria. These are listed on the Environmental Footprint map as NRP. Of these, only Mt. Zion Cemetery is within the study bounds, 1200' off KY 121. There is one historic farm, Andrus Farm located in Mayfield, the exact location unidentified at the time of this writing.

There are no previously recorded archaeological finds within the study area, although there is moderate potential for discovery of significant deposits. A reconstruction project would require a Phase I level archaeological investigation (shovel test probe excavations).

4. Aquatic

30 streams could be impacted by sedimentation from construction activities. All are tributaries of Mayfield Creek which is a direct tributary of the Mississippi River. Kentucky Division of Water (KDOW) will require a non-point source pollution control plan and erosion control plan. KYTC Specific Specifications for Road and Bridge Construction and FHWA's Best Management Practices for Erosion and Sediment Control can be used to alleviate most sedimentation problems.

There are no wild or scenic rivers, outstanding resource waters, municipal intakes or recorded wells within the study area. The study area doesn't cross any special flood hazard areas (Zone A) and is located entirely within Zone X (areas outside 500-year floodplain).

5. Wetlands and Ponds

There are 24 wetlands from 0.1 to 4.6 acres within the study area, most probably created ponds. More intensive field surveys would be required to confirm/delineate wetlands and identify any not appearing on the map.

6. Terrestrial Resources

Plant and animal life is considered typical for the area. What was once grassland and forested wetlands has been converted to cropland. Numerous small wood lots are scattered throughout the project area.

7. Threatened and Endangered Species

The US Fish and Wildlife Service (USFWS) has indicated there are no federally protected species known to occur within the study area.

The Kentucky Department of Fish and Wildlife Resources (KDFWR) indicated the copperbelly water snake is known to occur in the Hickory quad. It is federally listed as a threatened species in the northern part of its range but is not federally listed in the southern part of its range (including Kentucky) but could require mitigation if suitable habitat land (i.e., wetlands) is impacted and may require more intensive field studies.

The Kentucky State Nature Preserves Commission (KSNPC) identified two state-threatened species from the study area:

- Compass Plant - two sites near the study area on the south side of KY 121.
- Bachman's Sparrow – one site northwest and outside the study area.

8. Managed Land Areas

There are no known managed land areas within the study area. No agricultural districts are impacted.

9. Farmlands

There is between 40 and 50 percent prime farmland soil in the study area. About 31 percent of existing KY 121 crosses prime farmland. Some of this prime farmland's value has already been compromised by residential development and roadway construction.

10. Hazmat Concerns

Land use in the study area is predominantly agricultural and residential with some commercial facilities. There are four possible contamination sites within or near the study area:

- Site 1 - CITGO (outside the study area to the south across from the Graves County High School)
- Sites 2 - Vacant commercial property (outside the study area, at the KY 1830 intersection. Contains possible petroleum or

hazmat from former operations; also possible asbestos containing building materials (ACBM)

- Site 3 – Vacant commercial property (formerly Turners Body Shop) with possible petroleum or hazmat from former operations; also possible asbestos containing building materials (ACBM)
- Site 4 – Farmer’s Co-op (former gasoline station), contains potential hazmats

Also, various locations with:

- PCB’s associated with power pole mounted electrical transformers
- Above ground storage tanks (AST’s) – heating fuel oils, gasoline and liquid propane
- ACBM’s (Asbestos containing building materials) – residential and commercial buildings.

11. Air Quality

Graves County is located within the Paducah-Cairo Interstate Air Quality control region. The area is designated as an Attainment Area for all transportation related pollutants. The project is not expected to adversely impact air quality in the region.

12. Traffic Noise

The study area contains several residences, a motel, three schools (south of the study area), churches, cemeteries, a retirement home, and several small businesses. Properties somewhat removed from the roadway are not anticipated to be adversely affected by traffic noise. Noise barriers would interfere with roadway access for widely spaced single family residences. They should not be required for this project. The highest potential for impact is from additional right-of-way needs.

13. Other

A water tank on the north end of study area was removed in 1999.

B. Environmental Justice

The Purchase Area Development District conducted an environmental justice assessment of the project area. Data was compiled from a number of sources including 2000 US Census data, KYTC Division of Planning, local officials, and field observations of the project area. The purpose of the review was to ensure equitable environmental protection regardless of race, ethnicity, age, disability, economic status or community, so that no segment of the population or community bears a disproportionate share of

the impacts to the natural and human environment attributable to a proposed project. A copy of the environmental justice and community impact information is included in **Appendix F**.

The project area crosses two Census Tracts with only one block group in each tract:

- Census Tract 201, Block Group 4 contains Census Blocks 4005, 4006, 4008 and 4009
- Census Tract 207, Block Group 3 contains Census Blocks 3018, 3019, 3020(no people) and 3021.

Census blocks are the smallest division used by the Census Bureau. The Census Bureau does not, however, break down poverty data smaller than the block group level.

1. Minority Population

There were no significant block groups identified for minority populations. At the block group level, however, Census Block 4005 contains a significantly higher percentage of minority population, 15.5% vs. 9.5% PADD (Regional), 7.9% Graves County and 9.4% Kentucky.

2. Low-Income Population

The percentage of county low-income population is higher than the region and state, 16.4% vs. 15.0% and 15.8%. There were no low-income populations identified using 16.4% as the threshold.

3. Population by Age

There were no significant block groups identified for elderly populations, age 62 and older. However the following four census blocks had elderly population percentages greater than the threshold, county percentage of 18.8%:

- Census Block 3021 (CT207, BG 3) - 23.5%
- Census Block 4005 (CT201, BG 4) - 19.2%
- Census Block 4006 (CT201, BG 4) - 18.9%
- Census Block 4009 (CT201, BG 4) - 24.0% significantly above threshold

Based on data obtained from the U.S. Census Bureau for income and race, discussions with local officials and field observations, there is no defined Environmental Justice community within the project area. Analysis of the minority population data showed one Census Block having a percentage higher than the reference threshold percentage. This Census Block should be noted during any subsequent phases of this project but there is not sufficient minority population in the project area to

be considered an Environmental Justice community. Age analysis of the project area indicates that there is a distribution of elderly residents in the project area but no specific concentrations of elderly residents.

C. Real Estate and Relocation

A questionnaire was developed by the Division of Environmental Analysis to explore real estate and relocation issues associated with the potential reconstruction of the subject study route. This questionnaire was introduced to the project team at the initial team meeting. The Purchase Area Development District collected the data and presented it in a report that is included in **Appendix G** at the end of this document.

The real estate information in the report included home characteristics, price ranges, number of homes built, number of homes on the market, available business relocations, dependence on existing location, and effect on farms and agricultural activities in the area.

The report concluded that there are suitable relocations available for residences. One lamp company indicated it would need to be relocated within a three to four mile radius due to other lamp businesses being located in Mayfield and competitive pressures. The impact to farms is expected to be minimal.

V. RESOURCE AGENCY COORDINATION

Coordination letters were sent to various public officials, resource agencies, organizations, and internal Cabinet offices to obtain input and comments about the needs and potential impacts of the project. Copies of the request letters, mailing list, and the responses are included in **Appendix H**. The following is a summary of the issues and concerns raised:

- Kentucky Department of Military Affairs, Facilities Division – Reviewed for potential impacts to properties utilized by The Department of Military Affairs. None were found.
- Department of the Army, Corps of Engineers – Need to address the stream crossings impacted by the project. Open water areas and wetlands have been adequately inventoried by the preliminary study. After the stream crossings have been documented, permitting requirements will need to be addressed for all wetlands, stream crossings, and open water areas prior to construction.
- Department for Surface Mining Reclamation & Enforcement, Natural Resources and Environmental Protection Cabinet – Did not identify any specific issues or concerns at this time.
- Kentucky Geological Survey –

- Physiographic Region – Jackson Purchase (Gulf Embayment) Physiographic Region, which is a typical coastal plain made up of clays, silt, sand, and gravel.
- Karst Potential – probably would not encounter karst features such as sinkholes and caves.
- Landslide Potential – Probably would encounter pre- and /or post-landslide hazards.
- Unconsolidated Sediments – Would encounter clays, silt, sand and gravel.
- Resource Conflicts – Probably would not encounter any resource conflicts.
- Materials Suitability – The gravel of the continental deposits might be suitable for construction stone.
- Fault Potential – Would not encounter any faults.
- Earthquake Zone – The study area has probable peak ground acceleration (PGA) due to earthquake ground motion of 0.40 g. There would be a high potential for liquefaction or slope failure in the unconsolidated sediments.
- United States Environmental Protection Agency – Enclosed four population maps to assist us in our environmental justice review. No potential EJ areas shown on maps. Advised to include all the potential impacts and potential measures for impact mitigation in DEIS.
- 8th Coast Guard District, Bridge Branch – This is not a waterway over which the Coast Guard exercises jurisdiction for bridge administration purposes. A Coast Guard bridge permit is not required.
- United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) – Concerned with potential impacts upon prime farmland soils and additional farmlands of statewide importance.
- United States Department of the Interior, Fish and Wildlife Service – Concerned that highway projects frequently accelerate erosion and sedimentation in streams, resulting in adverse effects to the aquatic environment. Prevent through Best Management Practices. Endangered Indiana bat and gray bat may exist within study area. Recommend KYTC survey the project area for caves, rock shelters, and underground mines; identify any such habitats and avoid impacts. Only remove trees between October 15 and March 31 to avoid impacting Indiana bat “swarming” behavior. If the recommendations can’t be accomplished, have qualified biologist survey the project area, or, provide written documentation with site specific information that shows there is no suitable habitat in the project area.
- Kentucky Cabinet for Health Services – Project will not impact operations of Cabinet of Health Services.
- City of Mayfield – Proposed construction would relieve congestion and improve capacity. Would also accommodate increased truck use and promote regional connectivity.

- Kentucky Department of Fish and Wildlife Resources (KDFWR) – No federally threatened or endangered species are known to occur in the Hickory 7.5 minute USGS quadrangle. State threatened or endangered species are known to occur in the Hickory quad but are not found in the vicinity of the project. KDFWR does not anticipate impacts to critical habitats of fish and wildlife.
- Division for Air Quality, Department for Environmental Protection, Natural Resources and Environmental Protection Cabinet – Prevent particulate matter from becoming airborne. Cover open bodied trucks. Open burning prohibited except for expressed purposes.
- Geotechnical Branch, Division of Materials, Kentucky Transportation Cabinet (KYTC) – A large portion of the project will encounter Loess and Continental Deposits, which are highly erosive. Cut slopes in these materials may require flatter slopes (2½ :1 or flatter) especially in areas with high water tables. Slope protection may be required in some cases to prevent erosion. Embankment fill slopes may require flatter than normal slopes for fills higher than 15 to 20 feet. Sub-grade stabilization will be required throughout the project. The project is located in Seismic Zone 3 which is considered as a high risk for earthquake damage.
- Kentucky State Police – The Division of Police Services, Frankfort, received the resource agency coordination correspondence and forwarded it to the Commander of the Mayfield Post. No comments were received from the Mayfield Post.
- Division of Forestry, Department for Natural Resources, Natural Resources and Environmental Protection Cabinet – No immediate concerns if the project stays within or adjacent to the current right-of-way.
- Permits Branch, Kentucky Transportation Cabinet (KYTC) – Recommends all new projects be classified as partially controlled access and set all possible access points on the plan. Have the design speed be the same as the anticipated posted speed. Install access control fence in the partial control access portion. Notify Permits if the proposed roadway is to be placed on the NHS.
- Aeronautics Division, Kentucky Transportation Cabinet (KYTC) – Project unlikely to affect the Mayfield-Graves County Airport or any other public use Kentucky airport.
- Kentucky State Nature Preserves Commission (KSNPC) – No KSNPC-listed species or unique natural areas would be directly impacted.

VI. SECOND PROJECT TEAM MEETING

The second (final) project team meeting was held on June 4, 2004. The meeting was conducted through video conferencing facilities located in Paducah and Frankfort, Kentucky. The purpose of the meeting was to review the purpose, goals and objectives of the study, evaluate new

information collected since the initial team meeting, and develop recommendations to be carried forward into subsequent project phases. A copy of the minutes from that meeting is included in **Appendix I**. Items presented at the meeting include:

- There were no major environmental issues noted that might jeopardize reconstruction efforts. A review of the high points included:
 - The topography and geology of the area consists of unconsolidated coastal plain sediments susceptible to rapid erosion.
 - Of the culturally sensitive locations listed, only Mt. Zion Cemetery is within the study bounds, being 1200 feet off KY 121, shown on **Exhibit 5 in Appendix A** as Site F on the north end of the study on the environmental footprint. An historic farm, Andrus Farm, is located somewhere in Mayfield, not known to be within the study area, but its exact location was not determined in the environmental overview. Meeting participants were not familiar with this farm or its location. There are no previously recorded archaeological sites but moderate potential for discovery of significant deposits.
 - Thirty streams could be impacted by sedimentation from construction activities. There are 24 wetlands from 0.1 to 4.6 acres, most of which are probably created ponds
 - Plant and animal life is considered typical for the area. The Kentucky Department of Fish and Wildlife Resources (KDFWR) indicated that the copperbelly water snake is known to occur in the Hickory quadrangle. It is federally listed as a threatened species in the northern part of its range but is not federally listed in the southern part of its range, including Kentucky. It could require mitigation if suitable habitat land (i.e., wetlands) is impacted and may require more intensive field studies. The Kentucky State Nature Preserves Commission (KSNPC) identified two state threatened species from the study area: Compass plant (two sites near the study area, south side of KY 121) and Bachman's Sparrow (one site northwest and outside the study area).
 - There is 40 to 50% prime farmland soil in the study area. About 31% of existing KY 121 crosses prime farmland. Some of the prime farmland value has already been compromised by development and roadway construction.
 - Only two of the hazmat sites listed in the overview are within the study area: Vacant commercial property, formerly Turners Body Shop (Site 3 on footprint) has possible petroleum or hazmat from former operations and also possible asbestos containing building materials (ACBM); and Farmer's Co-op, a former gasoline station (Site 4 on footprint) has potential hazmat.
 - The study area is in an air quality attainment area and improvements are not expected to adversely impact air quality in the region.

- Traffic noise should not adversely affect properties.
 - The water tank on the north end of the project area near the KY 121/KY 440 intersection has been removed.
- There were no readily identifiable minority or low-income groups at the Census Tract or Block Group level. If taken down to the Census Block (CB) level, CB 4005 has a higher percentage minority population, 15.4%, than 7.9% Graves County, 9.5% Region (Purchase Area Development District), 9.4% Kentucky, but lower than 30.9% US. Note, at this level, the 15.4% represents a total minority population of only 4 (approximately one family) compared to a total CB population of 26. There is a higher percentage of elderly residents in the project area, 18.3% age 62+, compared to 14.9% Kentucky and 14.7% US, but lower than 18.8% Graves County and 19.1% Region. The numbers however, are evenly distributed with no specific concentrated populations identified. These findings should be noted in future project planning and design phases. The general conclusion is that there is no defined Environmental Justice community within the project area.
 - After a review of real estate market information including home characteristics, price ranges, number of homes built, number of homes on the market, available business relocations, dependence on existing location, and effect on farms and agricultural activities in the area, it was concluded that there are suitable relocations for residences. One lamp company indicated it would need to be located within a three to four mile radius due to other lamp businesses being located in Mayfield and competitive pressures. The Eagles Club and Langston Trucking properties are located within the project area and were not included in the compiled information. Langston Trucking is located within the Y-intersection of KY 121 and KY 440. The impact to farms is expected to be minimal.
 - The following resource agency coordination response highlights were discussed:
 - The Corps of Engineers noted that the open water areas and wetlands have been adequately inventoried but that stream crossings would need to be documented and permitting requirements addressed for all wetlands.
 - The Kentucky Geological Survey responded that the project would probably encounter pre- and or post-landslide hazards and unconsolidated sediments. They noted that no faults would be encountered but that the project is in an earthquake zone and there would be a high potential for liquefaction or slope failure in the unconsolidated sediments.

- The United States Environmental Protection Agency forwarded four population maps. No potential environmental justice areas were shown on the maps.
 - The United States Department of Agriculture (USDA), Natural Resources Conservation Service responded with concerns about potential impacts upon prime farmland soils.
 - The United States Department of the Interior, Fish and Wildlife Service expressed concerns over accelerated erosion and sedimentation in streams that would be most effectively prevented through Best Management Practices. Fish and Wildlife also noted that the Indiana and Gray Bat may exist within the study area.
 - The City of Mayfield favors reconstruction of KY 121.
 - The Kentucky Department of Fish and Wildlife does not anticipate impacts to critical habitats of fish and wildlife.
 - The Division of Air Quality, Department of Environmental Protection, Natural Resources and Environmental Protection Cabinet wrote that project activities should include measures to prevent particulate matter from becoming airborne.
 - KYTC Geotechnical Branch noted that highly erosive continental deposits would be encountered requiring flatter than normal cut and fill slopes. The project is located in Seismic Zone 3, which is considered a high risk for earthquake damage.
 - The KYTC Permits Branch recommends all new projects be classified as partially controlled access and set all possible access points on the plan. The project team discussed this. The team had agreed in the initial team meeting that it would probably be best to recommend improvements for an access by permit facility. The team noted during this meeting that it would not be practical to classify this, or any number of other projects as partial control access, but the consideration of doing so would be documented in the report write-up.
 - The Kentucky State Nature Preserves Commission (KSNPC) responded that no KSNPC-listed species or unique natural areas would be directly impacted.
- There were several projects in the study area that could affect the recommendations of this study. The following is a summary of discussion on these related projects:
 - **I-66** – While the study to recommend alternatives for the location of an I-66 corridor is not yet complete, no additional project development phases are currently scheduled. That study team has looked at different locations for an Ohio or Mississippi River crossing. There are flood control features just south of the confluence of these two rivers that the Army Corps of Engineers wants to avoid. The Coast Guard also recommends a four-mile recovery distance downstream from the confluence, which will most

likely set the recommended location of a new bridge. Just south of this location, on the Kentucky side, are two National Register listed historic sites that must be avoided. There are also concerns with the possibility of having to maintain the existing bridge at Wickliffe in addition to a new bridge. While the final location of an I-66 corridor has not been decided, there are no major impacts anticipated to the KY 121 study corridor.

- **KY 1830** – The status of the KY 1830 reconstruction project was discussed. This project has not been deobligated but is a high priority with right-of-way acquisition going forward.
- **Regional Industrial Park** – Earlier bills to fund construction for a major regional industrial park in the Folsomdale/Viola area along US 45 north of Mayfield died in the House and Senate. More recently, \$5 million was allocated and this project is moving ahead with land acquisition.
- **I-69** – While the study to recommend an I-69 corridor is not complete, part of the I-69 corridor is expected to follow the Julian M. Carroll Purchase Parkway. If so, then traffic levels on KY 121 could rise more than those predicted using statewide average rates.
- The study team suggested several different improvement alternatives, considering recent KY 121 improvements between the current study segment and the Julian M. Carroll Purchase Parkway. Also considered were new schools along KY 121 and KY 1830, planned improvements to KY 1830, a planned Regional Industrial Park north of Mayfield, future I-66 and I-69 corridors, crash statistics, current and projected traffic and levels of service, truck percentages, environmental issues, relative cost and available resources. Suggested improvements were, do nothing, spot, two-lane, two-lane on four-lane right-of-way, three-lane, four-lane, and super-two on five-lane right-of-way. These improvements are described in detail in **Section X**.
- Before finalizing a recommendation, the team suggested getting KY 121 traffic projections taking into consideration a future I-69 corridor built along the Julian M. Carroll Purchase Parkway. The traffic projections will be requested from the Division of Multimodal Programs and evaluated to see if there is further justification to go to a four or five-lane recommendation. If not, the recommendation will be for a super-two on five-lane right-of-way.

VII. TERMINI AND LENGTH

The original description listed in the Six-Year Highway plan described this project as a planning study to reconstruct KY 121 from the Graves County High School entrance to the KY 440 intersection; MP 12.714 to 16.588. However, the milepoints along KY 121 as originally described in the Six-Year Highway Plan

were increased by approximately 1.4 mile due to the extension of the KY 121 bypass. Also due to the extension of the KY 121 bypass, the segment of KY 121 immediately north of the Julian M. Carroll (Purchase) Parkway has been reconstructed from a two-lane to a five-lane urban, curb and gutter section. This portion extends just north of the Graves County High School entrance. And, KY 1830, which intersects KY 121 just north of the high school entrance, is scheduled for reconstruction. This reconstruction will include three-laning a portion of KY 121 from the north end of the five-lane section near the High School entrance to a point north of KY 1830.

The project team agreed that the south study terminus should be revised due to the reconstruction of KY 121 near the Julian M. Carroll Parkway and the scheduled reconstruction of KY 1830. The new south terminus should be located at the north end of the reconstructed portion of KY 121. The new south terminus description follows:

- Revised South Terminus: The south terminus was identified as a point 400 feet south of the KY 121/Harris Lane intersection; Milepoint 14.095.

Conditions at the KY 440 intersection include poor sight distance as a result of a combination of less than desirable horizontal and vertical alignment. Additionally, KY 945 intersects both KY 121 and KY 440 just north of this intersection. To more completely contain the elements pertinent to the intersection's problems, and solution, the team revised the north terminus as follows:

- Revised North Terminus: The north terminus was identified as the KY 121/KY 945 intersection; MP 17.167.

The revised project length is 3.072 miles.

VIII. SPECIAL TRAFFIC FORECAST

The original traffic projections presented in the initial team meeting were based on state average growth rate multipliers by functional class of highway. These multipliers are calculated and updated annually and distributed by the Division of Multimodal Programs in their Traffic Forecasting Report. The annual growth rate multiplier used for KY 121, a rural minor arterial, was 2.4 percent annually. These projections, however, do not take into account a future I-69 corridor along the existing Julian M. Carroll Parkway. Neither do the projections consider a future I-66 corridor also planned for the region. Additionally, a large regional industrial park is planned for the Viola-Folsomdale area, north of Mayfield, that could employ as many as 4000 people by the year 2017. Funds have already been allocated for land acquisition. Given these circumstances, the project team requested a special forecast to determine the potential effects of these planned interstates and industrial park on the KY 121 study corridor. The Division of Multimodal Programs ran the Statewide Traffic Model using current year 2004

traffic volumes with 12 percent trucks, along with modified industrial employment data using the 1999 Mayfield Urban Area Transportation Study. Future year 2030 traffic was projected on KY 121 considering the addition of I-66, I-69 and a planned regional industrial park. The complete Traffic Forecast Report can be found in **Appendix J** of this document. The forecast determined that there are no traffic impacts anticipated for the year 2030 on KY 121 due to a future I-66 or I-69 corridor in the region. For the planned regional industrial park, only a slight increase, 200 trips per year for future year 2030, was anticipated.

IX. PROJECT PURPOSE AND NEED

Goals and objectives were developed by the project team at the beginning of the study process based on identified needs. These goals and objectives were distributed to resource agencies and public officials as part of the resource agency coordination effort and revisited later by the project team to ensure accuracy toward meeting the project needs. The goals and objectives address safety, school access, bicycle and pedestrian access, roadway congestion, local economics, employment and truck traffic. The goals and objectives were used in developing the project Purpose and Need that will be carried forward during future project development. As future project phases are scheduled and funded, the Purpose and Need should be continually reevaluated and updated to address new issues and concerns. Following is an overview of the Purpose and Need for the proposed reconstruction of KY 121.

- **The proposed project is needed to improve safety on KY 121.**

Three schools located immediately south of the project area make safety a paramount concern. Crash data indicate less than critical crash rate factors on the study corridor, that is, crash rates less than the statewide average for routes of similar functional class. However, a high school and new elementary school located on KY 121 just south of the study corridor, and a middle school located on KY 1830 in the vicinity of the other two schools dictate a proactive approach in addressing potential safety concerns. KY 121 is on the National Truck Network (NN) and is the primary connector for commercial traffic between Mayfield and Wickliffe. Being on the NN permits the use of increased dimension vehicles (102-inch versus 96-inch wide trailers). The combination of school buses and teenage drivers traveling on the same road at peak hours with a relatively high volume of trucks, including increased dimension vehicles, presents a safety concern. While there are 11-foot wide lanes, the two-foot wide shoulders do not allow space to clear the road for emergency situations, especially when that situation involves increased dimension vehicles. In a survey conducted by the Purchase Area Development District, trucking company representatives have expressed concern over the narrow shoulder width on this segment of KY 121. Pedestrians and bicyclists attempting to travel to school along this route must also be considered from a safety standpoint. Further to the north on the study corridor, the KY 121/KY 440 intersection is skewed and contains a

combination of horizontal and vertical curvature that team members noted present sight distance problems. Just north of this intersection, KY 945 intersects both KY 121 and KY 440 at skewed angles. One other skewed intersection noted was KY 121/KY 1276. KY 1276 is a two-lane road that currently carries more than 1,100 vehicles per day on the west end nearest KY 121, and 1,450 vehicles per day, two miles to the east, near its intersection with US 45.

- **Reconstruction is needed to address factors that will increase the average travel speed and decrease the percent time-spent following.** The study corridor is located in a predominantly rural area in rolling terrain with clusters of residential dwellings and private driveway access along both sides of KY 121. South of the study corridor, urban five lane improvements have relieved congestion on KY 121 between the Julian M. Carroll (Purchase) Parkway to just north of the Graves County High School entrance. Reconstruction of KY 1830 is in the Right-of-Way acquisition phase and includes three lane improvements on KY 121 from immediately north of the Graves County High School entrance to just beyond the KY 1830 intersection (400 feet south of Harris Lane). For the study corridor, capacity is not a problem, with the highest volume to capacity (v/c) ratio being 0.25 for the segment between KY 1830 and KY 1276 in 2002. For the year 2030, the projected v/c is only 0.43. The study corridor was operating at LOS D for the year 2002, with a computed average travel speed (ATS) only slightly under 45 mph. ATS between 40 and 45 mph results in LOS D; between 45 and 50 mph, LOS C. Factors contributing to the reduced ATS included 11-foot lanes and 2-foot shoulders, a relatively high number of access points, and between 59 and 75 percent no-passing zones. An improvement in any one of these areas would increase the ATS to above 45 mph, thus improving the LOS to C. However, projected increases in volume cancel out the benefits expected from these improvements within a couple of years, and the LOS would go back to D. Average daily traffic, ADT, in 2002, ranged from 2,960 vehicles per day on the northern end of the study segment, to 5000 vehicles per day on the southern end. Using these starting figures and state average growth rate multipliers, year 2030 traffic projections would range from 5,750 vehicles per day on the northern end of the study corridor to 9,710 vehicles per day on the southern end. [It should be noted that at the time of this writing, those traffic projections have not yet materialized, and have actually decreased from 3,740 to 3,610 vehicles per day, approximately 3.5 percent, from 2003 to 2004 on the segment between KY 1830 and KY 440.] While these projected traffic volumes don't exceed even half the capacity of the roadway, the LOS is still adversely affected. At these volumes, both ATS and percent time-spent following (PTSF) result in LOS D for the corridor. For year 2030 projected traffic volumes, the PTSF is computed to be between 66 and 76.7 percent. PTSF between 65 and 80 percent results in LOS D. Factors contributing to this higher PTSF at the higher traffic volumes are the directional distribution

(assuming a 57/43 percent split) combined with the percentage of no-passing zones (59 to 75 percent).

- **An improved KY 121 is needed to accommodate increased truck use and promote regional connectivity.** Both Wickliffe and Mayfield are home to companies that generate substantial numbers of trucks that travel along the study corridor. Questionnaires completed by trucking agencies, solicited by the Purchase Area Development District, indicate concerns with narrow lanes and shoulders. HIS data show eleven-foot lanes and two-foot shoulders throughout the corridor. The truck percentage on KY 121 in 2002 was 14.5 percent on the segment immediately south of the KY 440 intersection. By 2004, that percentage had increased to 15.4 percent. KY 121 is a designated “AAA” weight class highway allowing 80,000 pound gross vehicle weights, is on the National Truck Network (NN) which permits the use of increased dimension vehicles (102-inch wide trailers versus 96-inches), and is the primary connector between Mayfield and Wickliffe.

X. ALTERNATIVES AND RECOMMENDATIONS

A. Geometric Design Features and Alternatives

The study team suggested several different improvement alternatives, considering recent KY 121 improvements between the current study segment and the Julian M. Carroll Purchase Parkway. Also considered were existing and new schools along KY 121 and KY 1830, planned improvements to KY 1830, a planned Regional Industrial Park north of Mayfield, future I-66 and I-69 corridors, crash statistics, current and projected traffic and levels of service, truck percentages, environmental issues, relative cost and available resources. Suggested improvements were, do nothing, spot, two-lane, two-lane on four-lane right-of-way, three-lane, four-lane, and super-two on five-lane right-of-way.

- **Alternative 1, Do nothing** – This alternative does not address any of the project goals or purpose. No team members were in favor of a do-nothing recommendation.
- **Alternative 2, Spot Improvements** – For this study segment of KY 121, the only spot location of interest to the team was the Y-intersection at KY 440. An extreme skew combine with a crest vertical curve to reduce the sight distance at this location. A short, “unofficial” cut-across just west of the intersection is used by local traffic to negotiate turning movements. The northern study terminus was extended to the KY 945 intersection since it also is on a skew and would possibly be affected by any improvements made at the KY 440 intersection. KY 1276 also intersects KY 121 on a skew. Statistically

there are no crash problems at any of these intersections. While no team members recommended spot improvements as their first choice, most agreed that improvements need to be made at the KY 440 intersection.

- **Alternative 3, Two-lane** – Current level of service for the segment is D, as is the 2030 projected level of service. There are no crash problems on this segment compared to similar roads in Kentucky. KY 121 is on the National Truck Network (NN) and is the primary link between Mayfield and Wickliffe. Right-of-way funds have been allocated for a major Regional Industrial Park north of Mayfield along US 45 in the Viola-Folsomdale area. This industrial park, as well as a proposed I-66 and I-69 might increase traffic levels and truck percentages along KY 121, although a special traffic forecast conducted by the Division of Multimodal Programs found no anticipated impact. Timing and specific locations for the proposed interstates are still undecided. Two-lane improvements in the form of lane and shoulder widening would improve the ability to handle trucks on KY 121 but would not do anything significant to improve level of service for the long term. No team members were in favor of two-lane only improvements.
- **Alternative 4, Three-lane** - According to the Highway Capacity Manual, two-lane with two-way left-turn lane (TWLTL) improvements do not have a formal methodology for evaluating operational effectiveness. At current or projected traffic levels, no significant operational improvements are expected by adding a two-way left-turn lane (TWLTL). A TWLTL might be considered if there was a crash problem, especially a problem with rear-end crashes. No team members favored three-lane improvements.
- **Alternative 5, Two-lane on four-lane right-of-way** – This was the recommendation made for this segment of KY 121 in the 2000 Wilbur Smith Associates study. Team members noted that this recommendation would involve going off alignment due to the additional right-of-way needed, but would still fall within the project study corridor. This improvement would have the same advantages as the two-lane improvements noted above, with the added benefit of being able to provide additional capacity if needed in the future. The disadvantage would be the additional right-of-way costs. No team members favored this alternative.
- **Alternative 6, Four-lane** – Four lane improvements would involve either a four-lane rural divided section, or four-lane urban section with a TWLTL. The biggest advantage for either the rural or urban case, is that either would improve the current LOS from D to A, and would

accommodate increases in traffic, improving the projected 2030 LOS from LOS D to A. The downside is that this improvement may be more than is needed given the traffic levels now and the uncertainty of what will be needed in the future. Several team members spoke in favor of four-lane improvements, suggesting urban improvements from KY 1830 out to KY 1276 and then either a rural or urban section west of KY 1276.

- **Alternative 7, Super-two on five-lane right-of-way** - This alternative would have the same benefits as the two-lane improvements noted above with the advantages of being able to accommodate future increases in traffic if needed. The disadvantage is the same as that for the two-on-four case above, that it would require additional right-of-way. However, the right-of-way requirements would be less for the super-two compared to the two-on-four case and have a better chance to stay on the existing alignment. Several team members favored the super-two on five-lane right-of-way recommendation.

B. Recommendations

The ADT on the study segment ranged between 2,960 and 5,000 vehicles per day in 2002 and is projected to increase to between 5,750 and 9,710 vehicles per day by the year 2030. Level-of-service for the study segment is LOS D and is expected to remain at LOS D into year 2030 without improvements. Four-lane improvements would be expected to raise the level-of-service to LOS A. Two-lane improvements should achieve LOS C, but then revert back to LOS D within two years given projected increases in traffic using state average growth rate multipliers. The improved two-lane road would then be expected to stay at LOS D into the year 2030. Generally LOS D is not considered acceptable for a rural highway, but is considered acceptable on an urban highway. However, this is a borderline case between LOS C and D with no guarantees for the traffic growth expected. Also, any increase in traffic on this highway can be expected to be accompanied by a similar increase in development with the result of changing the setting more toward an urban landscape in which LOS D could be considered acceptable. Already, the south end of the study area very closely borders the urban outskirts of Mayfield. The special Traffic Forecast study conducted by the Division of Multimodal Programs and summarized in **Chapter VIII** of this report predicted no increase in traffic due to future I-66 and I-69 corridors and an insignificant increase in traffic due to a planned regional industrial park north of Mayfield.

Taking all of this into consideration, it is recommended to make those improvements that address the immediate safety concerns on the corridor

by providing full-width shoulders and realign the major intersections at KY 440, KY 945 and KY 1276. While, four or five lane improvements are not being recommended at this time, it is recommended to allow for such improvements in the future should they become justified, and purchase the additional right-of-way early, before development continues and property values and right-of-way costs increase. Therefore, the recommendation of this study is to build a super-two on five-lane right-of-way (Alternative 7). If traffic increases beyond projections, the additional right-of-way purchased can accommodate further improvements when needed. Full width shoulders are recommended due to the fact that this route is on the National Truck Network and designated to carry increased dimension vehicles. Improvements to realign the skewed intersections on the KY 121 study segment are recommended in the following priority order: KY 440, KY 945, KY 1276. It is recommended that these intersection improvements be implemented in the short term, followed by Alternative 7 recommended improvements. While there are no immediate crash problems on the roadway, having existing and new schools immediately south of the project study area demand that an increased emphasis be placed on safety while considering improvement alternatives. School bus safety will also benefit from wider shoulder and lane widths. Bicycle and pedestrian needs should also be addressed in future project phases. Turning lanes at the major intersections are also recommended.

C. Project Phases and Cost Estimates

District 1 personnel prepared phase-by-phase cost estimates for each of the improvement alternatives considered by the project team. A summary of these alternates and associated cost estimates is included in **Table 7 and 8, Appendix C**. Phase costs for recommended Alternative 7 and interim Spot Improvements, Alternative 2, are shown in **Appendix C** and below in **Table 9** as follows:

Table 9. Estimated Phase Costs for Recommended Alternative 7 and Interim Spot Improvements, Alternative 2

	Alternative 2	Alternative 7
Phase	Spot Improvements	Two-Lane on Five-Lane R/W
Design	325,000	1,250,000
Right-of-Way	500,000	5,500,000
Utility Relocation	600,000	2,000,000
Construction	1,400,000	7,500,000
Total	2,825,000	16,250,000

D. Concerns and Issues Considered During the Study

- A high school and new elementary school are located on KY 121 just south of the project study area. A middle school is also located in this general area on KY 1830.
- Continental General Tire, one of the area's largest employers and traffic generators, stopped production at its Mayfield plant in December 2004 resulting in the loss of over 800 jobs. The plant is located immediately east of the project study area at the KY 1276/US 45 intersection.
- There are plans for a major regional industrial park to be developed in the Folsomdale-Viola area north of Mayfield on US 45. Initial funding for land acquisition has been delivered. Employment estimates start at 1000 in 2008 rising to 4000 in 2017.
- An I-69 corridor is in the planning phase. It is expected this corridor will follow the existing Julian M. Carroll Purchase Parkway.
- An I-66 corridor is planned for the region but the final location has not been decided. There are no major impacts anticipated to the KY 121 study corridor.
- The KY 1830 reconstruction project has moved forward with right-of-way acquisition. The utilities and construction phases are scheduled for 2005. A portion of this project includes intersection improvements at KY 121 as well as three-laning a segment of KY 121 immediately south of the project study area.
- Environmental concerns include numerous wetlands and streams, at least three potential threatened plant and animal species, 40 to 50 percent prime farmland soils, four possible hazardous materials contamination sites, and one cemetery within the project study area.

E. Recommended Public Involvement Activities

Public involvement for this study included soliciting input from public officials and agencies through Resource Agency Coordination efforts. No officials, stakeholders or public meetings were held. When future phases of this project are scheduled and ready to move forward, public meetings should be held to involve the local business people and residents in the decision making process.

XI. ACKNOWLEDGEMENTS

There are several people responsible for the success of this project. This study would not have been possible without the time, effort, and knowledge of the following individuals:

For setting up meetings, providing cost estimates, collecting field information and general support throughout the project, thanks go to Tim Choate, Chris Kuntz, Allen Thomas, Jeff Thompson and other KYTC District 1 staff members.

Thanks also to the Purchase Area Development District and Stacey Courtney for preparing the Environmental Justice Report, providing answers to the Real Estate/Relocation Questionnaire, verifying field information and general support throughout the project.

Finally, thanks go to David Smith and other staff at Qk4 who worked on developing the Environmental Footprint.

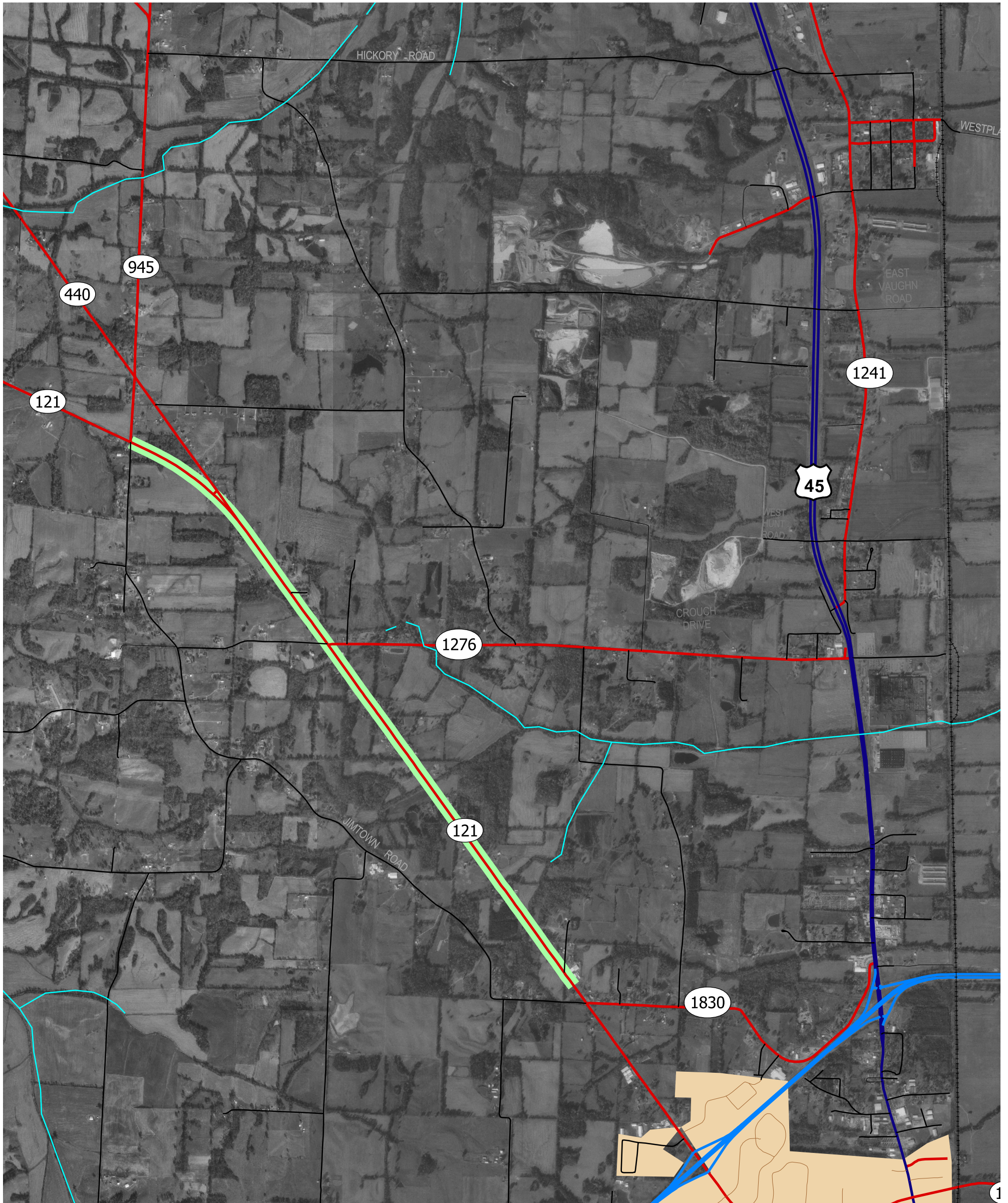
XII. CONTACTS








The following KYTC Division of Planning Staff may be contacted if additional information is needed on the KY 121 Planning Study:

- Annette Coffey, P.E. Director
- Daryl J. Greer, P.E. Branch Manager, Strategic Planning Activity Center
- Jim Wilson, P.E. Team Leader, Strategic Corridor Planning Team
- Steve Ross, P.E. Project Manager, Strategic Corridor Planning Team

The following address and phone numbers can be used to reach these individuals:

Division of Planning
Kentucky Transportation Cabinet
Station: W5-05-01
200 Mero Street
Frankfort, KY 40622
Phone: (502) 564-7183
FAX: (502) 564-2865



-  Parkways
-  US Highways
-  State Roads
-  Local Roads
-  Streams
-  Railroad
-  Corporate Boundary



Division of Planning

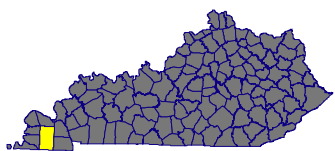
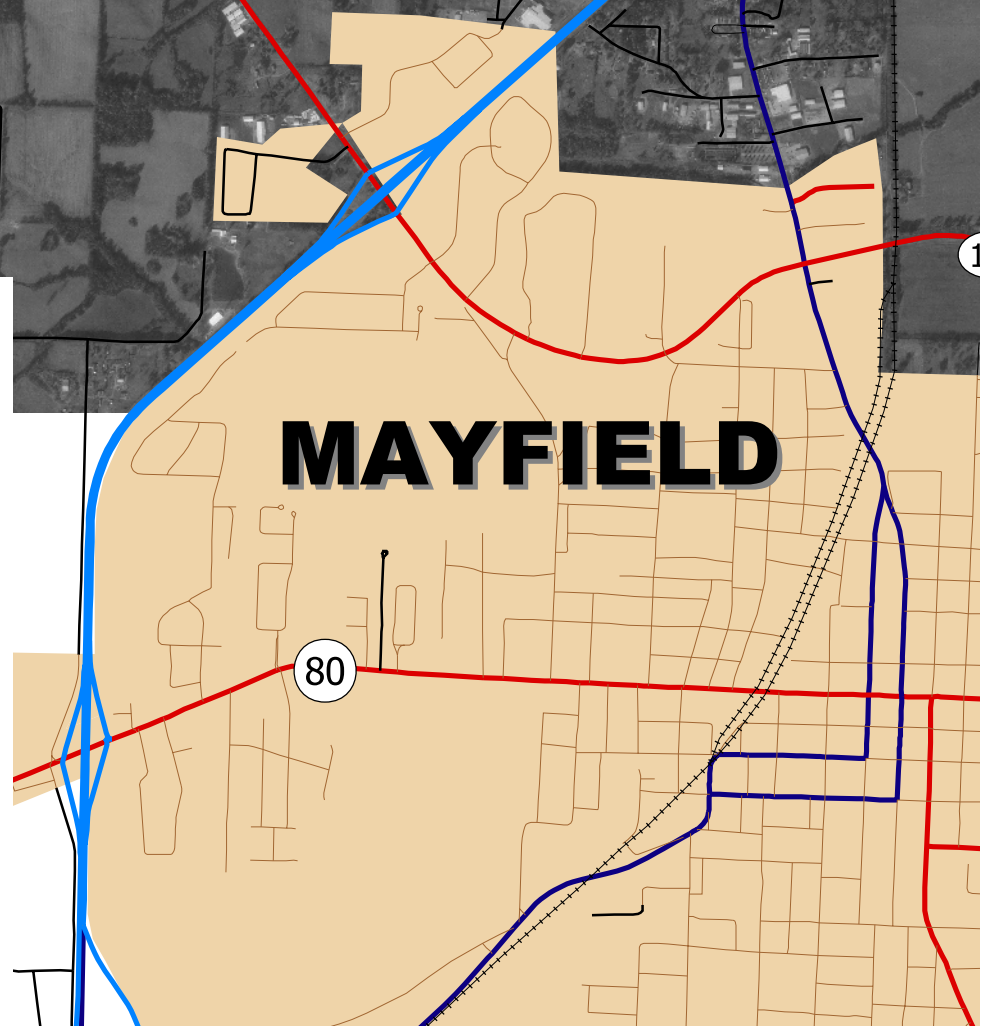
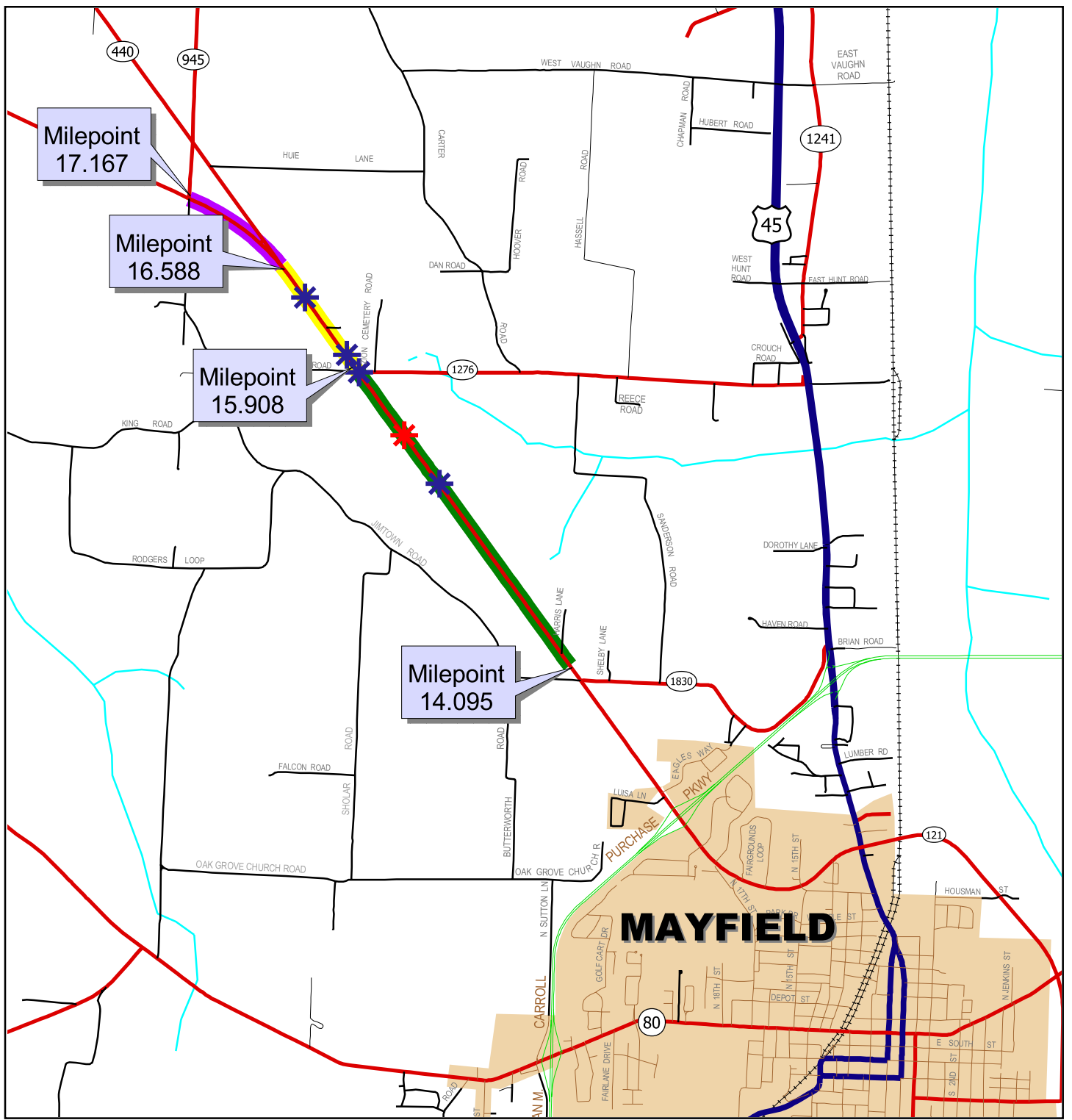


Exhibit 1
Project Location
 Graves County
 Item No. 1-8100.00
 KY 121 From 400' South
 of Harris Lane to the
 KY 945 Intersection

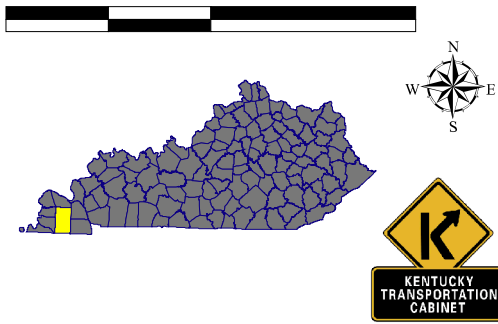




LEGEND

- 2 Crashes, CRF = 0.187
- 9 Crashes, CRF = 0.608
- 16 Crashes, CRF = 0.437
- * Fatal Crash
- * Injury Crash

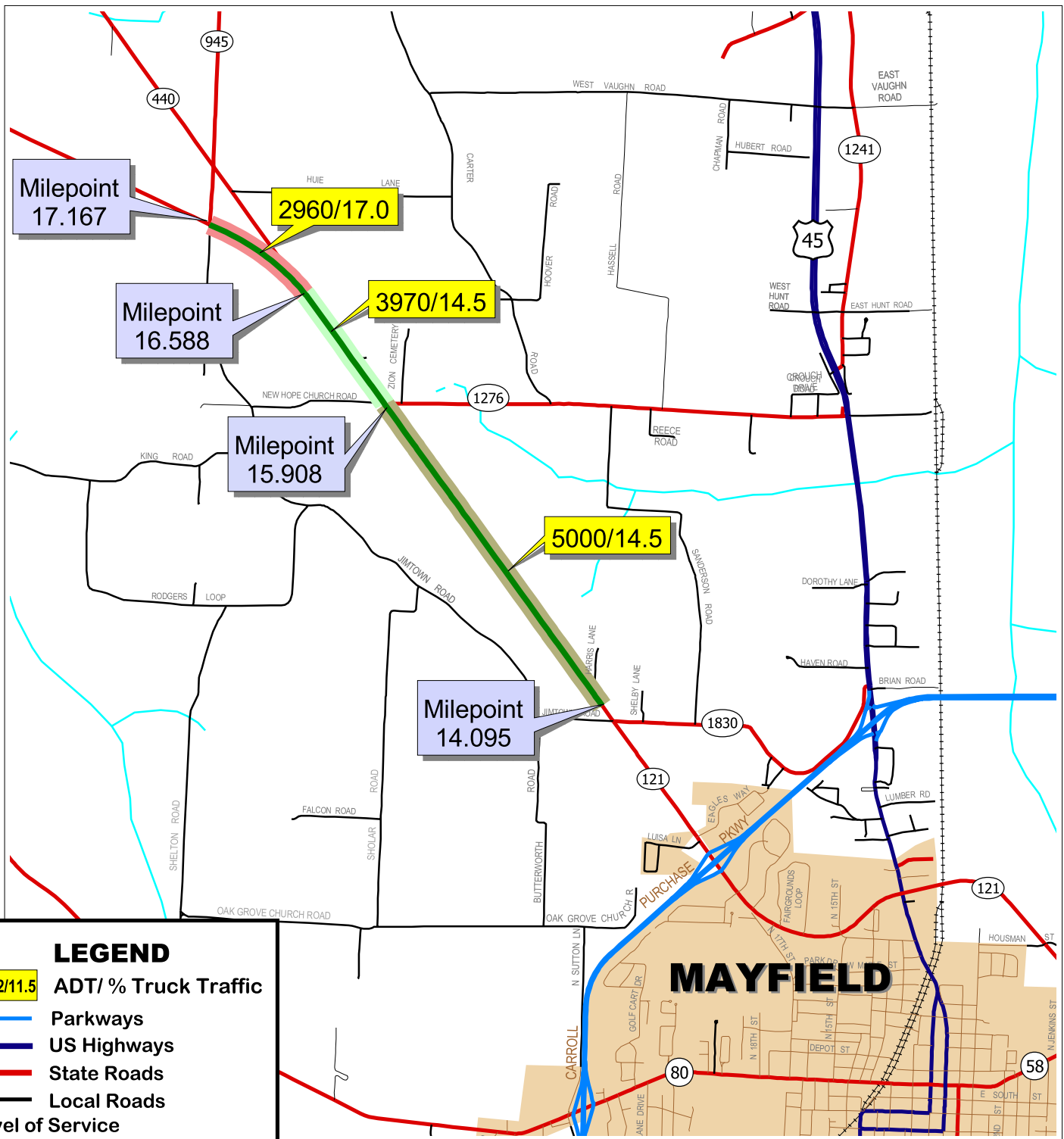
4000 0 4000 Feet



**Exhibit 2
Vehicle Crash
Information
By Severity**

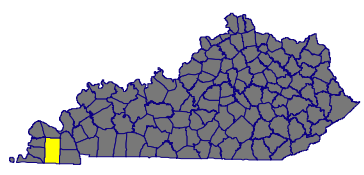
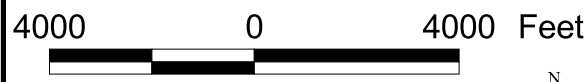
Jan. 1, 2000 - Dec. 31, 2002
Graves County
Item No. 1-8100.00
KY 121 From 400' South
of Harris Lane to the
KY 945 Intersection

There are no High Crash Spots in the study corridor.



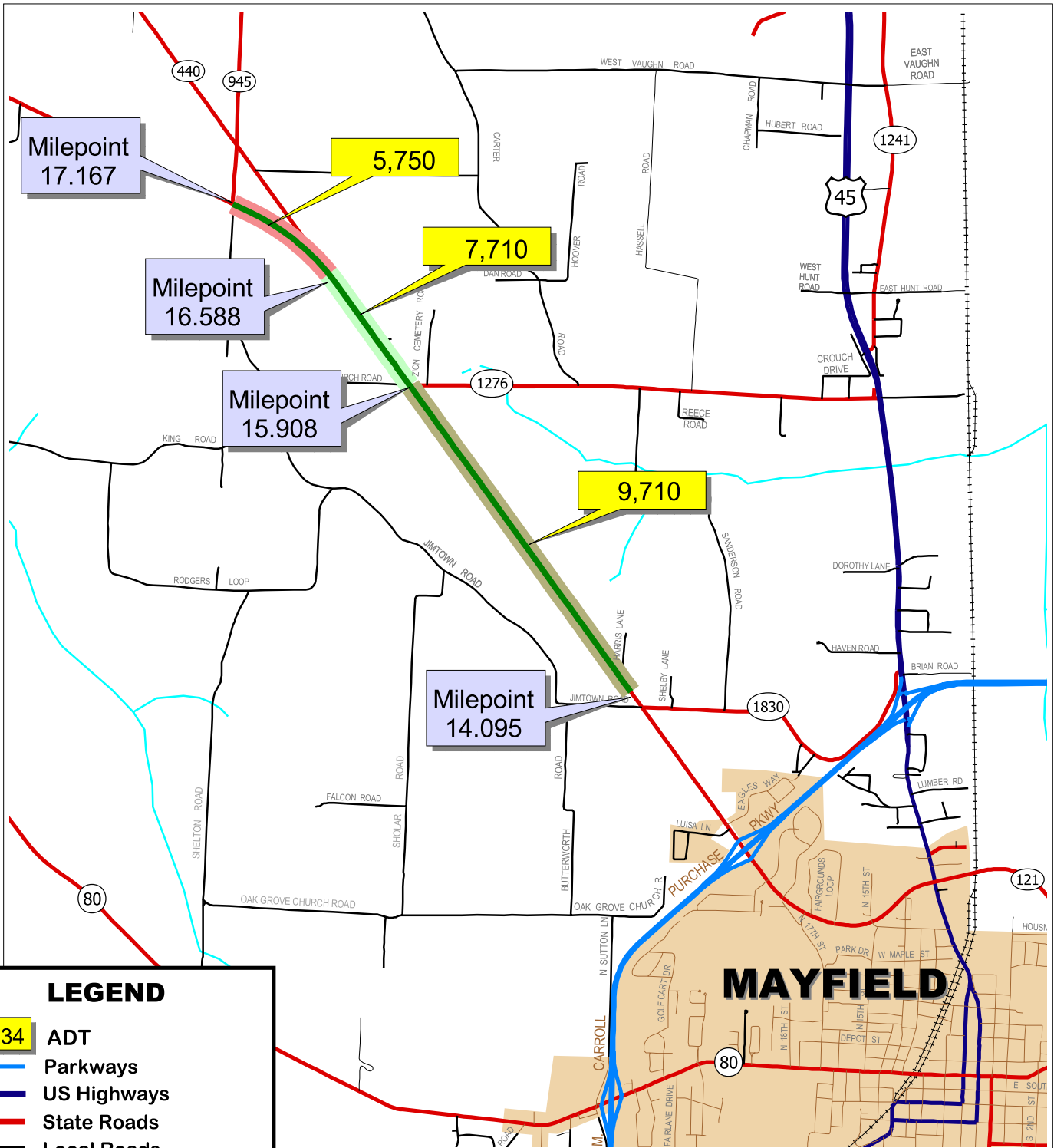
LEGEND

- 1122/11.5 ADT/ % Truck Traffic
- Parkways
- US Highways
- State Roads
- Local Roads
- Level of Service**
- C or Better
- D
- E
- F
- MP 16.588 - 17.167
- MP 15.908 - 16.588
- MP 14.095 - 15.908
- Streams
- Railroad
- Corporate Boundary



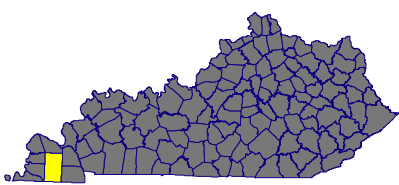
Division of Planning

Exhibit 3
Year 2002
Traffic and Level
of Service
 Graves County
 Item No. 1-8100.00
 KY 121 From 400' South
 of Harris Lane to the
 KY 945 Intersection



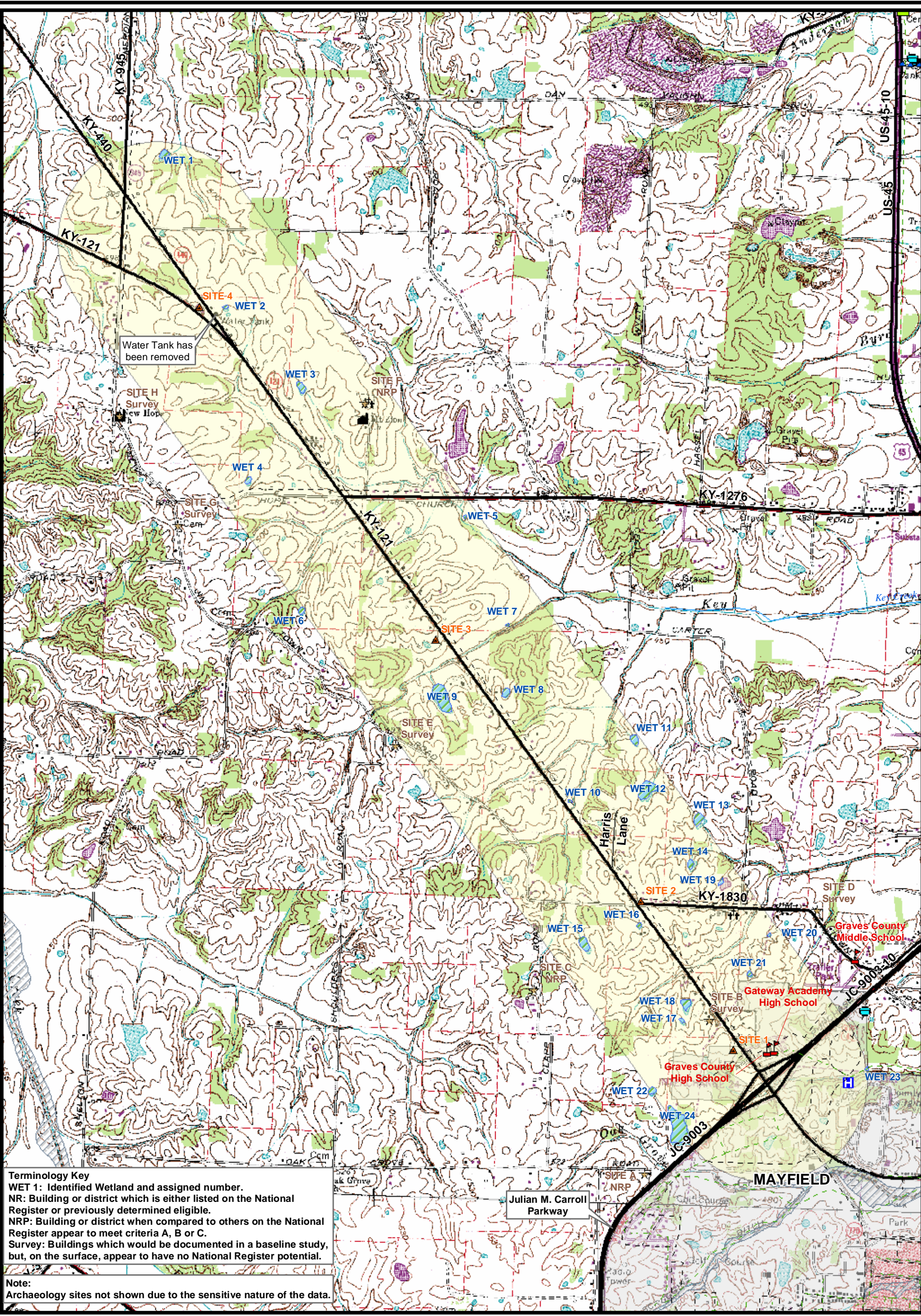
LEGEND

- 1234 ADT
- Parkways
- US Highways
- State Roads
- Local Roads
- Level of Service**
- C or Better
- D
- E
- F
- MP 16.588 - 17.167
- MP 15.908 - 16.588
- MP 14.095 - 15.908
- Streams
- Railroad
- Corporate Boundary



Division of Planning

Exhibit 4
Year 2030
Traffic and Level
of Service
 Graves County
 Item No. 1-8100.00
 KY 121 From 400' South
 of Harris Lane to the
 KY 945 Intersection



Terminology Key
 WET 1: Identified Wetland and assigned number.
 NR: Building or district which is either listed on the National Register or previously determined eligible.
 NRP: Building or district when compared to others on the National Register appear to meet criteria A, B or C.
 Survey: Buildings which would be documented in a baseline study, but, on the surface, appear to have no National Register potential.

Note:
 Archaeology sites not shown due to the sensitive nature of the data.

- | | | | |
|-----------------------------|------------------------|----------------------------|---------------------------|
| Airport | Landfill | Public Water Source | State Park |
| Church | Oil Well | Water Tank | Conservation/Natural Area |
| Park | Gas Well | Water Treatment Plant | PROJECT STUDY AREA |
| Populated Place | Combined Oil and Gas | Sewers | |
| Cemetery | Newly Permitted Well | Package Plant | |
| School | Dry and Abandoned Well | Wastewater Pump Station | |
| Hospital | Miscellaneous Well | Wastewater Treatment Plant | |
| Potential Historic Location | Waterline | Stream | |
| HAZMAT Site | Water Well | Wetlands | |
| | | Potential Flood Risk | |

1,800 900 0 1,800 Feet

Exhibit 5 Sheet 1 of 1

USGS Topographic Environmental Footprint
 KY 121
 400' South of Harris Lane to KY-945
 Graves County
 KYTC Item No. 1-8100.00

VICINITY MAP





Photo No. 1 - KY 121 looking north from JMC Parkway ramp. Note Graves County High School Entrance ahead on right. Luisa Lane is on left beside the Citco Station, directly across from GCHS entrance.



Photo No. 2 – KY 121 northbound; Jct. KY 1830 ahead on right.



Photo No. 3 - Northbound KY 121 at Milepoint 13.



Photo No. 4 - Continuing northbound on KY 121.



Photo No. 5 - KY 121 northbound travelling through residential area.



Photo No. 6 - KY 121 northbound; Jct. KY 1276 ahead on right.



Photo No. 7 - KY 121 northbound, north of Jct. KY 1276.



Photo No. 8 - KY 121 northbound, approaching intersection KY 440.



Photo No. 9 - KY 121 northbound, immediately north of intersection KY 440.



Photo No. 10 - KY 121 northbound approaching Jct. KY 945.



Photo No. 11 - KY 121 northbound, Jct. KY 945 ahead on right.



Photo No. 12 - KY 121 southbound, approaching intersection KY 440; note business on left in the triangle between KY 121 and KY 440.



Photo No. 13 - KY 440 looking south at intersection with KY 121. Note white truck southbound on KY 121 on the right. Photo taken from the KY121/KY440 cutover.



Photo No. 14 - KY 440 looking north from KY121/KY440 cutover.



Photo No. 15 - Looking south from cutover between KY440 and KY 121. Note empty log trucks travelling southbound on KY 121.



Photo No. 16 - Looking south on KY 121 toward intersection KY 440.



Photo No. 17 - KY 121 looking north from KY121/KY440 cutover. Note business between KY 121 and KY 440.



Photo No. 18 - KY 121 southbound through residential area.



Photo No. 19 - Looking east on New Hope Church Road (KY 1276) at intersection with KY 121.



Photo No. 20 - KY 121 looking south at intersection of KY 1276.



Photo No. 21 - Looking north at residential section of KY 121.



Photo No. 22 - Looking north at residential area of KY 121.



Photo No. 23 - KY 121 looking south at intersection KY 1830



Photo No. 24 - KY 121 looking north from intersection KY 1830.

Table 7. Alternatives and Estimated Phase Costs

	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6a	Alternative 6b	Alternative 7
Phase	Spot Improvements	Two-Lane	Three-Lane	Two-Lane on Four-Lane R/W	Four-Lane Rural	Four-Lane Urban	Two-Lane on Five-Lane R/W
Design	325,000	1,000,000	1,500,000	2,000,000	2,000,000	1,750,000	1,250,000
Right-of-Way	500,000	4,000,000	4,000,000	7,000,000	7,000,000	5,500,000	5,500,000
Utility Relocation	600,000	1,500,000	1,500,000	2,000,000	2,000,000	2,000,000	2,000,000
Construction	1,400,000	7,000,000	8,000,000	8,000,000	13,000,000	10,000,000	7,500,000
Total	2,825,000	13,500,000	15,000,000	19,000,000	24,000,000	19,250,000	16,250,000

Table 8. Alternative 2, Spot Improvements and Estimated Phase Costs

Phase	Spot Improvements - KY 121 Intersections at:			
	KY 440	KY 945	KY 1276	Total
Design	150,000	75,000	100,000	325,000
Right-of-Way	300,000	100,000	100,000	500,000
Utility Relocation	300,000	100,000	200,000	600,000
Construction	750,000	250,000	400,000	1,400,000
Total	1,500,000	525,000	800,000	2,825,000

Table 9. Estimated Phase Costs for Recommended Alternative 7 and Interim Spot Improvements, Alternative 2

	Alternative 2	Alternative 7
Phase	Spot Improvements	Two-Lane on Five-Lane R/W
Design	325,000	1,250,000
Right-of-Way	500,000	5,500,000
Utility Relocation	600,000	2,000,000
Construction	1,400,000	7,500,000
Total	2,825,000	16,250,000

MINUTES

Programming Study – Initial Team Meeting Graves County, Item No. 01-8100 KY 121 from Graves County High School Entrance to Intersection KY 440

Meeting Location: District 1 Office, Conference Room

Meeting Date: February 13, 2003

Introductions & Purpose

The meeting began at 12:30 PM local time. Handouts were distributed and attendees introduced themselves. Those present were:

Wayne Mosley	D-01 Chief District Engineer
Tim Choate	D-01 Preconstruction
Allen Thomas	D-01 Planning
Chris Kuntz	D-01 Design
Jeff Thompson	D-01 Planning
Johnny Wall	D-01 Utilities
Stephen Hoefler	CO Hwy Design
Mary Murray	FHWA (by telephone)
Stacey Courtney	Purchase ADD
Bruce Siria	CO Planning
Joe Tucker	CO Planning
Steve Ross	CO Planning

Original Project Description

Steve Ross described the project as a programming study to evaluate the need to reconstruct KY 121 in Graves County. The segment was described as beginning at the Graves County High School entrance and extending northward to the intersection of the KY 440 intersection. This is an in-house study except for the Environmental Footprint which will be contracted out. A total of \$200,000 has been allotted for planning in the Six Year Highway Plan, however, it is expected that this will be under-run.

Changes to Original Description

The milepoints along KY 121 as originally described in the Six Year Highway Plan have increased by approximately 1.4 mile due to the extension of the KY 121 bypass. The new milepoints as now currently listed in HIS are shown in the meeting exhibits. Also due to the extension of the KY 121 bypass, the south end of the study segment is now under construction to convert from a two-lane to a five-lane urban, curb and gutter section. This portion extends just north of the Graves County High School entrance and is depicted in the meeting exhibits.

Wayne Mosley and Tim Choate explained that the reconstruction of KY 1830 will also affect this study's termini. As a result of the KY 1830 reconstruction, a portion of KY 121 will be three-laned from the north end of the five-lane section near the High School entrance to a point north of KY 1830.

Prior Studies and Reports

- KY 121 Corridor Planning Study, Existing Conditions Technical Memorandum, November 1997
- Mayfield Urban Area Transportation Study, February 1999
- KY 121 Corridor Planning Study, Final Report, February 2000

These reports were prepared by Wilbur Smith Associates for the Kentucky Transportation Cabinet. The February 2000, Corridor Planning Study used study information from the 1997 Existing Conditions

Technical Memorandum. It identified, analyzed, and prioritized improvement alternatives between Mayfield and Wickliffe. Copies from this report including the Executive Summary were provided at the meeting. The No. 1 priority identified in the 2000 report is the segment currently under consideration between the Julian M. Carroll (Purchase) Parkway and the intersection of KY 440. Recommendations from the 2000 report for this section of the KY 121 corridor, two-lane reconstruction on four-lane right-of-way, were estimated at \$6.9 million. Priority No. 2, improvements to the KY 440 intersection, were estimated at \$1.5 million. The rest of the KY 121 corridor was recommended for spot improvements with realignment closer to Wickliffe, but the study also recommended deferring these improvements until a more definite plan and location for the I-66 corridor was developed. It is not known why further study was deemed necessary for this priority segment between the Julian M. Carroll (Purchase) Parkway and KY 440. Note, however, that discussion from this meeting suggested that the two-lane recommendations made in the prior study do not provide an acceptable future level of service and these recommendations will be examined more closely in this study.

Crash Data

The crash data collected for the study corridor indicates that the segment between the Julian M. Carroll (Purchase) Parkway and KY 1830 has a Critical Rate Factor greater than one. There are also two “spots” within this segment with Critical Rate Factors greater than one. However, since the team is changing the termini for the study, this segment is no longer within the bounds and will have already been addressed by the reconstruction of the KY 121 Bypass and KY 1830 reconstruction. There are no other segments or spots within the study corridor with Critical Rate Factors greater than one, with the next highest being 0.47.

Traffic Data

The segment within the study corridor with the highest traffic numbers is between the Julian M. Carroll (Purchase) Parkway and KY 1830, and is therefore already being addressed by the KY1830 and KY121 Bypass improvements already discussed. AADT is 5,000 between KY 1830 and KY 1276 with 14.5% trucks. AADT is 3,970 for the remainder of the corridor to KY 440 with 14.5% trucks.

The corridor is operating now at LOS D. If no improvements are made, it will continue to operate at LOS D into the year 2030 given a 2.4% growth rate. The best that could be achieved by reconstructing with a two-lane section would be LOS C. But, if the corridor experiences a 2.4% growth rate, it would be less than two years before it would return to LOS D. 2.4% is the average annual growth rate calculated for a Rural Minor Arterial in the state of Kentucky, as reported in the 2002 Traffic Forecasting Report, Division of Multimodal Programs, Kentucky Transportation Cabinet.

Existing Geometry

Exhibits show a tangent horizontal alignment, and rolling vertical alignment through the study corridor. If the northern terminus is extended just beyond the KY 440 intersection to KY 945, this additional length will include one horizontal curve. There was also a sight distance problem noted with the crest vertical curve at the KY 440 intersection.

Trucks, Planned Industrial Park

One major factor affecting this study corridor is the high percentage of trucks, 14.5%. KY 121 is on the National Truck Network and is the only viable connector for freight movement between Mayfield and Wickliffe, as exhibited in the meeting handouts. Comments solicited from local trucking companies by the Purchase ADD indicate there is a problem with narrow lane and shoulder widths through this corridor. HIS data show eleven-foot lanes and two-foot shoulders.

Also noteworthy is a plan to develop a major Industrial Park to boost the region’s economy, just north of Mayfield in the Folsomdale-Viola area along US 45. This would be a world-class, as large as 2,500 acre facility, capable of supporting a large national, or international firm (e.g. a Saturn type plant). The Industrial Park would provide economic development benefits to a multi-county region. It is not known

whether this plan will go forward, but, sentiment is, it is a likely possibility. Once begun, the Industrial Park might begin to see tenants within six to ten years.

Environmental Footprint

Qk4 will be preparing the environmental footprint for the study and has been provided with the project scope. Qk4 will be presenting a proposal to complete this work in the immediate future. Judging from the most recent study for the longer Mayfield to Wickliffe corridor, no significant problems are anticipated between Mayfield and the KY 440 intersection. Environmental Justice data will be provided by the Purchase ADD by request of KYTC Central Office, Division of Planning.

Real Estate/Relocation Information

A list of questions prepared by Environmental Analysis was presented to meeting attendees for review. The purpose is to obtain accurate, reliable information regarding real estate availability and value in a reasonable time frame. The plan presented is for the District Planning Engineer, working with the District Right-Of-Way Agent, to use their knowledge and local contacts to obtain this information. It was also noted that the intent is to spend no more than on-half man-day in this effort. Steve Ross asked Wayne Mosley if he would be agreeable to having his people provide this information and asked for other comments from the team on this proposal. There was a long pause from the group. Wayne Mosley pointed out that several of the items listed could take half a day to complete each, and that much of the information could be obtained from the local PVA. Steve Ross made a request to the District to make an attempt at the questionnaire one time for this study, spend no more than one-half man-day, and provide written comments on the form where information was too time-consuming to obtain. Stacey Courtney of the Purchase ADD volunteered to collect this information, since he would already be providing Environmental Justice data and Agency Coordination. Steve Ross indicated that his offer was appreciated, and that the Central Office may want to accept it.

Other (ITS/Bikes/Ped.)

The team consensus was that there does not appear to be a viable ITS solution for the identified problems and issues. The team also agreed that current bicycle and pedestrian guidelines will be followed, especially given the proximity of existing, and planned schools in the area.

Identify Logical Termini

South Terminus: As discussed early in the meeting, the KY 1830 project will include three-lane reconstruction of KY 121 beginning at the five-lane section and extending north beyond the KY 1830 intersection. Participants agreed that this study should begin at the north end of this proposed three-lane reconstruction. **The south terminus was identified during the meeting, as being approximately 400 feet south of the Harris Lane intersection.**

North Terminus: Problems at the KY 440 intersection include poor sight distance as a result of a combination of less than desirable horizontal and vertical alignment. Additionally, KY 945 intersects both KY 121 and KY 440 just north of this intersection. To more completely contain the elements pertinent to the intersection's problems, and solution, **the team agreed to extend the north terminus on KY 121 to the intersection of KY 945.**

Benefits of the proposed project – Goals and Objectives

- Improve Safety

The primary goal suggested by the team was to improve safety. The KY 121/KY 440 intersection, on the north end of the study corridor, is skewed, and contains a combination of horizontal and vertical curvature. Team members noted sight distance problems at this intersection. Just north of this intersection, KY 945 intersects both KY 121 and KY 440 at skewed angles. One other highly used, but skewed intersection

noted, was KY 121/KY 1276. KY 1276 is a two-lane road that currently carries more than 1,100 vehicles per day on the west end, at KY 121, and 1,450 vehicles per day, two miles to the east, near its intersection with US 45. The KY 1276/US 45 intersection is the location of Continental General Tire, one of the areas largest employers. Crash data indicates less than critical crash rate factors, that is, crash rates less than the state average for routes of similar functional class, for the revised study corridor. However, an existing high school and a planned elementary school along KY 121, just south of the study corridor, make safety a concern. That these educational facilities are accessed directly by a two-lane roadway with relatively high percentages of truck traffic also raises safety issues. There is also a middle school located on KY 1830, in the vicinity of the other two schools. Addressing the needs of pedestrians and bicyclists along KY 121, as well as accommodating high percentages of trucks will be a challenge.

- Relieve congestion, improve capacity and level of service

Secondary goals suggested include improving level of service, improving capacity, and relieving congestion. Much has already been done to relieve congestion on KY 121 at the Julian M. Carroll (Purchase) Parkway, south of the study corridor. For the segment currently under consideration, two-lane improvements would increase the level of service from D to C. Once achieved, this level of service could only be maintained for two years before falling back to D. Four-lane improvements, however, achieve level of service A for year 2030 traffic projections. While the study corridor is located in a predominantly rural area, there are segments with residential dwellings and private driveway access continuous along both sides of KY 121. Other section alternatives need to be explored before finalizing any recommendations.

- Accommodate increased truck use and promote regional connectivity

Both Wickliffe and Mayfield are home to companies that generate substantial numbers of trucks that travel along the study corridor. Questionnaires completed by trucking agencies, solicited by the Purchase ADD, point to problems with narrow lanes and shoulders. HIS data show eleven-foot lanes and two-foot shoulders through the corridor. KY 121 is on the National Truck Network and is the primary connector between Mayfield and Wickliffe. A Regional Industrial Park proposed north of Mayfield along US 45, if completed, would have a significant impact on traffic levels and truck percentages in the study corridor.

Benefits tend to overlap when addressing the goals noted above, for example, a safety improvement could also affect level of service, and vice versa. Some of the possible solutions suggested by the team that address the above noted deficiencies include, improving the alignment at the KY 121/KY 440 and KY 121/KY 1276 intersections. Also suggested was reconfiguring KY 945 into any realignment plan for the KY 121/KY 440 intersection. Other suggested solutions include adding, and/or widening lanes and shoulders. Each of these suggested improvements would address all of the goals identified above. Whether such improvements are justified, and whether they will address the future needs of the area, without adversely impacting other areas, will require further consideration. The team must still review Environmental Footprints, Environmental Justice data, and Agency Coordination responses.

Probable Design Criteria

Functional Class

The team did not see the likelihood that it would recommend that the functional class of this segment of KY 121 change from Rural Minor Arterial.

ADT/DHV

As exhibited, traffic is projected to be as high as 9,700 ADT through most of the study corridor by the year 2030 given an average growth rate of 2.4% per year. It was pointed out during the meeting that there are plans for a new elementary school on KY 121 immediately south of the study area with a planned enrollment of 500 children. 25% of these students are estimated to live north of the study area and will generate additional traffic through the study corridor. It will be

necessary, as part of this study, to estimate the amount of traffic this will generate and add this amount to the current traffic projection.

Design Speed

The speed limit through the study corridor is currently 55 miles per hour. The team agreed that a 55 mph design speed is appropriate for reconstruction. If during the course of this study it is determined that a significantly different roadway section is called for, a lower design speed may be necessary.

Typical Section

- Two-Lane - It was noted that the highest LOS attainable for a two-lane section given the current traffic is LOS C. At a growth rate of 2.4% per year, this LOS could only be maintained for approximately two years before it would revert back to LOS D and remain at D through the year 2030.
- Four-Lane - It was noted that for four-lane improvements, LOS A would be achieved for year 2030 traffic projections.

Two issues here: (1) Future year LOS D for a two-lane segment, and A for a four-lane begs the questions “why” and what options (three-lane?) do we have other than those two, and (2) If KY 121, from the existing five-lane section through the KY 1830 intersection, is being designed as a three-lane segment, is that adequate/appropriate? If so, then the options further out are more restricted.

Some specific questions raised were:

1. For a two-lane section, what factor(s) is (are) driving the LOS to D?
2. How would a three-lane improvement affect the future LOS?
3. Would five-lane improvements be appropriate given the location and traffic projections for this area?
4. If five-lane improvements are justified, compare curb and gutter, flush, and combination improvements out to KY 440.

Other Criteria

- The team agreed that KY 1276/KY 121 intersection improvements should be included in the study recommendations. It was noted that 2002 ADT on KY 1276 was 1,130 on the west end, at KY 121, and 1,450 on the east end, at US 45. The KY 1276/US 45 intersection is where Continental General Tire is located, one of the area’s major employers and traffic generators.
- No intersections within the study corridor are signalized. There are no plans to signalize KY 1830 at KY 121 but KY 1830 will be signalized at US 45.
- There is a new elementary school planned on KY 121 to be located immediately north of the existing High School entrance.
- There are tentative plans for a major Regional Industrial Park in the Folsomdale-Viola area, as large as 2,500 acres. Such a facility would have a dramatic effect on the local economy, as well as traffic generation north of Mayfield.
- KY 945 intersects KY 440 and KY 121 immediately north of the KY 121/KY 440 intersection and will be included in plans to improve this intersection. There is a water tank located to the east of the KY 121/KY 440 junction. The intersection improvement plan included in the 2000 study would have some turning movement storage issues to be resolved. Also, the actual vertical alignment at this intersection (crest vertical curve) creates sight distance problems that cannot be visualized in the two-dimensional plan

view depicted in the 2000 report. The intersection may need to be cut down to correct deficiencies.

- Access is currently by permit, and, by team consensus, should remain so.

Agency Coordination Needs

Our standard letter and distribution list will be used for agency coordination. Stacey Courtney will supply additional names from the Purchase ADD's list of contacts.

Public Involvement Needs

There are no Public Information Meetings or Officials Meetings planned for this study. Mary Murray questioned whether these meetings were being omitted in an attempt to save money. Bruce Siria explained that these meetings were not in the scope of this study and that we did not want to unnecessarily upset a group of citizens over a project that might not materialize. Public involvement will be handled through agency coordination. Depending on the agency responses received, further public involvement could be added.

Documentation/Reports

Information to include/not include in report

The study report will include existing and future traffic and LOS data, Crash data, recommendations for improvements and estimated costs.

Level of Detail

The level of detail will be low for this study and report. No detailed plans or cost/benefit analysis will be included. Only general recommendations will be made.

Distribution

Reports will be distributed to the groups represented by the team members including the District, Department of Highways, Purchase ADD, and FHWA.

Field Review of Project Area

The office portion of the meeting was adjourned at 3:10 PM local time. All interested team members were invited to a field review of the study corridor. The majority of the team was already familiar with this section of KY 121. Tim Choate, Stacey Courtney, Bruce Siria, Joe Tucker and Steve Ross participated. Steve Ross took photographs. Several empty log trucks were noted travelling southbound on KY 121. There was one business noted within the triangle created by the KY 121/KY 440 intersection. Also, at the approximate midpoint of the study corridor, there is about a quarter mile length of continuous residential development with private driveway access on each side of the roadway. Although there are no bridges within the study corridor, there was one drainage feature noted utilizing a culvert under the roadway. All other items discussed in the office portion of the meeting were confirmed where possible.

AGENDA
Initial Team Meeting – KY 121 Graves County

Meeting Location: District 1 Office, Conference Room
5501 Kentucky Dam Road
Paducay, KY 42002-3010

Meeting Date: February 13, 2003,
Meeting Time: 12:30 PM CT

- 1) Introduction and Purpose
- 2) Project Goals and Objectives
 - a) Project area
 - b) Prior reports
 - c) Roadway Conditions
 - i) Traffic data
 - ii) Crash data
 - iii) Existing geometry
 - iv) Other
 - d) Identify additional information needed to document problems
 - i) Environmental Footprint
 - ii) Real Estate/Relocation Information
 - iii) Other (ITS/Bikes/Ped.)
 - e) Identify logical termini
 - f) Benefits of proposed project
 - g) Develop project goals and objectives
- 3) Probable Design Criteria
 - a) Functional class
 - b) ADT/DHV
 - c) Design speed
 - d) Typical section
 - e) Other criteria
- 4) Agency Coordination Needs
- 5) Public Involvement Needs
- 6) Documentation/Reports
 - a) Information to include/not include in report
 - b) Level of detail
 - c) Distribution
- 7) Field Review of Project Area

KENTUCKY 121, GRAVES COUNTY

From 400 feet south of Harris Lane to KY 945

ITEM NUMBER 01-8100.00

ENVIRONMENTAL OVERVIEW

Prepared for:

**KENTUCKY TRANSPORTATION CABINET
DIVISION OF PLANNING**

October 2003

Prepared by:



ENVIRONMENTAL OVERVIEW

KENTUCKY 121
From 400 feet south of Harris Lane to KY 945
GRAVES COUNTY, KENTUCKY

Item No.: 01-8100.00

Prepared for:

KENTUCKY TRANSPORTATION CABINET
DIVISION OF PLANNING

Prepared by:

William C. Crawford
David E. Smith



October 2003

ENVIRONMENTAL OVERVIEW

This environmental overview identifies KY 121 project study area issues likely to require consideration during the KY 121 roadway improvement planning study. It summarizes the results of environmental investigations, based primarily upon literature, archival, known database, and map research. Limited amounts of fieldwork were conducted, consisting mainly of windshield surveys to confirm identified sites, and visually identify previously unknown sites. Additional information was collected through correspondence with other state and federal agencies. This environmental overview does not provide a detailed analysis and assessment of any potential impacts. The KY 121 study area is about 4.7 miles long, and 0.8 miles wide, as indicated by the highlighted area on Exhibits 1 and 2. The study area is larger than the project termini, which extend from 400 feet south of Harris Lane to the KY 945 intersection. Refer to Exhibits 1 and 2, and the color photographs of existing KY 121 typical sections, for the following discussions concerning the study area.

Environmental Footprint

Topography and Geology. Elevation in the study area ranges from 440 to 540 feet above mean sea level. The study area is within the Loess Plains Ecoregion of the Mississippi Valley Loess Plains Ecoregion of far Western Kentucky, also known as the Jackson Purchase. It is composed of irregular plains, gently rolling hills, and bluffs. It is underlain by unconsolidated coastal plain sediments of Quaternary and Tertiary age that are susceptible to rapid erosion and is covered by thick loess and alluvium. Graves County is located in the Purchase physiographic region, sometimes referred to as the Mississippian Embayment region, which consists of unglaciated, undulating to rolling uplands, broad bottomlands and terraces. The gravel-bearing Lafayette geologic formation largely underlies Graves County. Streams in the ecoregion's western portion are low gradient and have many wetlands along their lower reaches, while more eastern streams form gullies on the sandy gravelly hills. Graves County is drained by a large number of streams, generally flowing to the west or north. The study area's main drainage is provided by the West Fork of Mayfield Creek, and also by Key Creek (a tributary of Mayfield Creek), and Mayfield Creek (a Mississippi River tributary). The study area's terrain consists of rolling hills with small stream valleys and dissected upland. Grasslands and forested wetlands were once common, but most have been converted to cropland.

Culturally Sensitive Locations. This preliminary study identified the following culturally sensitive locations in or near the study area: 2 cemeteries (Mount Zion Baptist Church Cemetery and an unnamed cemetery), at least 1 church (New Hope Church), the Jackson Purchase Medical Center, Graves County High School, Gateway Academy High School, and the County War Memorial Fairgrounds. The hospital and fairgrounds are located in the study area's southern tip, south of the Julian M. Carroll Parkway. The schools – including a new elementary school scheduled to open in 2004/2005, and the Graves County Middle School located just outside the study area boundaries – are all located in the northern quadrant of the KY 121 and Julian M. Carroll Parkway intersection. The topographic maps indicate the location of Mt. Zion Baptist Church and Cemetery, however the church building is no longer standing.

These culturally sensitive locations vary from having local community significance, to regional significance with state and/or federal regulations. Any future roadway improvements proposed should thoroughly consider potential impacts to these resources.

Historic, Archaeological, and Cultural Resources. The study area contains no National Register of Historic Places (NRHP) listings for historic sites. A windshield survey of the study area located 9 sites, of which one was inaccessible and not evaluated, and 5 were surveyed for overview study documentation only (*i.e.*, no apparent NRHP potential; identified on the exhibits as “Survey”). However, 3 individual building sites were identified with the potential to meet NRHP criteria, and identified on the exhibits with the suffix “NRP” (National Register Potential). (This preliminary assessment was based primarily on Criterion C, architecture). Two NRP sites (Sites A and C, houses) are located in the southern portion, close to the study area’s western boundaries, while the third (Site F, Mt Zion Cemetery) is in the north, about 1,200 feet from existing KY 121. No buildings were inspected in detail. NRHP eligibility determination will require additional research, physical examination, evaluation, and consultation with the State Historic Preservation Office (SHPO). *Kentucky’s Historic Farms* publication listed one historic farm (Andrus Farm) as located in Mayfield, potentially in the vicinity of the study area. The farm’s exact location and property boundaries could not be determined without further research; therefore its relationship and proximity to the study area is unknown.

The archaeological overview identified no previously recorded or otherwise known archaeological sites within the study area, and concluded the area has moderate potential for discovery of significant archaeological deposits. The overview revealed the study area to be largely uninvestigated; and agricultural activity and urban development have resulted in a good amount of ground disturbance. Nevertheless, archaeological sites have been recorded in other county areas, and the area’s topography is typically an ideal location for prehistoric sites. Additionally, within the study area are historic cemeteries, and potential historic structures and resources. Historic mapping review indicated approximately 49 potential archaeological resource sites, with two historic structures (Structures 1 and 2 on the exhibits) tentatively identified in the field and considered to have strong potential for intact archaeological resources. Based upon the background literature review, the likelihood for encountering undiscovered historic and prehistoric archaeological sites is considered strong. If improvements to KY 121 are to be implemented, requiring an environmental document, then the study area should be subjected to a Phase I level archaeological investigation (*i.e.*, shovel test probe excavations in accessible areas), and a historic structures survey performed by an architectural historian.

Aquatic Resources. The region is within the Mississippi River drainage system, with a reported 30 surface streams that could potentially be impacted, including Key Creek, Gilbert Creek, the West Fork of Mayfield Creek, numerous unnamed tributaries of these creeks, and one unnamed tributary of Oak Grove Creek. All these streams are tributaries of Mayfield Creek, which is a direct tributary of the Mississippi River. The conversion of grasslands and forests into cropland, the associated agricultural runoff, and the channelization of most streams have resulted in water quality degradation. If KY 121 improvements are implemented, then all 30 streams in the study area may be impacted by sedimentation resulting from roadway construction improvements. Soil from exposed and erodible surfaces may directly enter surface water, temporarily increasing turbidity levels. Surface and ground water may also experience temporary increases in specific conductance, suspended solids, and nutrients. Kentucky Division of Water (KDOW) will require a non-point source pollution control plan, and an erosion control plan. Application of Kentucky Transportation Cabinet’s (KYTC) *Specific Specifications for Road and Bridge Construction* and the Federal Highway Administration’s (FHWA) *Best Management Practices for Erosion and Sediment Control* can be used to alleviate most sedimentation problems.

No nationally listed wild and scenic rivers are located within the study area. No other rivers or streams are listed on the Kentucky Wild River System.

No outstanding resource waters, municipal/public surface water intakes, or recorded water wells were identified in the study area. The KDOW reported that no wellhead protection areas are located within, or adjacent to, the study area. The KDOW recently implemented a policy change and now regards the location of municipal water supplies and groundwater protection areas as classified information. Therefore, only a limited amount of information is available, and mainly originates from other public information sources.

A limited amount of floodplain information is available for the study area. The Graves County Flood Hazard Boundary Maps (dated November 4, 1977) were converted to Flood Insurance Rate Maps (FIRM) on December 1, 1992, by Letter of Map Change (LOMC). New maps were not published, and the existing maps are subject to change "after a more detailed study." According to the maps, the study area does not cross any special flood hazard areas (*i.e.*, Zone A), and is located entirely within Zone X (areas outside 500-year floodplain).

Wetlands and Ponds. National Wetland Inventory (NWI) map reconnaissance revealed 24 wetlands within the study area, ranging in size from 0.1 to 4.6 acres. The wetlands are identified on the exhibits as "WET #." Palustrine, forested, broad-leaved, deciduous wetlands accounted for 4 sites (Wet sites 5, 7, 10, and 23 on exhibits), each about 0.1 acres. One of these wetlands is located along Key Creek, 2 on unnamed tributaries of Key Creek, and 1 along an unnamed tributary of Oak Grove Creek. Ponded, open water habitats with unknown bottoms accounted for 20 wetland sites, most of which are probably created ponds, although some may have wetland fringes that could be considered jurisdictional. In addition to the 20 NWI probable ponds, another 15 ponds appear on the topographical maps, for a total of 35 ponds. Ponds may be considered jurisdictional if a jurisdictional stream flows through them. More intensive field surveys would be required to confirm and delineate NWI map wetlands, as well as identify any wetlands not appearing on the map.

A specific roadway design is needed before the type of United States Army Corps of Engineers (USACE) permit required (*i.e.*, Nationwide or Individual) can be determined. However, depending upon the specific roadway design, this project may be permitted under *Nationwide Permit 14, Linear Transportation Crossings*, rather than an Individual Permit. The nationwide permit only authorizes activities with minimal adverse effects on the aquatic environment. The KDOW will probably require a Kentucky Pollutant Discharge Elimination System (KPDES) General Stormwater Permit, a Floodplain Construction Permit if filling within the one-hundred-year floodplain, and a Water Quality Certification.

Terrestrial Resources. The plant and animal life is considered typical for the area. Historically, the area was covered with grasslands and forested wetlands, but most have been converted to cropland. Numerous small wood lots are scattered throughout the area, consisting of mostly young trees (15 – 30 years old), and dominated by exotic species in the shrub and herbaceous strata. Potential natural vegetation consists of oak-hickory forest, a mosaic of oak-hickory forest and bluestem prairie (barrens), and southern floodplain forest.

Threatened and Endangered Species. Coordination with the United States Fish and Wildlife Service (USFWS) indicated there are no federally protected species known to occur in the study area.

Coordination with the Kentucky Department of Fish and Wildlife Resources (KDFWR) indicated the copperbelly water snake (*Nerodia erythrogastor neglecta*) is known to occur in the Hickory, Kentucky quadrangle. The copperbelly water snake is a federally listed threatened species in the northern part of its range. However, in the southern part of its range (includes Kentucky), it is not federally listed, but could require habitat mitigation if suitable habitat land (*i.e.*, wetlands) is impacted. The potential presence of the copperbelly water snake may require more intensive field studies and habitat mitigation if wetlands are filled for the project.

Coordination with the Kentucky State Nature Preserves Commission (KSNPC) identified two state threatened species from the study area. The Compass plant (*Silphium laciniatum* var. *robinsonii*) is known to occur at two sites near the study area, both are located on the south side of KY 121. Bachman's sparrow (*Aimophila aestivalis*) is known to occur at a site northwest and outside of the study area.

Managed Land Areas. Managed land areas are under governmental or private regulatory control, typically to encourage environmental protection or resource procurement. No known managed land areas are located within, or adjacent to, the study area. No agricultural districts would be impacted by the project.

Farmlands. The Graves County Natural Resources Conservation Service (NRCS) provided prime farmland soil maps encompassing the study area. The predominant soil type in the study area is Purchase loam complex, while Grenada silt loam is the major prime farmland soil type present. Reviewing the soil survey maps, it appears the study area contains 40 to 50 percent prime farmland, and about 31 percent of the existing KY 121 roadway crosses prime farmland. Some of this prime farmland's value has already been compromised due to residential development and roadway construction.

Hazardous Materials Concerns. Land use in the study area is predominantly agricultural and residential, with some commercial facilities. Relevant data was collected from numerous sources, including federal and state databases, and a windshield survey of the area within and near the study area. The survey identified 4 possible contamination sites (see Table 1, *Possible Contamination Sites*, and the color photographs of site examples). Three sites involve fuel distribution and/or vehicle/equipment maintenance facilities, and have similar potential contamination concerns (*e.g.*, underground storage tanks (UST's), fuel spills/leaks/soil contamination, waste petroleum products, heavy metals, solvents, corrosives, tires, lacquers/paints, 55-gallon drums, miscellaneous debris piles, etc.). The former gasoline station being used by the local Farmers Co-Op appeared to have significant amounts of waste stock piling, including: building debris and construction materials, abandoned autos and trucks, trailers, farm and construction equipment, repair parts, etc. Structures with suspected asbestos containing building materials (ACBM) were also observed. Additional potential contamination concerns include: pole-mounted electrical transformers (PCB's), aboveground storage tanks (AST's), and pesticide/herbicide use on farms. Construction activities in and near these sites may require special procedures and permits.

Air Quality. Graves County is located within the Paducah (Kentucky) – Cairo (Illinois) Interstate Air Quality Control Region. The area is designated as an Attainment Area for all transportation-related pollutants, as per the 1990 Clean Air Act Amendments, and transportation control measures are not required for the project. However, recent information indicates Graves County is on a “watch list” and a small probability exists it may be redesignated as a Non-Attainment Area when the new National Ambient Air Quality Standards (NAAQS) are published in April 2004. The project is listed on page 84 of the *Kentucky Statewide Transportation Improvement Program (STIP), Fiscal Years 2003–2008*, approved September 2002. The project is not expected to adversely impact air quality in the region.

Traffic Noise. The study area contains several residences, a motel, 3 schools (with an additional elementary school under construction), churches, cemeteries, a retirement home, and several small businesses. If KY 121 improvements were implemented, then the highest potential for impacts to properties is from additional right-of-way needs. Properties somewhat removed from the roadway are not anticipated to be adversely affected by traffic noise. It is usually unreasonable to construct noise barriers for single, widely spaced residences, and the need to maintain access to the road would render any noise barriers ineffective.

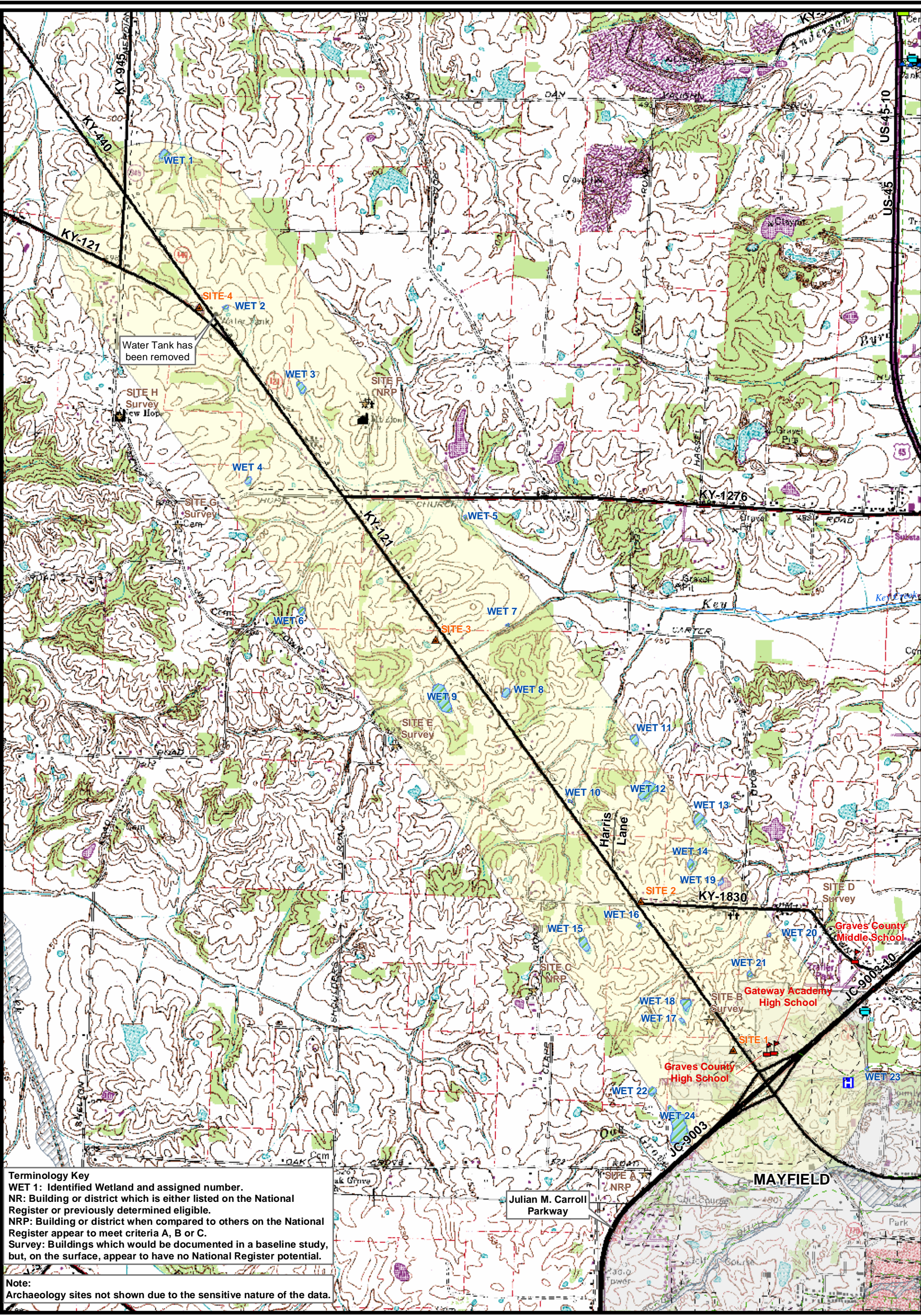
Other Concerns. An elevated water tank that appears on the topographic maps, located near the northern study area boundary, was abandoned and removed by the Hickory Water District about 1999.

Environmental Justice. The Purchase Area Development District (PADD) is preparing the environmental justice section and its related issues/concerns.

TABLE 1
Possible Contamination Sites
Graves County, KY 121

Site Number	Site Name or Description	Suspected Contaminant or Area of Concern
1	CITGO Gas Station	USTs, petroleum products, heavy metals, and semi-volatile organic compounds.
2	Vacant Commercial Property	Possible petroleum contamination or hazardous materials from former operations on site, and Asbestos Containing Building Materials (ACBM).
3	Vacant Commercial Property (formerly Turners Body Shop)	Possible petroleum contamination or hazardous materials from former operations on site and Asbestos Containing Building Materials (ACBM).
4	Farmer's Co-Op (former gasoline station)	Petroleum products, heavy metals, semi-volatile organic compounds, oils, greases, waste oils and oil products, solid waste materials, used auto tires, 55-gallon drums with unknown liquid chemical contents, abandoned automobiles, construction debris, heavy equipment, farm machinery, engine parts, possible USTs and linked contamination, and possibly a variety of unknown hazardous materials storage in the interior of the structure on site (i.e., structure interior not inspected).
Not Mapped*	Power Pole Mounted Electrical Transformers	Polychlorinated Biphenyl's (PCB's)
Not Mapped*	Aboveground Storage Tanks (AST's)	Heating fuel oils, gasoline, and liquid propane.
Not Mapped*	Residential Dwellings & Commercial Buildings	Asbestos Containing Building Material (ACBM)

* Found at various locations throughout study area.



Terminology Key
 WET 1: Identified Wetland and assigned number.
 NR: Building or district which is either listed on the National Register or previously determined eligible.
 NRP: Building or district when compared to others on the National Register appear to meet criteria A, B or C.
 Survey: Buildings which would be documented in a baseline study, but, on the surface, appear to have no National Register potential.

Note:
 Archaeology sites not shown due to the sensitive nature of the data.

- | | | | |
|-----------------------------|------------------------|----------------------------|---------------------------|
| Airport | Landfill | Public Water Source | State Park |
| Church | Oil Well | Water Tank | Conservation/Natural Area |
| Park | Gas Well | Water Treatment Plant | PROJECT STUDY AREA |
| Populated Place | Combined Oil and Gas | Sewers | |
| Cemetery | Newly Permitted Well | Package Plant | |
| School | Dry and Abandoned Well | Wastewater Pump Station | |
| Hospital | Miscellaneous Well | Wastewater Treatment Plant | |
| Potential Historic Location | Waterline | Stream | |
| HAZMAT Site | Water Well | Wetlands | |
| | | Potential Flood Risk | |

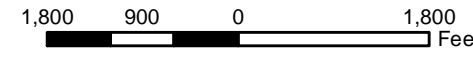
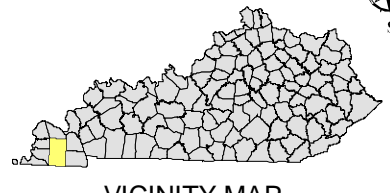
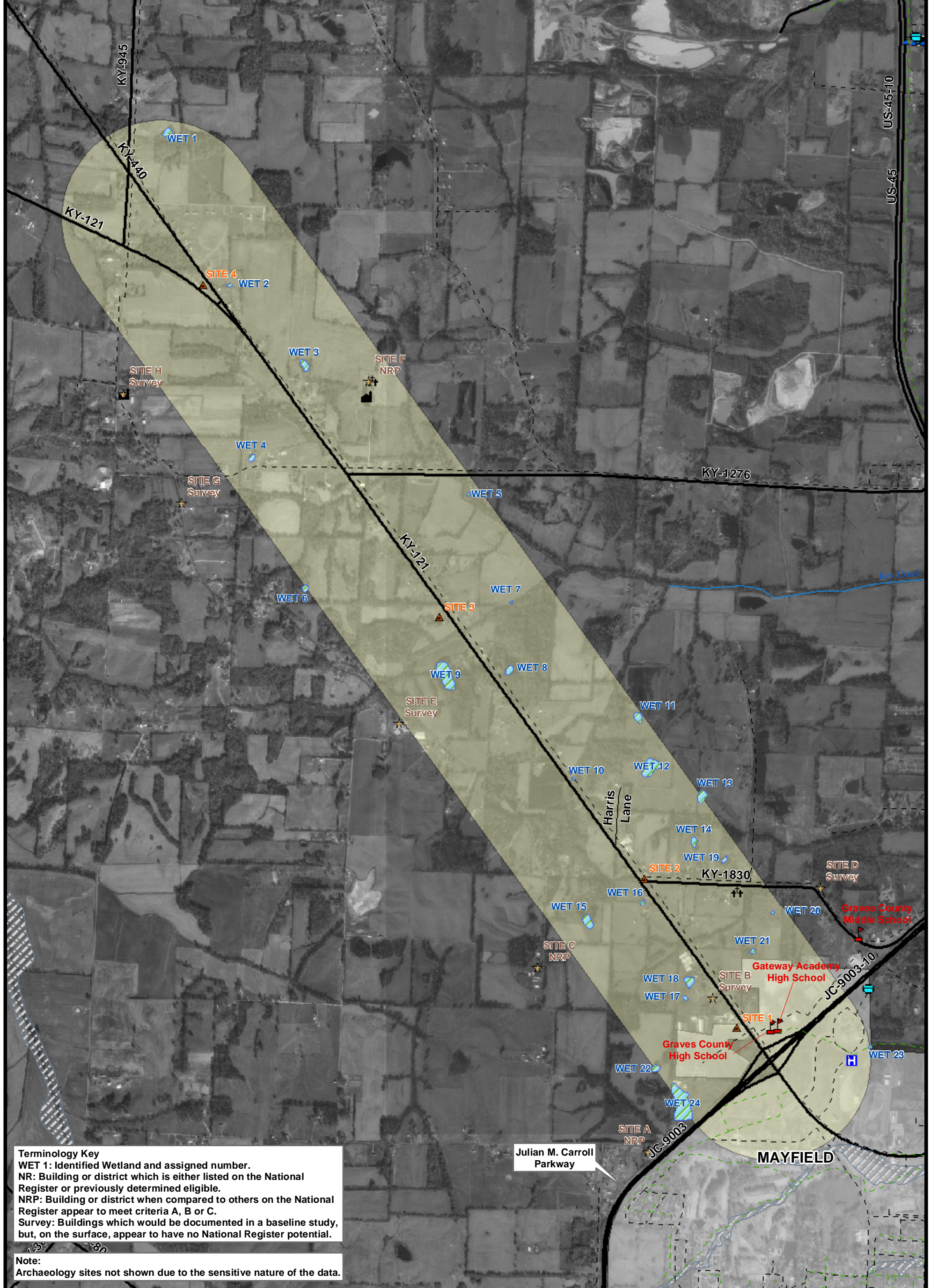


Exhibit 1 Sheet 1 of 1

USGS Topographic Environmental Footprint
 KY 121
 400' South of Harris Lane to KY-945
 Graves County
 KYTC Item No. 1-8100.00



VICINITY MAP



Terminology Key
 WET 1: Identified Wetland and assigned number.
 NR: Building or district which is either listed on the National Register or previously determined eligible.
 NRP: Building or district when compared to others on the National Register appear to meet criteria A, B or C.
 Survey: Buildings which would be documented in a baseline study, but, on the surface, appear to have no National Register potential.

Note:
 Archaeology sites not shown due to the sensitive nature of the data.



- | | | | |
|-----------------------------|------------------------|----------------------------|---------------------------|
| Airport | Landfill | Public Water Source | State Park |
| Church | Oil Well | Water Tank | Conservation/Natural Area |
| Park | Gas Well | Water Treatment Plant | PROJECT STUDY AREA |
| Populated Place | Combined Oil and Gas | Sewers | |
| Cemetery | Newly Permitted Well | Package Plant | |
| School | Dry and Abandoned Well | Wastewater Pump Station | |
| Hospital | Miscellaneous Well | Wastewater Treatment Plant | |
| Potential Historic Location | Waterline | Stream | |
| HAZMAT Site | Water Well | Wetlands | |
| | | Potential Flood Risk | |



Exhibit 2 Sheet 1 of 1
KYOGIS Orthographic Environmental Footprint
 KY 121
 400' South of Harris Lane to KY-945
 Graves County
 KYTC Item No. 1-8100.00



**KY 121, Existing
Typical**

KY 121 and KY 440 intersection, looking south



KY 121 typical section with residential property



Entrance to Graves County High School



Site 1, Citgo Gas Station

KY 121, Possible Contamination Site Examples



Site 3, Vacant (formerly Turner's Body Shop)



Site 4, Farmers Co-Op

GRAVES COUNTY ITEM 1-8100.00

KY 121 FROM 400' SOUTH OF HARRIS LANE TO THE KY 945 INTERSECTION

ENVIRONMENTAL JUSTICE REVIEW

August 1, 2003

Prepared for

Kentucky Transportation Cabinet (KYTC) – Division of Planning

Kentucky Transportation Cabinet (KYTC) – District 1



Prepared by

Purchase Area Development District



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1.0 INTRODUCTION

This document is an assessment of the community characteristics for the KY 121 Project Area (Figure 1.1) in Graves County. The data used in this report has been compiled from a number of sources including the U.S. Census Bureau Census 2000, Kentucky Transportation Cabinet Division of Planning, local officials, and field observations of the project area. The information and results are intended to assist the Kentucky Transportation Cabinet in making informed and prudent transportation decisions in the project area, especially with regard to the requirements of Executive Order 12898¹, to ensure equal environmental protection to all groups potentially impacted by this project.

This report outlines Census 2000 statistics for the KY 121 Project Area using tables and maps. Statistics are provided on minority, low-income, and elderly populations for the project area, nation, state, region, block group and where available the census block level.

2.0 WHAT IS ENVIRONMENTAL JUSTICE?

The U.S. EPA Office of Environmental Justice (EJ) defines EJ as:

“The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies. Fair treatment means that no group of people, including racial, ethnic, or socio-economic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local and tribal programs and policies.”

A disproportionately high and adverse effect on a minority or low-income population means an adverse effect that:

1. is predominately borne by a minority population and/or low-income population, or
2. will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low-income population.

2.1 Definitions

USDOT Order 5610.2 on EJ, issued in the April 15, 1997 Federal Register defines what constitutes low income and minority populations.

- Low-Income is defined as a person whose median household income is at or below the U.S. Department of Health and Human Services poverty guidelines.
- Minority is defined as a person who is: (1) Black (a person having origins in any black racial groups of Africa); (2) Hispanic (a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race); (3) Asian American (a person having origins in any of the

¹ Executive Order 12898 signed on 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...”

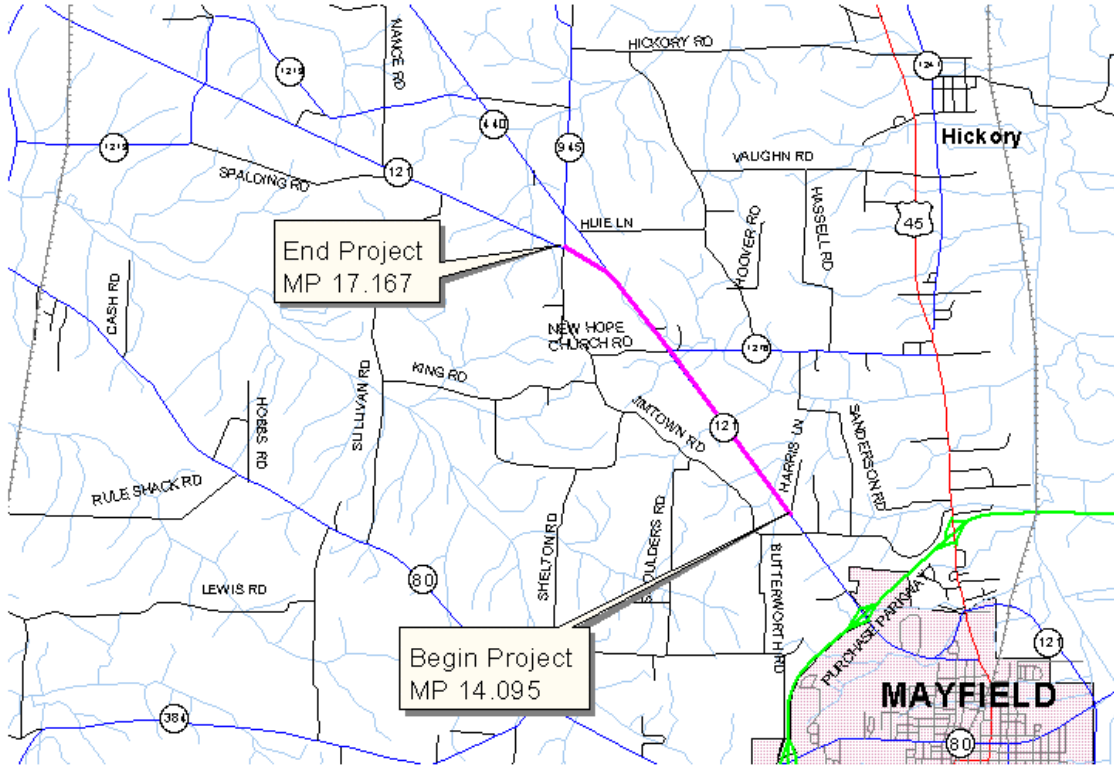


Graves County

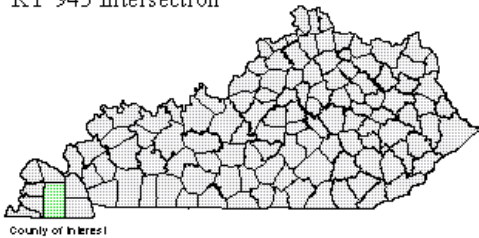
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Figure 1.1: Project Area



Project Area
 Graves County
 Item No. 1-8100.00
 KY 121 From 400' South
 of Harris Lane to the
 KY 945 Intersection



- Legend**
- Project Area
 - Purchase Parkway
 - State Routes
 - US Highways
 - Local Roads
 - Railroad
 - Streams
 - Corporate Boundary



original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands); or (4) American Indian and Alaskan Native (a person having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition).

- Low-Income Population is defined as any readily identifiable group of low-income persons who live in geographic proximity, and, if circumstances warrant geographically dispersed/transient persons who will be similarly affected by a proposed DOT program, policy or activity.
- Minority Population is defined as any readily identifiable group of minority persons who live in geographic proximity, and if circumstances warrant, geographically dispersed/transient persons who will be similarly affected by a proposed DOT program, policy or activity.

EO 12898 and USOT Order 5610.2 do not address consideration of the elderly population. However, the U.S. DOT encourages the study of these populations in EJ discussions and in accordance with EJ, Title VI of the Civil Rights Act of 1964 and the Kentucky Transportation Cabinet’s advocacy of inclusive public involvement and equal treatment of all persons this study includes statistics for persons age 62+ that are within the project and comparison areas.²

3.0 METHODOLOGY

For this study data was collected by using the method outlined by the KYTC document, “Methodology for Assessing Potential Environmental Justice Concerns for KYTC Planning Studies”.

The primary sources of data were the US Census Bureau Census 2000, local leaders, and field observations. Statistics were compiled to present a detailed analysis of the community conditions for the KY 121 Project Area in Graves County. Comparison areas are also included in the analysis.

4.0 CENSUS DATA ANALYSIS

The U.S. Census Bureau defines geographical units as:

- Census Tract (CT) – “A small, relatively permanent statistical subdivision of a county or statistically equivalent entity, delineated for data presentation purposes by a local group of census data users or the geographic staff of a regional census center in accordance with Census Bureau guidelines. CTs generally contain between 1,000 and 8,000 people. CT boundaries are delineated with the intention of being stable over many decades, so they generally follow relatively permanent visible features. They may also follow governmental unit boundaries and other invisible features in some instances; the boundary of a state or county is always a census tract boundary.”
- Block Group (BG) - “A statistical subdivision of a CT. A BG consists of all tabulation blocks whose numbers begin with the same digit in a CT. BGs generally contain between 300 and 3,000 people, with an optimum size of 1,500 people.”

² Ohio Transportation EJ Guidance
August, 2002

- Census Block (CB) – “An area bounded on all sides by visible and/or invisible features shown on a map prepared by the Census Bureau. A CB is the smallest geographic entity for which the Census Bureau tabulates decennial census data.”

The project and comparison area analysis include the percentages for minorities, low-income and elderly population levels for the census tract block group (when available census block level is used), Graves County, Purchase Area Development District, the Commonwealth of Kentucky and the United States.

Graves County is composed of nine census tracts. The project area lies in CT 201 and CT 207. BG 4 of CT 201 and BG 3 of CT 207 are examined in this study because they border the project area. These locations are shown in Figures 4.1 and 4.2. BG 4 CT 201 contains 38 CBs and BG 3 CT 207 contains 34 CBs. The selected block groups each contained four CBs that bordered the project area and can be seen in Figure 4.3. The eight CBs selected for analysis in this study are 4005, 4006, 4008, 4009 and 3018, 3019, 3020, 3021.

The comparison block group areas (shown in Figure 4.4) BG 1 CT 206 and BG 1 CT 209 were chosen for their close proximity to the project area. BG 1 CT 206 is located on KY 80 west of the corporate limits of Mayfield and to the area south of the KY 121 project area. BG 1 CT 209 is located on KY 121 S east of the corporate limits of Mayfield and approximately six road miles south of the KY 121-project area.

4.1 Minority Population Analysis

Graves County has a lower minority percentage (7.9%) than the national (30.9%), state (9.4%), and regional percentages (9.5%) as shown in Table 4.1. However, to determine if there are identifiable minority populations in the project area, the two BGs bordering the project were studied. BG 4 and BG 3 have minority percentages (2.0% and 5.7% respectively) well below the national average and slightly lower than the state, region, and county average as shown in Table 4.1.

Table 4.1 2000 Census Data by Race at Block Group Level

	United States	Kentucky	Purchase ADD	Graves County	Block Group 4 Tract 201	Block Group 3 Tract 207
Total Population	281,421,906	4,041,769	193,495	37,028	1,074	745
White alone	194,514,140	3,610,112	175,186	34,085	1,052	702
Black or Africa American alone	33,707,230	291,735	12,663	1,519	22	43
Hispanic or Latino	35,238,481	56,414	2213	867	0	0
American Indian and Alaska Native alone	2,091,206	8,424	346	64	0	0
Asian alone	10,067,813	28,697	932	133	0	0
Native Hawaiian and Other Pacific Islander alone	342,743	947	0	0	0	0
Some other race alone	447,552	3,303	79	17	0	0
Two or more races	5,012,741	42,137	2076	343	0	0
Total Minority Population	86,907,856	431,657	18,309	2943	22	43
% Minority Population	30.9	9.4	9.5	7.9	2.0	5.7

Source: US Census Bureau, Census 2000

There appears to be no “readily identifiable” groups of minority persons living within the project area if the USDOT definition of minority populations is applied. However, race data is available at the CB level, and was studied for any small concentrations of minorities within the project area. A method developed by the Ohio



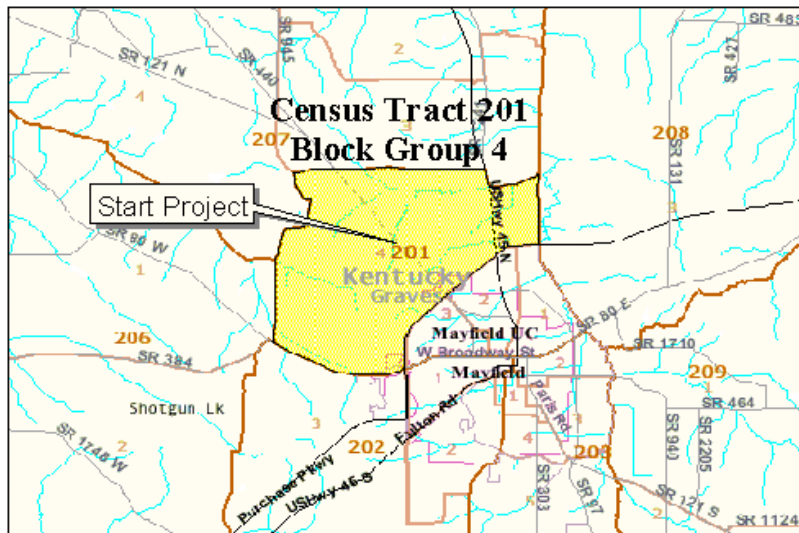
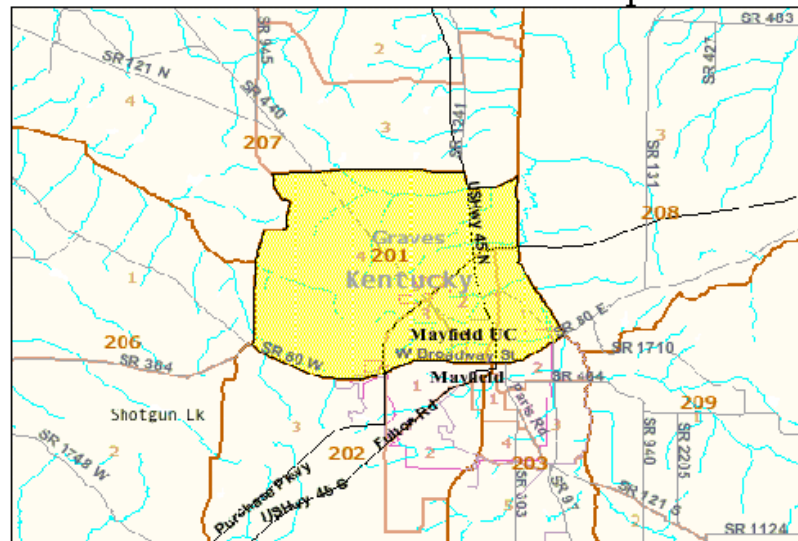
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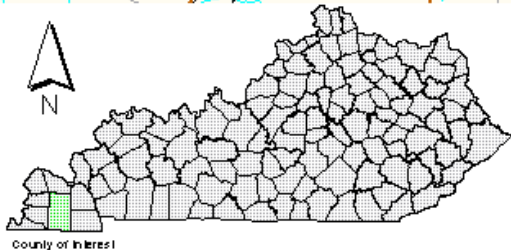


Figure 4.1: Census Tract 201 & Block Group 4

Location of
Census Tract 201
in Graves County



Census Tract 201
Block Group 4
in Project Area





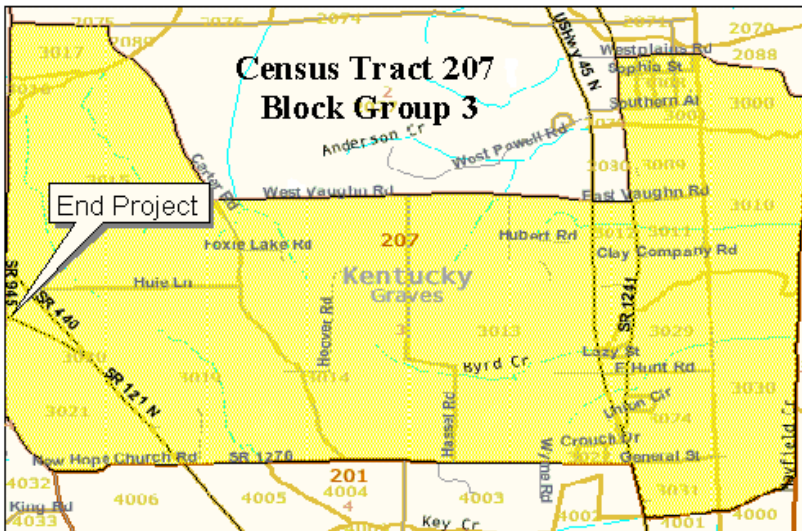
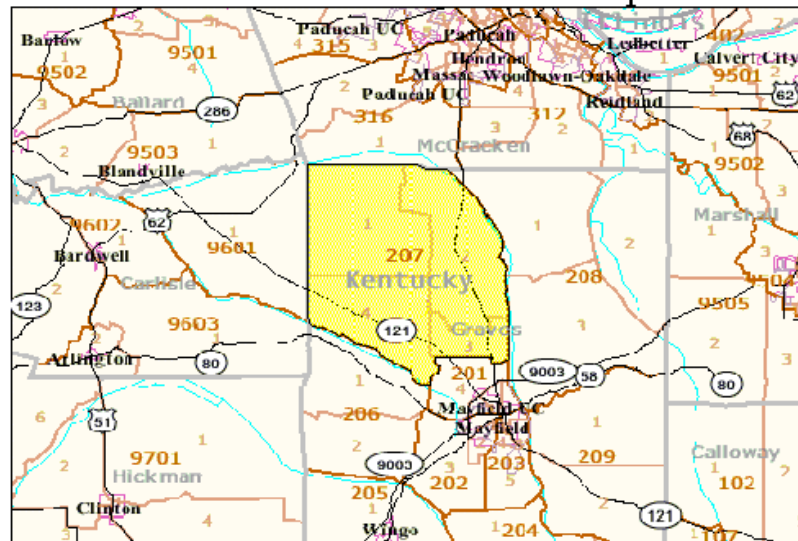
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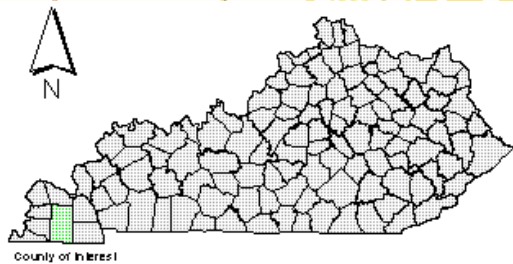


Figure 4.2: Census Tract 207 & Block Group 3

Location of
Census Tract 207
in Graves County



Census Tract 207
Block Group 3
in Project Area



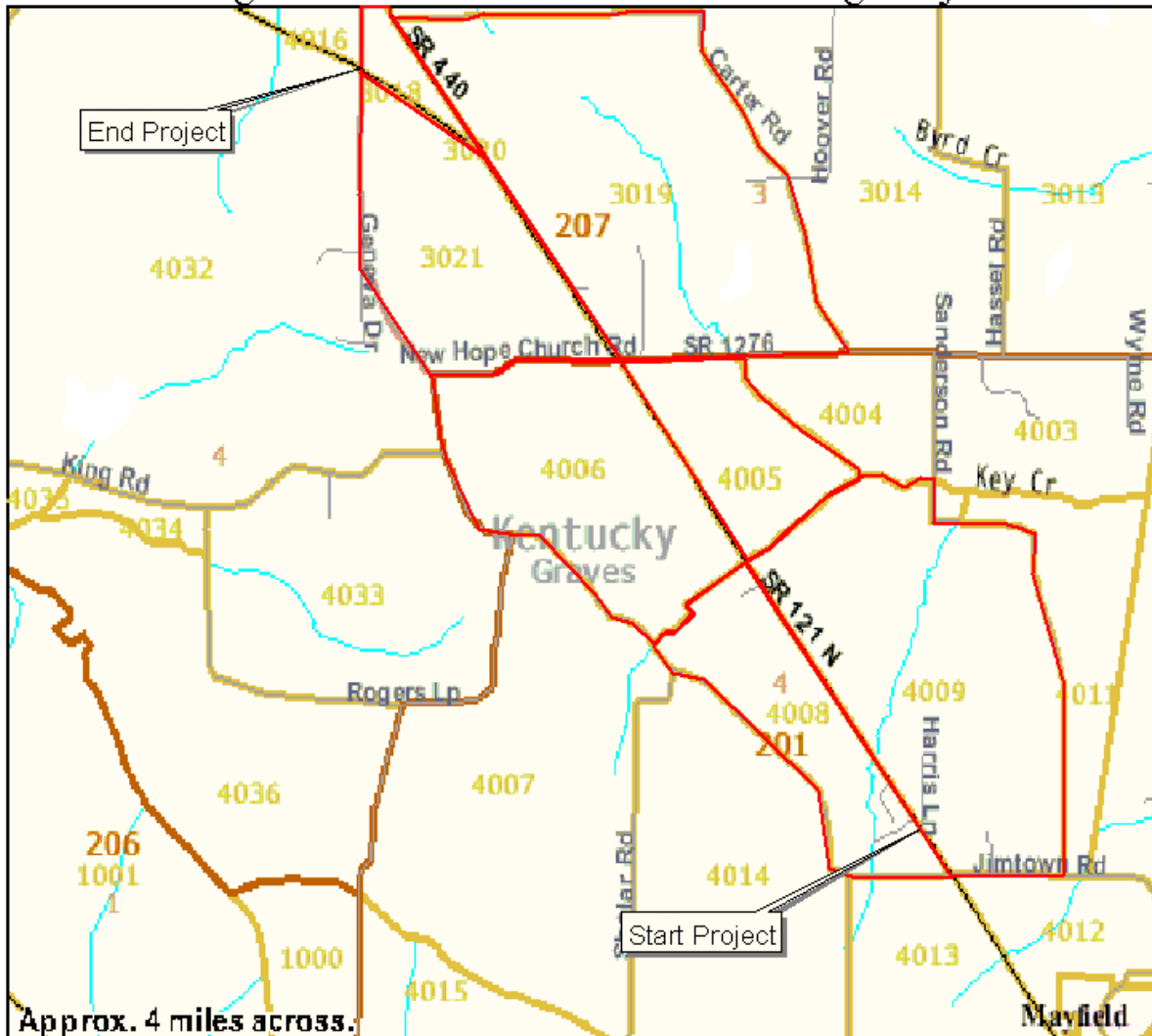


Graves County

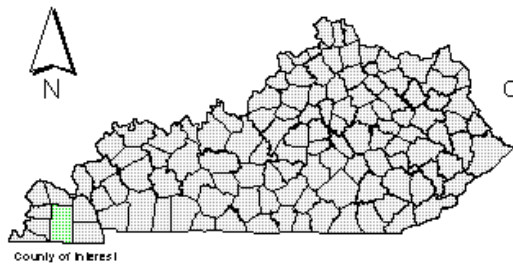
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Figure 4.3: Census Blocks Bordering Project



Approx. 4 miles across.



- Census Blocks Bordering Project
- Census Tract 201 Block Group 4
 - Block 4005
 - Block 4006
 - Block 4008
 - Block 4009
- Census Tract 207 Block Group 3
 - Block 3018
 - Block 3019
 - Block 3020
 - Block 3021



Graves County

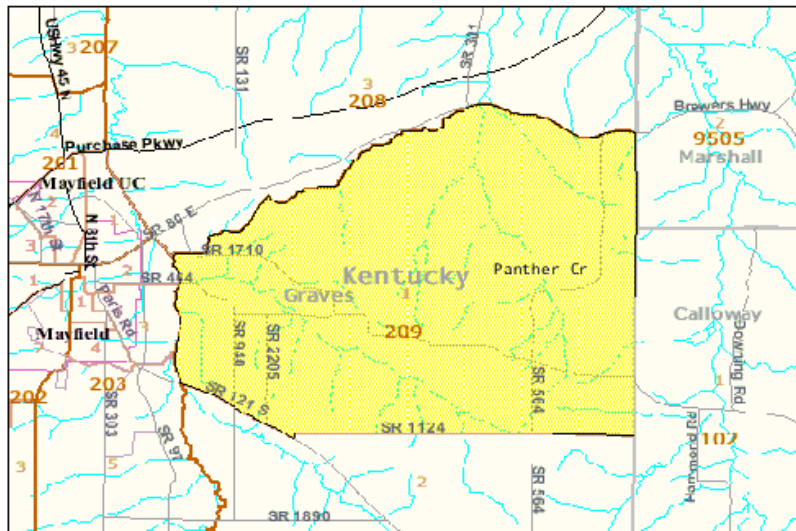
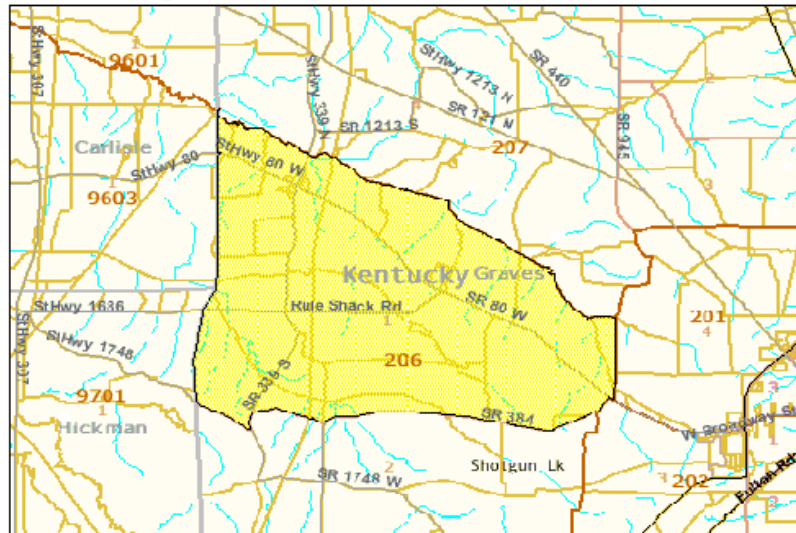
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Figure 4.4: Comparison Area

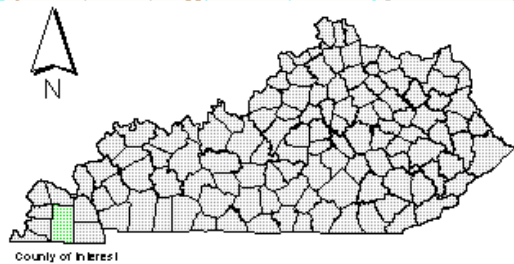
Census Tract 206
Block Group 1

Located on KY 80
West of Mayfield and
South of Project Area



Census Tract 209
Block Group 1

Located on KY 121 South
East of Mayfield



Block Groups in Comparison Area

Department of Transportation (ODOT)³ to identify target populations of minorities or low-income residents is applied in this study.

The first step in identifying if a target minority population exists is to determine the regional or state percentage of the minority population. In this case the regional percentage (9.5%) is used since it is higher than the state percentage (9.4%). The regional percentage will be used as a reference point for defining minority target areas, using a range of 25 percent above and 25 percent below that point (this is demonstrated in Table 4.2).

Table 4.2: Minority Population Analysis Ranges

<u>Analysis Range</u>	<u>Percent Minority</u>
Significantly Above Threshold	> 11.9%
Just Above Threshold	9.5% - 11.9%
Reference Threshold (Regional Percentage)	9.5%
Just Below Threshold	7.1% - 9.5%
Significantly Below Threshold	< 7.1%

Areas with minority percentages significantly above the reference threshold (>11.9%) are included as part of the local minority community. The next step is to plot the minority locations on a map to identify the boundaries of any minority communities. Areas that have percentages just above the reference threshold (between the reference threshold and twenty-five percent above the reference threshold) may or may not be considered part of the target population depending on the number of residents, location, percentage, and size of the area.

The CBs within the project area are examined in Tables 4.3 and 4.4. CB 4005 has a percentage (15.4%) significantly above the reference threshold. CB 4005 is highlighted in Figure 4.5. The remaining CBs in the project area had no minority percentages between the threshold values of 9.5% and 11.9%.

Table 4.3: 2000 Census Data by Race for Blocks in Block Group 4, Census Tract 201

	Purchase ADD	Block 4005	Block 4006	Block 4008	Block 4009
Total Population	193,495	26	74	51	96
Total Minority Population	18,309	4	0	0	8
% Minority Population	9.5	15.4	0.0	0.0	8.3

Source: US Census Bureau, Census 2000

Table 4.4: 2000 Census Data by Race for Blocks in Block Group 3, Census Tract 207

	Purchase ADD	Block 3018	Block 3019	Block 3020	Block 3021
Total Population	193,495	15	157	0	34
Total Minority Population	18,309	0	11	0	1
% Minority Population	9.5	0.0	7.0	0.0	2.9

Source: US Census Bureau, Census 2000

³ Ohio Transportation EJ Guidance, Ohio Department of Transportation, August 2002, Pages 10-11.

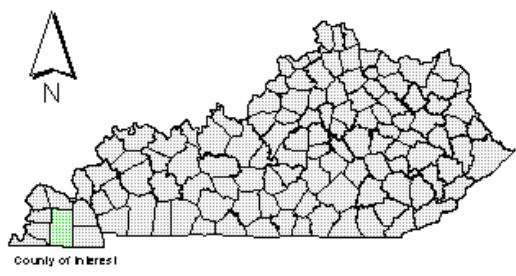
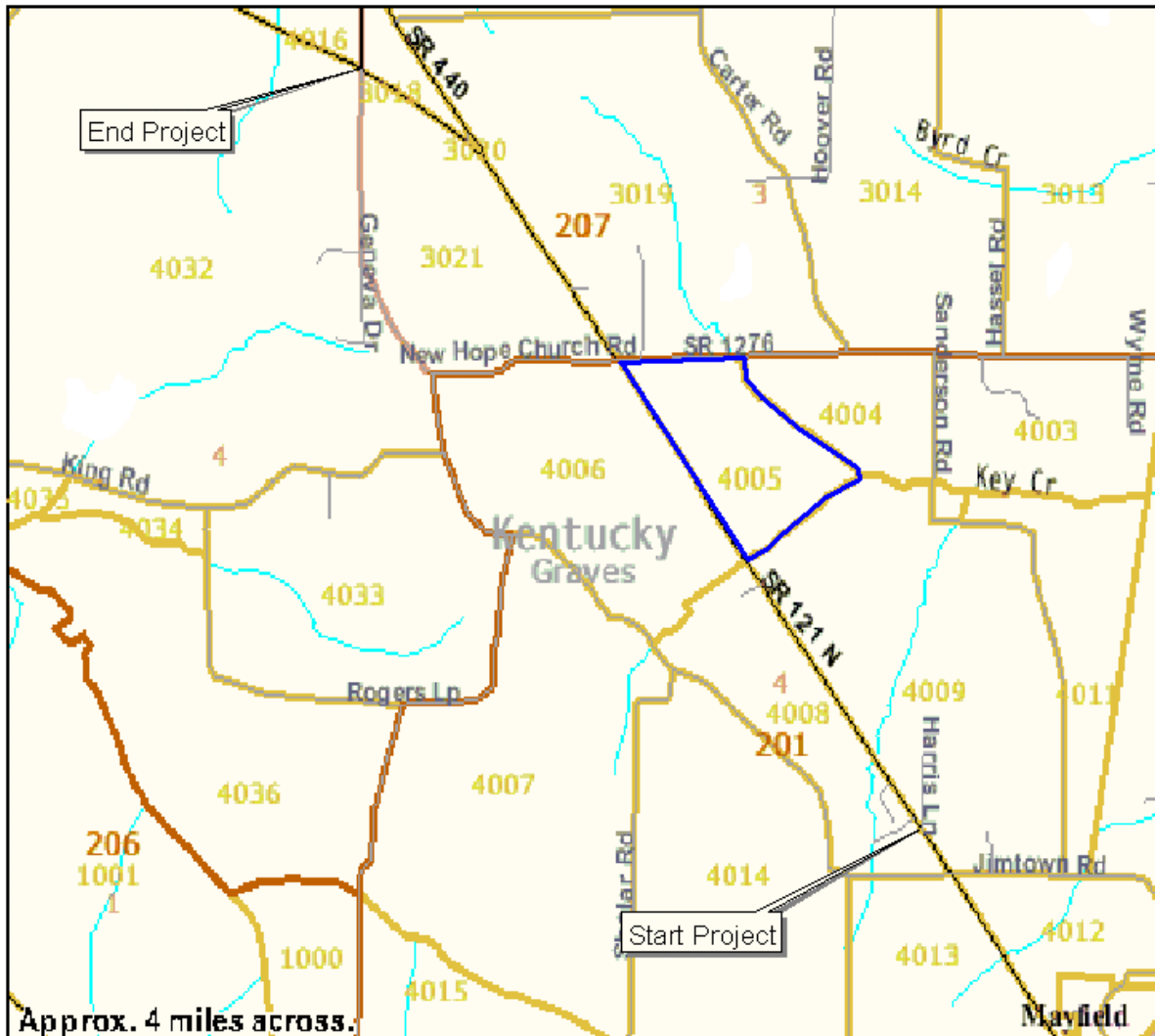


Graves County

Item No. 1-8100.00



Figure 4.5: Location of Minority Blocks



Location of Minority Blocks
Block 4005 = 15.4%

THIS DOCUMENT WAS PREPARED BY COOPERATION WITH THE KENTUCKY TRANSPORTATION CABINET

The Kentucky Transportation Cabinet methodology states to compare demographics for the county, state, nation and other nearby CTs and BGs. BG 1 CT 206 and BG 1 CT 209 are used as comparison data to the BGs in the project area. The comparison BG data is shown in Table 4.5.

Table 4.5 2000 Census Data by Race at Block Group Level (Comparison Area)

	Project Area			Comp. Area			
	Kentucky	Purchase ADD	Graves County	Block Group 4 Tract 201	Block Group 3 Tract 207	Block Group 1 Tract 206	Block Group 1 Tract 209
Total Population	4,041,769	193,495	37,028	1,074	745	1,365	1,608
White alone	3,610,112	175,186	34,085	1,052	702	1,365	1,593
Black or Africa American alone	291,735	12,663	1,519	22	43	0	8
Hispanic or Latino	56,414	2213	867	0	0	0	0
American Indian and Alaska Native alone	8,424	346	64	0	0	0	0
Asian alone	28,697	932	133	0	0	0	0
Native Hawaiian and Other Pacific Islander alone	947	0	0	0	0	0	0
Some other race alone	3,303	79	17	0	0	0	0
Two or more races	42,137	2076	343	0	0	0	7
Total Minority Population	431,657	18,309	2943	22	43	0	15
% Minority Population	9.4	9.5	7.9	2.0	5.7	0.0	0.9

Source: US Census Bureau, Census 2000

According to the previous Tables and Figures there is no significant concentration of minorities within the project area. Although CB 4005 has a higher percentage minority population than the reference threshold, the size, total population (26) and total minority population (4) should be considered in project planning. Based on this data, there is not a sufficient minority population or concentration in the project area for an environmental justice community.

4.2 Low-Income Population Analysis

Low-Income populations were studied in the project area using the same methodology as described in the previous section. Poverty levels are examined using the census geographic units, however, income data is not available at the CB level so the BG level is used to determine low-income population communities. Listed in Table 4.6 is the census data for poverty levels in the project area.

There is a higher percentage of the county population (16.4%) that lives below the poverty level than in the region (15.0%) or in the state (15.8%). The county percentage of 16.4% will be used as the reference point because it is the higher percentage. Since data at the CB level is not available it is not feasible to determine where populations of low-income persons live within the BGs. Based on the data available at the BG level if 16.4% is the threshold then none of the BGs in the project area would be considered low-income populations.

Table 4.6 1999 Census Data for Poverty Levels

	United States	Kentucky	Purchase ADD	Graves County	Block Group 4 Tract 201	Block Group 3 Tract 207
Total Population	273,882,232	3,927,047	186,722	36,161	956	745
Population Below Poverty Level	33,889,812	621,096	27,972	5,921	48	90
% Population Below Poverty Level	12.4	15.8	15.0	16.4	5.0	12.1

Source: US Census Bureau, Census 2000

Table 4.7 includes listings of income levels for the comparison area (BG 1 CT 206 & BG 1 CT 209). The comparison area has one BG that is slightly lower than the county average. This comparison most likely demonstrates the similarities in poverty levels throughout the county.

Table 4.7 1999 Census Data for Poverty Levels (Comparison Area)

	Kentucky	Purchase ADD	Graves County	Project Area		Comp. Area	
				Block Group 4 Tract 201	Block Group 3 Tract 207	Block Group 1 Tract 206	Block Group 1 Tract 209
Total Population	3,927,047	186,722	36,161	956	745	1,365	1,592
Population Below Poverty Level	621,096	27,972	5,921	48	90	221	115
% Population Below Poverty Level	15.8	15.0	16.4	5.0	12.1	16.2	7.2

Source: US Census Bureau, Census 2000

4.3 Population by Age

Table 4.8 shows the data for population by age in the project area. Both BGs in the project area have higher percentage of residents 62+ compared to the state and nation. BG 4 CT 201 has a higher percentage (19.0%) than the county (18.8%) but slightly less percentage than the region (19.2%). BG 3 CT 207 has a slightly lower percentage (17.3%) than both the region and the county.

Table 4.8 2000 Census Data for Age 62+

	United States	Kentucky	Purchase ADD	Graves County	Block Group 4 Tract 201	Block Group 3 Tract 207
Total Population	281,421,906	4,041,769	193,495	37,028	1,074	745
# Persons Age 62+	41,251,503	601,361	36,93	6971	204	129
% Persons Age 62+	14.7	14.9	19.2	18.8	19.0	17.3

Source: US Census Bureau, Census 2000

Because of the BG percentages being higher than the state and similar to the region and county CB data was obtained to determine if population concentrations for Age 62+ are present in the project area. Using the ODOT threshold methodology, the county percentage (18.8%) will be the reference point for determining population concentrations. The county percentage, while lower than the region percentage, is used because it is only slightly lower than the region and is more representative of the project area. Analysis ranges are outlined in Table 4.9.

Table 4.9: Elderly Population (62+) Analysis Ranges

<u>Analysis Range</u>	<u>Percent Minority</u>
Significantly Above Threshold	> 23.5%
Just Above Threshold	18.8% - 23.5%
Reference Threshold (County Percentage)	18.8%
Just Below Threshold	14.1% - 18.8%
Significantly Below Threshold	< 14.1%

There are four CBs in the project area that are above the 18.8% threshold: 3021 (23.5%), 4005 (19.2%), 4006 (18.9%) and 4009 (24.0%). These areas are highlighted in Figure 4.6.

Areas that have percentages just above the reference threshold (between the reference threshold and twenty-five percent above the reference threshold) may or may not be considered part of the target population depending on the number of residents, location, percentage, and size of the area. The CBs are not highly populated with elderly residents in relation to total population as shown in Tables 4.10 and 4.11. Although there may be a high percentage of elderly residents 62+ there is not necessarily a concentrated population but these areas should be noted in future project planning and design.

Table 4.10: 2000 Census Data for Age 62+ in Block Group 3, Census Tract 207

	Graves County	Block 3018	Block 3019	Block 3020	Block 3021
Total Population	37,028	15	157	0	34
#Persons Age 62+	6971	0	22	0	8
% Persons Age 62+	18.8	0.0	14.0	0.0	23.5

Source: US Census Bureau, Census 2000

Table 4.11: 2000 Census Data for Age 62+ in Block Group 4, Census Tract 201

	Graves County	Block 4005	Block 4006	Block 4008	Block 4009
Total Population	37,028	26	74	51	96
#Persons Age 62+	2943	5	14	6	23
% Persons Age 62+	7.9	19.2	18.9	11.8	24.0

Source: US Census Bureau, Census 2000

Table 4.12 includes listings of Age 62+ levels for the comparison area (BG 1 CT 206 & BG 1 CT 209). The comparison area has percentages very similar to the project area. This comparison most likely demonstrates the similarities in census data for age 62+ throughout the county.

Table 4.12 2000 Census Data for Age 62+ (Comparison Area)

	Kentucky	Purchase ADD	Graves County	Project Area		Comp. Area	
				Block Group 4 Tract 201	Block Group 3 Tract 207	Block Group 1 Tract 206	Block Group 1 Tract 209
Total Population	4,041,769	193,495	37,028	1,074	745	1,365	1,608
#Persons Age 62+	601,361	36,93	6971	204	129	292	256
% Persons Age 62+	14.9	19.2	18.8	19.0	17.3	21.4	15.9

Source: US Census Bureau, Census 2000

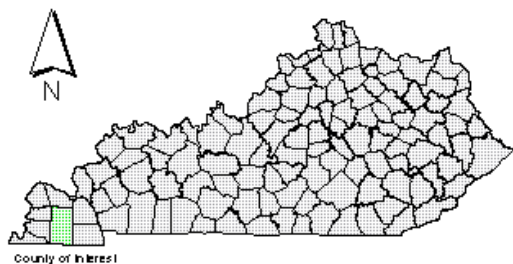
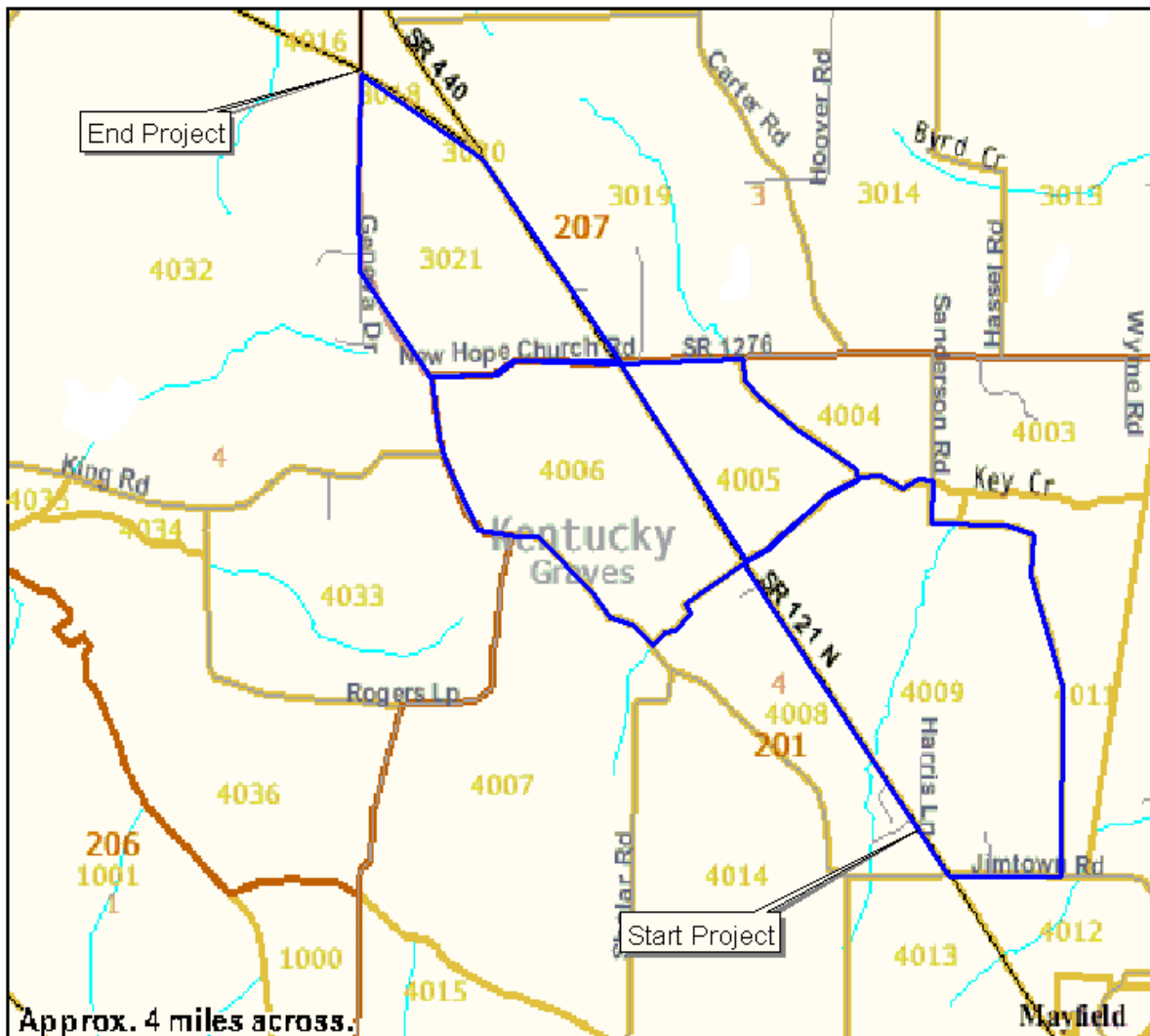


Graves County

Item No. 1-8100.00



Figure 4.6: Location of Elderly Population Blocks



Location of Elderly Population Blocks

Census Tract 201 Block Group 4	Census Tract 207 Block Group 3
Block 4005 = 19.2%	Block 3021 = 23.5%
Block 4006 = 18.9%	
Block 4009 = 24.0%	

THIS DOCUMENT WAS PREPARED BY COOPERATION WITH THE KENTUCKY TRANSPORTATION CABINET

5.0 CONCLUSION

Based on data obtained from the U.S. Census Bureau for income and race, discussions with local officials and field observations there is no defined Environmental Justice community within the project area. Analysis of the minority population data showed one CB having a percentage higher than the reference threshold percentage. This CB should be noted during project planning and design but there is not a sufficient minority population in the project area for an environmental justice community. Age analysis of the project area indicates that there is a distribution of elderly residents in the project area but no specific concentrations of elderly residents.

At the request of the Kentucky Transportation Cabinet, Division of Planning, this report has been prepared by the Purchase Area Development District to demonstrate real estate / relocation issues (defined by the KYTC) within Graves County and the project area. The project area is defined as *Graves County Item 1-8100.00 - KY 121 from KY 1830 (Jimtown Road) intersection to KY 440 intersection*. This information has been compiled from a number of sources including the U.S. Census Bureau, Graves County Property Valuation Administrator, Mayfield-Graves County Chamber of Commerce, Graves County Board of Realtors, Natural Resources Conservation Service, the project area business owners / representatives and the Purchase Area Development District. This information is intended to aid the Kentucky Transportation Cabinet's planning and public involvement process.

Included in this report:

- Map of Project Area
- Information to Real Estate Questionnaire
- Tables that contain data for total housing units / rental information
- Pictures (from "windshield survey" of project area) of businesses and other points of interest along the existing corridor
- Aerial Photos obtained from the USDA-NRCS
- Contact List compiled by the Purchase Area Development District

REAL ESTATE QUESTIONS

- *How many homes and mobile homes sell per year in the county?*

Graves County Board of Realtors (BR) reports that in 2002, 312 homes were sold in Mayfield and Graves County. The average sell price was \$69,806 and the median price was \$64,750.

- *How many homes and mobile homes sell per year in the project area?*

The Graves County PVA reported that 7 Deeds transferred ownership in the project area for the year 2002. (This number would include homes and vacant lots/acreage.)

- *What are the characteristics of a typical pre-owned home and mobile home including the number of bedrooms, number of bathrooms, age, price/value range?*

BR list typical home as 3 bedroom, 1-2 bath, 20 to 40 years old, with a price range of \$40,000 to \$90,000.

- *What are the characteristics of a typical, newly constructed home?*

BR and PVA both agree that a newly constructed home is most likely 1500 sq. ft. – 2000 sq. ft. with 3 bedrooms, 2 bath in a price range of \$75,000 to \$125,000.

- *How many new homes are constructed in a year?*

PVA reported 87 new homes were built in 2002.

- *How many new homes are listed on the market at any given time? How long do they remain on the market? Has the market remained stable, increased or decreased over the past five years?*

As of February 26, 2003 the BR reported that 253 residential listings were on the market by a realtor and 9 residential listings were on the market listed by owner in *The Mayfield Messenger*. Homes remain on

the market an average of 3 – 6 months and the market has been relatively stable over the past five years.

- *How many rental units are available currently? What are typical rental rate ranges? How many rental units are conventional homes, apartments or mobile homes?*

(This information was not available from the local sources.)

Source: US Census Data

Of the 16,340 total housing units, 4592 units (28.1%) are rental units. (PVA agreed with census data that approximately 28% of county housing units are rental.)

Median contract rent \$256

Median gross rent \$354

- *Do suitable replacement locations for businesses exist within the county, city and project area?*

All sources visited were in agreement that suitable locations could be available in the city and county. The consensus on the project area would depend on the size and alignment / location of the project area as to what might be available.

- *Are businesses dependent upon their existing location? Is it necessary for the business to remain in the nearby or immediate area?*

Because of the type of businesses located within the project area the response was that business would most likely not be dependent upon the existing location. The K & T Lamp company commented that because Mayfield is a popular location for lamp companies (5 or 6 companies are currently located in the city) that it would be important for them to remain in the Mayfield area to remain competitive with others. K & T Wire and Shade company also stated that it would be important to remain within a 3 or 4 mile radius of Mayfield. Wiman Auto Sales commented that it would not be effected by highway improvements. Robbies Hair Design was not reached for comment.

- *How many farms are located in the project area and how many are estimated to be effected by the project?*

The PVA listed 12 farm owners within the project area. The NRCS provided aerial photo maps of the project area that outline the land tracts. (These maps are attached with the hard copy document.) The farm tracts consist of CRP ground and mostly pasture for cattle grazing and few row crop (soybeans, corn, wheat) farms.

- *Is the project likely to impact agriculture activities in the corridor? If yes, to what extent?*

The PVA and NRCS were in agreement that agriculture activities would likely receive minimal impact if improvements were made to the existing alignment. If an alternate alignment were chosen, in the case of a four-lane highway, then impacts could be more substantial.



K&T Lamp Company and K&T Wire and Shade Company

View of highway looking south in front of businesses





Robbie's Hair Design

View of highway looking north from front of business





Wiman Auto Sales

View of highway looking north from front of business



Contact List

1. Graves County PVA, Hal Carr
Courthouse
Mayfield, Kentucky 42066
270-247-3301
2. Mayfield-Graves County Chamber of Commerce, Donna Davenport
201 East College Street
Mayfield, Kentucky 42066
270-247-6101
3. NRCS, Ken Oliver
Highway 45 North
Mayfield, Kentucky 42066
270-247-9525
4. Graves County Board of Realtors, Shirley Baldree
Centrury 21 Waldrop & Waldrop Realty
935 Paris Road
Mayfield, Kentucky 42066
270-247-2734
5. K&T Lamp Company, Dan Burgess
2860 State Route 121 North
Mayfield, Kentucky 42066
270-247-5762
6. K&T Wire and Shade Company, Betty Goin
2838 State Route 121 North
Mayfield, Kentucky 42066
270-247-7474
7. Wiman Auto Sales, Charles Wiman
3754 State Route 121 North
Mayfield, Kentucky 42066
270-247-2645
8. Robbie's Hair Design
???? State Route 121 North
Mayfield, Kentucky 42066
270-247-6017



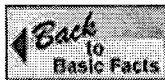
Geographic Comparison Table

GCT-H5. General Housing Characteristics: 2000
 Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Data
 Geographic Area: Kentucky -- County

NOTE: For information on confidentiality protection, nonsampling error, and definitions, see <http://factfinder.census.gov/home/en/datanotes/expsf1u.htm>.

Geographic area	Total housing units	Occupied housing units	Vacant housing units				Vacancy rate	
			Total	Percent		Homeowner	Rental	
				For sale only	For rent			Seas., rec., or occ. use
Kentucky	1,750,927	1,590,647	160,280	12.9	27.6	19.0	1.8	8.7
COUNTY								
Adair County	7,792	6,747	1,045	9.3	14.9	20.8	1.8	10.4
Allen County	8,057	6,910	1,147	11.7	11.7	26.2	2.4	8.5
Anderson County	7,752	7,320	432	14.8	32.2	17.4	1.1	8.6
Ballard County	3,837	3,395	442	24.4	12.9	14.0	3.7	8.5
Barren County	17,095	15,346	1,749	14.3	27.6	19.0	2.2	10.2
Bath County	4,994	4,445	549	14.2	11.1	24.2	2.2	6.4
Bell County	13,341	12,004	1,337	10.2	30.5	7.2	1.7	9.5
Boone County	33,351	31,258	2,093	26.7	32.8	15.0	2.3	7.9
Bourbon County	8,349	7,681	668	16.3	31.9	7.5	2.1	7.4
Boyd County	21,976	20,010	1,966	15.3	39.5	6.1	2.0	12.5
Boyle County	11,418	10,574	844	13.6	37.6	10.1	1.5	8.9
Bracken County	3,715	3,228	487	16.0	6.6	15.2	3.0	4.1
Breathitt County	6,812	6,170	642	7.6	18.4	14.5	1.0	7.5
Breckinridge County	9,890	7,324	2,566	6.3	6.2	64.2	2.6	10.7
Bullitt County	23,160	22,171	989	22.9	24.4	7.1	1.2	6.3
Butler County	5,815	5,059	756	8.2	12.3	23.8	1.5	8.3
Caldwell County	6,126	5,431	695	18.0	17.8	12.1	2.9	9.2
Calloway County	16,069	13,862	2,207	11.1	21.2	42.4	2.5	9.6
Campbell County	36,898	34,742	2,156	19.7	37.2	8.9	1.7	6.9
Carlisle County	2,490	2,208	282	22.3	15.2	12.1	3.3	10.8
Carroll County	4,439	3,940	499	18.6	24.6	21.2	3.4	8.6
Carter County	11,534	10,342	1,192	10.0	15.6	13.4	1.4	8.6
Casey County	7,242	6,260	982	7.5	9.7	16.6	1.4	7.4
Christian County	27,182	24,857	2,325	15.1	36.6	4.6	2.5	7.1
Clark County	13,749	13,015	734	17.2	33.4	6.1	1.4	5.7
Clay County	9,439	8,556	883	8.2	20.8	10.2	1.1	7.8
Clinton County	4,888	4,086	802	7.6	15.8	25.4	1.9	11.9
Crittenden County	4,410	3,829	581	14.6	15.1	21.2	2.7	10.6
Cumberland County	3,567	2,976	591	8.6	11.2	33.0	2.2	9.0
Daviess County	38,432	36,033	2,399	18.1	38.5	7.0	1.7	7.9
Edmonson County	6,104	4,648	1,456	4.5	4.2	74.7	1.6	8.3
Elliott County	3,107	2,638	469	9.4	7.5	13.2	2.0	7.0
Estill County	6,824	6,108	716	10.9	25.8	14.0	1.7	10.4
Fayette County	116,167	108,288	7,879	8.5	56.3	11.2	1.1	8.4
Fleming County	6,120	5,367	753	11.2	11.4	21.9	1.9	7.1
Floyd County	18,551	16,881	1,670	11.3	24.0	8.6	1.4	9.1
Franklin County	21,409	19,907	1,502	12.5	48.9	7.9	1.4	9.5
Fulton County	3,697	3,237	460	14.1	53.0	2.6	3.0	17.4
Gallatin County	3,362	2,902	460	18.3	14.1	37.2	3.6	8.8

Geographic area	Total housing units	Occupied housing units	Vacant housing units				Vacancy rate	
			Total	Percent			Homeowner	Rental
				For sale only	For rent	Seas., rec., or occ. use		
Garrard County	6,414	5,741	673	15.9	23.6	17.5	2.4	10.5
Grant County	9,306	8,175	1,131	12.6	15.1	39.4	2.3	7.5
Graves County	16,340	14,841	1,499	16.5	28.1	6.7	2.1	11.4
Grayson County	12,802	9,596	3,206	4.6	7.9	67.8	1.9	10.4
Green County	5,420	4,706	714	9.9	19.7	5.7	1.9	12.1
Greenup County	15,977	14,536	1,441	17.1	18.5	14.9	2.0	9.0
Hancock County	3,600	3,215	385	11.2	32.7	14.0	1.6	18.2
Hardin County	37,673	34,497	3,176	17.6	37.2	5.9	2.4	9.4
Harlan County	15,017	13,291	1,726	11.7	27.2	6.8	2.0	11.7
Harrison County	7,660	7,012	648	14.5	23.1	14.0	1.9	6.8
Hart County	8,045	6,769	1,276	9.2	16.8	28.3	2.2	12.3
Henderson County	19,466	18,095	1,371	12.5	32.6	7.5	1.4	7.0
Henry County	6,381	5,844	537	16.2	14.5	21.2	1.9	5.6
Hickman County	2,436	2,188	248	12.9	11.7	9.7	1.8	6.7
Hopkins County	20,668	18,820	1,848	17.1	29.1	7.0	2.2	10.1
Jackson County	6,065	5,307	758	9.2	11.9	15.8	1.6	7.9
Jefferson County	305,835	287,012	18,823	14.6	43.7	7.0	1.5	7.6
Jessamine County	14,646	13,867	779	22.1	32.1	7.7	1.8	5.2
Johnson County	10,236	9,103	1,133	9.8	22.1	8.7	1.6	10.5
Kenton County	63,571	59,444	4,127	16.7	43.9	6.0	1.7	8.3
Knott County	7,579	6,717	862	9.9	18.2	11.6	1.6	10.3
Knox County	13,999	12,416	1,583	9.7	32.0	5.7	1.7	12.5
Larue County	5,860	5,275	585	12.3	11.8	9.2	1.7	6.2
Laurel County	22,317	20,353	1,964	15.1	23.8	10.2	1.9	9.1
Lawrence County	7,040	5,954	1,086	8.3	15.0	29.0	1.9	11.1
Lee County	3,321	2,985	336	5.1	14.0	17.6	0.7	6.3
Leslie County	5,502	4,885	617	8.4	21.6	12.3	1.3	13.3
Letcher County	11,405	10,085	1,320	15.2	14.4	7.6	2.4	9.0
Lewis County	6,173	5,422	751	12.8	7.5	34.4	2.1	5.2
Lincoln County	10,127	9,206	921	17.2	18.8	8.6	2.1	8.2
Livingston County	4,772	3,996	776	7.9	7.7	31.2	1.8	9.2
Logan County	11,875	10,506	1,369	12.8	26.2	20.0	2.2	12.1
Lyon County	4,189	2,898	1,291	7.3	6.0	73.9	3.8	12.7
McCracken County	30,361	27,736	2,625	17.2	39.7	4.3	2.3	10.7
McCreary County	7,405	6,520	885	9.9	21.5	18.8	1.8	10.7
McLean County	4,392	3,984	408	13.2	13.2	18.9	1.7	6.4
Madison County	29,595	27,152	2,443	16.6	46.4	4.9	2.4	9.4
Magoffin County	5,447	5,024	423	6.9	11.6	12.3	0.7	5.1
Marion County	7,277	6,613	664	14.9	25.0	11.4	1.9	10.3
Marshall County	14,730	12,412	2,318	8.7	12.8	55.0	1.9	12.0
Martin County	5,551	4,776	775	14.3	17.5	8.8	2.8	12.1
Mason County	7,754	6,847	907	14.9	34.8	8.0	2.8	12.4
Meade County	10,293	9,470	823	17.1	21.3	13.6	2.0	6.6
Menifee County	3,710	2,537	1,173	4.1	2.6	76.0	2.3	6.0
Mercer County	9,289	8,423	866	11.7	21.2	36.5	1.6	7.9
Metcalfe County	4,592	4,016	576	16.7	10.9	11.5	2.9	7.0
Monroe County	5,288	4,741	547	9.1	22.1	12.2	1.4	9.3
Montgomery County	9,682	8,902	780	16.2	30.8	4.2	1.9	8.6
Morgan County	5,487	4,752	735	8.8	11.3	21.2	1.7	8.0
Muhlenberg County	13,675	12,357	1,318	15.1	18.6	8.0	1.9	10.4
Nelson County	14,934	13,953	981	17.2	27.8	14.0	1.5	8.2
Nicholas County	3,051	2,710	341	7.9	25.8	14.7	1.3	11.4
Ohio County	9,909	8,899	1,010	10.9	16.4	17.4	1.5	8.7
Oldham County	15,541	14,856	685	33.0	13.0	25.8	1.7	4.4
Owen County	5,345	4,086	1,259	9.8	6.9	56.2	3.7	8.9
Owsley County	2,247	1,894	353	3.4	9.1	11.9	0.8	7.3
Pendleton County	5,756	5,170	586	11.8	19.3	24.6	1.7	9.0



Geographic Comparison Table

GCT-H5. General Housing Characteristics: 2000
 Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Data
 Geographic Area: **Graves County, Kentucky -- Census Tract**

NOTE: For information on confidentiality protection, nonsampling error, and definitions, see <http://factfinder.census.gov/home/en/datanotes/expsf1u.htm>.

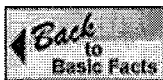
Geographic area	Total housing units	Occupied housing units	Vacant housing units				Vacancy rate	
			Total	Percent			Home-owner	Rental
				For sale only	For rent	Seas., rec., or occ. use		
Graves County	16,340	14,841	1,499	16.5	28.1	6.7	2.1	11.4
CENSUS TRACT								
Tract 201	2,094	1,826	268	9.7	56.0	3.0	2.4	16.7
Tract 202	1,886	1,721	165	19.4	35.2	3.6	2.4	12.1
Tract 203	2,922	2,676	246	21.1	33.3	8.1	2.9	8.2
Tract 204	1,305	1,170	135	10.4	8.9	14.8	1.3	7.7
Tract 205	1,742	1,582	160	25.0	15.0	8.8	2.9	9.3
Tract 206	889	818	71	21.1	31.0	8.5	2.2	12.4
Tract 207	1,977	1,800	177	13.0	16.9	4.5	1.4	11.3
Tract 208	2,352	2,171	181	19.3	11.6	3.3	1.8	7.1
Tract 209	1,173	1,077	96	10.4	22.9	12.5	1.1	12.2

(X) Not applicable

Source: U.S. Census Bureau, Census 2000 Summary File 1, Matrices H1, H3, H4, and H5.

U.S. Census Bureau **American FactFinder**

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Geographic Comparison Table

GCT-H9. Financial Housing Characteristics: 2000
 Data Set: Census 2000 Summary File 3 (SF 3) - Sample Data
 Geographic Area: **Kentucky -- County**

NOTE: Data based on a sample except in P3, P4, H3, and H4. For information on confidentiality protection, sampling error, nonsampling error, and definitions see <http://factfinder.census.gov/home/en/datanotes/expf3.htm>.

Geographic area	Occupied housing units	Specified owners			Specified renters		
		Median value (dollars)	Median selected monthly owner costs (dollars)		Median contract rent (dollars)	Median gross rent (dollars)	Percent with meals included in rent
			With a mortgage	Not mortgaged			
Kentucky	1,590,647	86,700	816	214	366	445	1.1
COUNTY							
Adair County	6,747	60,800	625	176	235	315	0.0
Allen County	6,910	69,300	684	204	248	357	0.0
Anderson County	7,320	89,500	803	213	424	523	0.0
Ballard County	3,395	58,800	614	188	238	349	0.4
Barren County	15,346	77,900	725	202	292	383	0.0
Bath County	4,445	65,000	651	197	245	317	1.0
Bell County	12,004	52,500	582	170	244	309	0.0
Boone County	31,258	131,800	1,103	243	521	596	4.5
Bourbon County	7,681	84,500	814	222	332	416	0.9
Boyd County	20,010	68,800	698	217	316	407	0.4
Boyle County	10,574	86,400	765	210	356	419	0.7
Bracken County	3,228	69,000	684	199	249	337	0.0
Breathitt County	6,170	46,500	642	179	224	297	0.6
Breckinridge County	7,324	64,600	643	197	253	360	0.0
Bullitt County	22,171	105,100	858	235	426	499	0.4
Butler County	5,059	59,900	641	208	245	338	0.9
Caldwell County	5,431	53,600	635	183	249	348	0.0
Galloway County	13,862	83,100	805	222	336	427	1.2
Campbell County	34,742	101,000	945	263	427	512	0.5
Carlisle County	2,208	49,400	608	207	180	273	0.0
Carroll County	3,940	79,900	781	193	314	389	0.0
Carter County	10,342	57,100	583	193	282	365	0.4
Casey County	6,260	49,500	550	179	214	295	0.0
Christian County	24,857	72,500	707	207	362	458	1.0
Clark County	13,015	93,700	813	214	391	476	0.0
Clay County	8,556	43,800	516	163	224	292	0.0
Clinton County	4,086	50,200	513	181	210	294	0.0
Crittenden County	3,829	48,300	561	180	244	331	0.0
Cumberland County	2,976	50,300	536	186	169	242	1.0
Daviess County	36,033	81,800	738	215	332	415	1.3
Edmonson County	4,648	63,700	675	193	230	310	0.0
Elliott County	2,638	54,800	555	220	148	232	0.0
Estill County	6,108	50,200	560	190	258	332	0.6
Fayette County	108,288	110,800	937	239	464	528	1.2
Fleming County	5,367	63,600	621	189	236	318	0.0
Floyd County	16,881	53,100	668	187	262	332	0.7
Franklin County	19,907	91,600	814	232	396	482	4.0
Fulton County	3,237	40,500	588	235	240	343	0.0

Geographic area	Occupied housing units	Specified owners			Specified renters		
		Median value (dollars)	Median selected monthly owner costs (dollars)		Median contract rent (dollars)	Median gross rent (dollars)	Percent with meals included in rent
			With a mortgage	Not mortgaged			
Gallatin County	2,902	87,100	780	231	334	422	0.0
Garrard County	5,741	81,300	746	203	316	390	2.1
Grant County	8,175	93,100	865	241	415	505	0.4
Graves County	14,841	63,600	662	200	256	354	0.6
Grayson County	9,596	65,600	649	185	272	353	0.5
Green County	4,706	52,500	569	193	224	326	0.0
Greenup County	14,536	67,500	689	220	317	412	0.1
Hancock County	3,215	71,800	727	217	315	438	1.0
Hardin County	34,497	88,300	814	212	355	443	0.5
Harlan County	13,291	43,000	575	176	232	306	0.8
Harrison County	7,012	83,100	736	213	314	403	0.0
Hart County	6,769	60,100	600	178	220	312	0.0
Henderson County	18,095	76,600	786	209	352	408	0.5
Henry County	5,844	82,100	777	214	353	444	0.0
Hickman County	2,188	49,200	568	204	176	282	0.4
Hopkins County	18,820	57,200	650	197	272	363	0.1
Jackson County	5,307	48,300	476	188	216	301	0.0
Jefferson County	287,012	103,000	913	246	423	494	1.5
Jessamine County	13,867	102,100	862	246	429	535	1.7
Johnson County	9,103	64,700	666	215	257	338	0.0
Kenton County	59,444	105,600	965	267	440	517	1.6
Knott County	6,717	46,500	587	153	236	293	0.5
Knox County	12,416	59,400	647	185	255	327	0.4
Larue County	5,275	72,100	653	186	279	342	0.0
Laurel County	20,353	77,300	697	191	298	377	0.7
Lawrence County	5,954	56,300	581	183	260	362	0.4
Lee County	2,985	52,300	491	201	180	268	0.8
Leslie County	4,885	36,900	592	163	194	278	1.1
Letcher County	10,085	39,500	547	168	219	309	0.0
Lewis County	5,422	44,700	547	176	175	269	0.3
Lincoln County	9,206	65,100	647	179	287	378	0.5
Livingston County	3,996	58,200	589	197	243	362	0.0
Logan County	10,506	67,100	707	217	298	415	0.0
Lyon County	2,898	80,700	683	204	294	398	0.0
McCracken County	27,736	84,300	795	216	336	419	0.6
McCreary County	6,520	46,300	487	155	247	320	0.0
McLean County	3,984	58,200	634	204	226	318	0.0
Madison County	27,152	93,500	819	195	369	428	0.9
Magoffin County	5,024	55,600	652	206	205	294	0.9
Marion County	6,613	70,300	638	194	287	353	0.0
Marshall County	12,412	82,800	755	224	302	407	0.5
Martin County	4,776	62,100	704	193	230	286	0.3
Mason County	6,847	71,900	749	189	296	369	0.9
Meade County	9,470	85,500	796	210	341	431	0.2
Menifee County	2,537	54,500	569	187	180	233	0.7
Mercer County	8,423	83,800	712	202	331	411	1.1
Metcalfe County	4,016	52,600	533	191	204	310	0.0
Monroe County	4,741	57,600	622	188	197	304	1.6
Montgomery County	8,902	82,100	720	199	321	420	0.4
Morgan County	4,752	55,400	580	191	234	310	0.3
Muhlenberg County	12,357	58,200	615	186	262	330	0.3
Nelson County	13,953	87,100	730	198	356	426	0.2
Nicholas County	2,710	62,000	647	199	219	296	2.4
Ohio County	8,899	56,600	623	191	266	350	0.5
Oldham County	14,856	158,600	1,176	288	421	499	1.2
Owen County	4,086	72,800	738	208	263	357	0.3

Froedge,
District Conservationist

Owner:
Farm:
Tract:

Cooperating with the
Graves County, KY
Conservation District



Prepared with Assistance
From USDA--NRCS
Prepared By:
Date Prepared:

Legend	
Farm Boundary	.....
Existing Fence	-----
Proposed Fence	-----
Field Boundary	-----
Field Number	②
Intermittent Stream or Open Ditch	-----
Crossed Waterway	-----

Scale 1:7920
(1" = 660')



Froedge,
District Conservationist

Owner:
Farm:
Tract:

Cooperating with the
Graves County, KY
Conservation District



Prepared with Assistance
From USDA--NRCS
Prepared By:
Date Prepared:

Legend	
Farm Boundary	.....
Existing Fence	.....
Proposed Fence	.....
Field Boundary	.....
Field Number	①
Intermittent Stream or Open Ditch	.....
Grassed Waterway	.....

Scale 1:7920
(1" = 660')



Froedge,
District Conservationist

Owner:
Farm:
Tract:

Cooperating with the
Graves County, KY
Conservation District



Prepared with Assistance
From USDA--NRCS
Prepared By:
Date Prepared:

Legend	
Farm Boundary	.....
Existing Fence	-----
Proposed Fence	-----
Field Boundary	-----
Field Number	⊙
Intermittent Stream or Open Ditch	-----
Grassed Waterway	-----

Scale 1:7920
(1" = 660')



Froedge,
District Conservationist

Owner:
Farm:
Tract:

61

Cooperating with the
Graves County, KY
Conservation District



Prepared with Assistance
From USDA--NRCS
Prepared By:
Date Prepared:

Legend	
Farm Boundary	.....
Existing Fence	-----
Proposed Fence	.....
Field Boundary	.....
Field Number	○
Intermittent Stream or Open Ditch	-----
Gassed Waterway	=====

Scale 1:7920
(1" = 660')





3.9

① 8.0

T 2587
FN 1435

③ 7.8

② 25.3

FN 138
T 2588

Hel ① 14.0
CRP

④ 10.0
CRP

CRP
⑤ 10.0

CRP
⑧ 8.0

CRP
⑨ 6.0

CRP
⑩ 4.0

⑤ 7.0
CRP
Hel

2589
4.6

⑦ 7.4

NA

T 2592
8.0

① 10.2
FN 9503
T 8668

FN 9504
T 8667

② 1.8

FN 1939
T 2605

Hel
① 10.9

FN 3279
T 2607

Hel

① 20.3

① 29.5

Hel
FN 3193
T 2585

④ 46.0

NA

FN 4780
T 2593

① 14.2

FN 1692
T 2594
① 3.7

① 11.0
FN 4822
T 2595

② 12.6 Hel

FN 10013
T 2583

① 08.7

② 23.4
Hel

Δ NAPP-6081

4102

FN 4025
T2352

② 101.0 Hel

① 3.9

③ 19.5 Hel

Hel 8.4

T2337
① 4.5

③ 8.4

① 38.5

FN 877
T2505
Hel

① 13.5

Hel

② 16.6

T2502
FN 3918

① 19.6

③ 6.9

FN 4636
T2274

① 6.5

① 7.5

② 3.5

① 19.5

② 15.0

② 14.3

② 8.0

① 4.1
T2513

⑩ 11.4 Hel

FN 1098
T2517

① 10.4 Hel

T2488

② 4.4

③ 2.0

FN 6823
T2518

① 10.0 Hel

T2487
① 4.8

④ 5.4

② 1.3

Hel 2.0

Hel



.....

1002 Medical Drive
PO Box 588
Mayfield, Kentucky 42066
Phone: 270-251-6146
Fax: 270-251-6110

Purchase Area Development District

February 28, 2003

Steve Ross
Division of Planning
Kentucky Transportation Cabinet
125 Holmes Street
Frankfort, Kentucky 40622

Dear Steve,

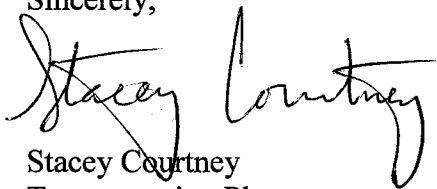
The enclosed correspondence is the real estate / relocation data for the Graves County Item Number 1-8100.00, KY 121 project (KY 121 from intersection of KY 1830 (Jintown Road) to intersection of KY 440).

In the project team meeting on February 13, 2003 at the District 1 Office, discussion took place on how long it would take to do this study. It would be fair to say that each project should be treated on a case by case basis because of factors involved. As we discussed on the telephone, this study took about one week to complete, which is much longer than the original estimation of one half day. Variables to consider in these type studies are: time spent researching data, gathering information for contacts, size of project corridor, reply time from contacts and the amount of available data for each county or city.

It is my opinion that these type studies could be handled by the ADDs and done as part of the environmental justice documents that we prepare for the Division of Planning.

If you need additional information please let me know. I look forward to working with you on this project.

Sincerely,



Stacey Courtney
Transportation Planner

P.A.D.D.

.....



Commonwealth of Kentucky
Transportation Cabinet
Frankfort, Kentucky 40622

James C. Codell, III
Secretary of Transportation

Paul E. Patton
Governor

Clifford C. Linkes, P.E.
Deputy Secretary

November 21, 2003

«Mailing_Title» «First_Name» «Last_Name»«Suffix»
«Title»
«Organization»
«Address1»
«Address2»
«City», «State» «Zip»

SUBJECT: Planning Study
Graves County
KY 121 from 400 feet south of Harris Lane
To KY 945
Item No. 01-8100.00

Dear «Letter_Title» «Last_Name»:

We are requesting your agency's input and comments on a planning study to determine the need and potential impacts for a proposed highway project. The Kentucky Transportation Cabinet has assembled a study team to evaluate the proposed reconstruction of KY 121 from 400 feet south of Harris Lane to the intersection with KY 945 in Graves County. The study is currently in the initial data-gathering stage.

We ask that you identify specific issues or concerns of your agency that could affect the development of the project. This planning study will include a scoping process for the early identification of environmental issues and impacts related to the proposed project. We believe that early identification of issues or concerns can help us develop improvement recommendations that avoid or minimize negative impacts.

We respectfully ask that you provide us with your comments by January 5, 2004 to ensure timely progress in this planning effort.

During the development of this planning study, comments will be solicited from Federal, state, and local agencies, in accordance with principles set forth in the National Environmental Policy Act (NEPA) of 1969. The Federal Highway Administration is partnering with us in these efforts.



«Mailing_Title» «First_Name» «Last_Name»

Page 2

November 21, 2003

Other Transportation Cabinet offices or consultants working on behalf of the Transportation Cabinet may also contact you seeking more detailed data or information to assist them in completing their environmental studies for this phase of the project.

We have enclosed the following project information for your review and comment:

- A draft statement of Study Purpose and Project Goals
- Major Issues, Project Schedule and Contacts
- Project Location Map
- Year 2002 Traffic and Level of Service
- Year 2030 Traffic and Level of Service
- Vehicle Crash Information by Crash Severity
- Topographic Environmental Footprint
- Digital Orthographic Environmental Footprint

We appreciate any input you can provide concerning this project. Please direct any comments, questions, or requests for additional information to Steve Ross of the Division of Planning at 502/564-7183 or at steve.ross@mail.state.ky.us. Please address all written correspondence to Annette Coffey, P.E., Director, Division of Planning, Kentucky Transportation Cabinet, 125 Holmes Street, Frankfort, KY 40622.

Sincerely,



Annette Coffey, P.E.
Director
Division of Planning

AC:RSR:RC

Enclosures

c:	Jose Sepulveda (w/a)	David Smith, Qk4
	Glenn Jilek (w/a)	Wayne Mosley (w/a)
	Mary Murray (w/a)	Allen Thomas (w/a)
	Anthony Goodman (w/a)	Chris Kuntz
	Henry Hodges, Purchase	Steve Hoefler (w/a)
	ADD (w/a)	David Waldner
	Stacey Courtney, Purchase	Tim Choate
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United States Senator
United States Senate
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The Honorable Mitch McConnell
United States Senator
United States Senate
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U. S. Army Corps of Engineers, Memphis District
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Memphis TN 38103-1894

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United States Representative - District 1
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Kentucky House of Representatives
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Mayfield KY 42066

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Chief
Mayfield-Graves County Emergency Medical Services
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Graves County Sheriff's Office
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Mr. Gary Pyle
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Mayfield KY 42066

Ms. Mary Jo Lewis
Chief Executive Officer
Jackson Purchase Medical Center
1099 Medical Center Circle
Mayfield KY 42066



**KY 121, Graves County
From 400 feet south of Harris Lane to KY 945
Item No. 01-8100.00**

Draft Statement of Study Purpose

The purpose of this study is to evaluate the need to reconstruct KY 121 in Graves County from 400 feet south of Harris Lane to KY 945.

Draft Project Goals

- Improve Safety

Opportunities exist to improve sight distance and intersection alignment on the study route. Although crash data analysis reveals less than critical crash rate factors, two high schools, a middle school and a planned elementary school just south of the study area combined with trucks traveling between Mayfield and Wickliffe make safety the primary focus of this study.

- Relieve congestion and improve capacity

Five-lane improvements have been made to KY 121 from the Julian M. Carroll Parkway to just north of the Graves County High School entrance. Three-lane improvements are planned for KY 121 from the north end of the five-lane section to just north of the intersection with KY 1830. Opportunities exist to improve the existing two-lane section of KY 121 north of KY 1830 to accommodate existing and projected increases in traffic levels.

- Accommodate increased truck use and promote regional connectivity

Both Wickliffe and Mayfield are home to companies that generate significant numbers of trucks that travel the study corridor. KY 121 is on the National Truck Network and is the primary connector between Mayfield and Wickliffe. A Regional Industrial Park proposed north of Mayfield on US 45, if completed, could have a significant impact on traffic levels and truck percentages in the study corridor. Opportunities exist to improve the existing two-lane section of KY 121 for truck use and regional connectivity.



Major Project Issues

- Narrow lane and shoulder widths
- Skewed alignment and less than optimal sight distance at the KY 121/KY 440 intersection
- Skewed alignment at the KY 121/KY 1276 and KY 121/KY 945 intersections
- Congestion and capacity issues with existing and projected traffic levels
- Potential increases in truck traffic due to planned industrial park in Folsomdale
- Maintaining safety through schools zones
- Environmental issues including culturally sensitive locations such as schools, churches and cemeteries; historic and archaeological sites; water and air quality; wetlands and ponds; plant and animal life including threatened and endangered species; managed land areas; farmlands; hazardous materials concerns; traffic noise; environmental justice to low income, minority and elderly populations; and other concerns

Any future roadway improvements will consider impacts to these sensitive issues.

Project Schedule

The current schedule as listed in the FY 2003-2008 Six Year Highway Plan for this project is:

<u>Phase</u>	<u>Fiscal Year</u>	<u>Estimated Cost</u>
Planning	FY 2003	\$200,000

Only the planning phase of this project has been approved and funded. **No** design, construction or other phases are included in the Six Year Highway Plan at this time.

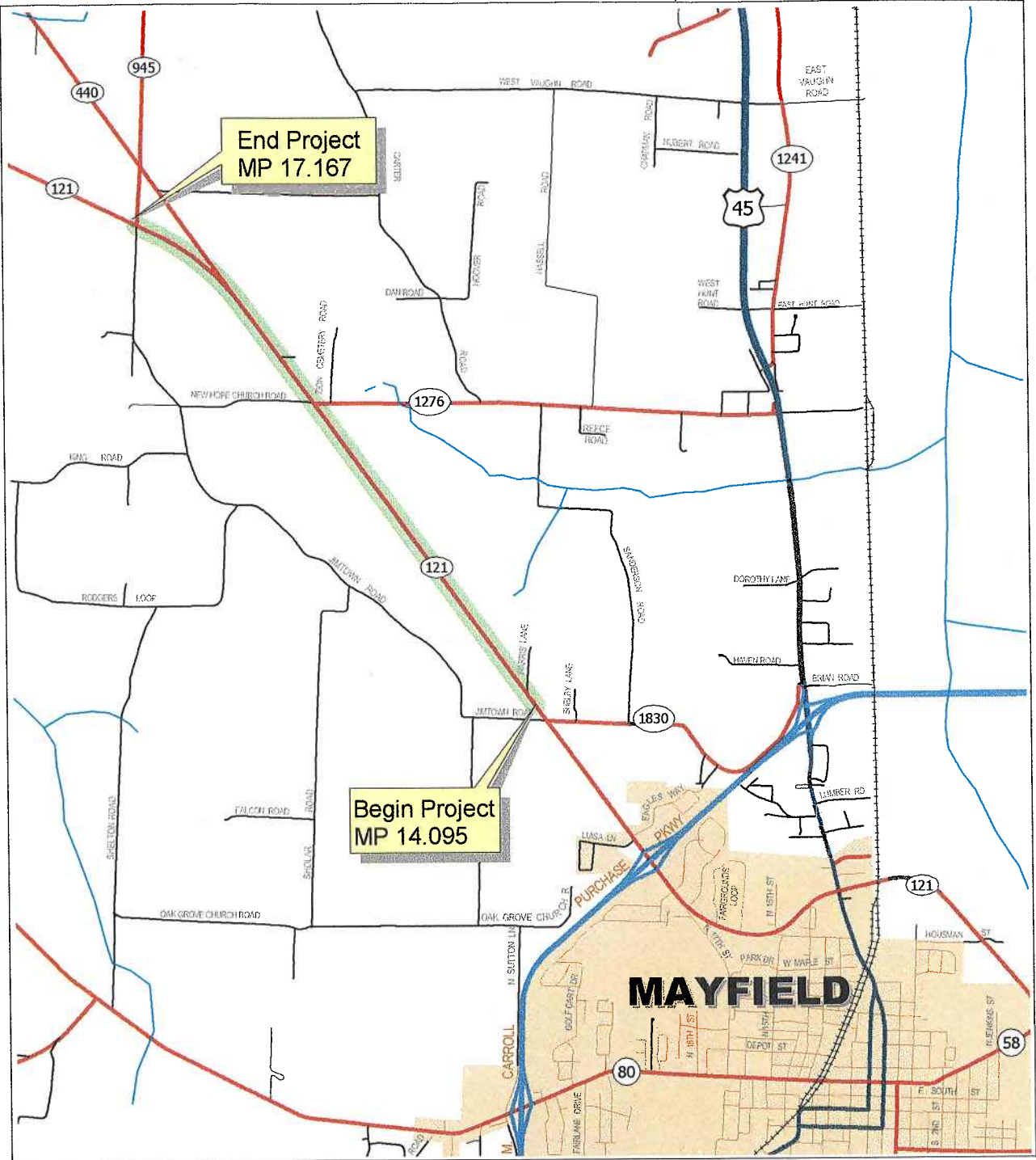
Contacts

Address written comments to:

Annette Coffey, P.E.
Director
Kentucky Transportation Cabinet
Division of Planning
125 Holmes Street
Frankfort, KY 40622

Or you may contact by phone:









Steve Ross, P.E.
Project Manager
Kentucky Transportation Cabinet
Division of Planning
(502) 564-7183



4000 0 4000 8000 Feet

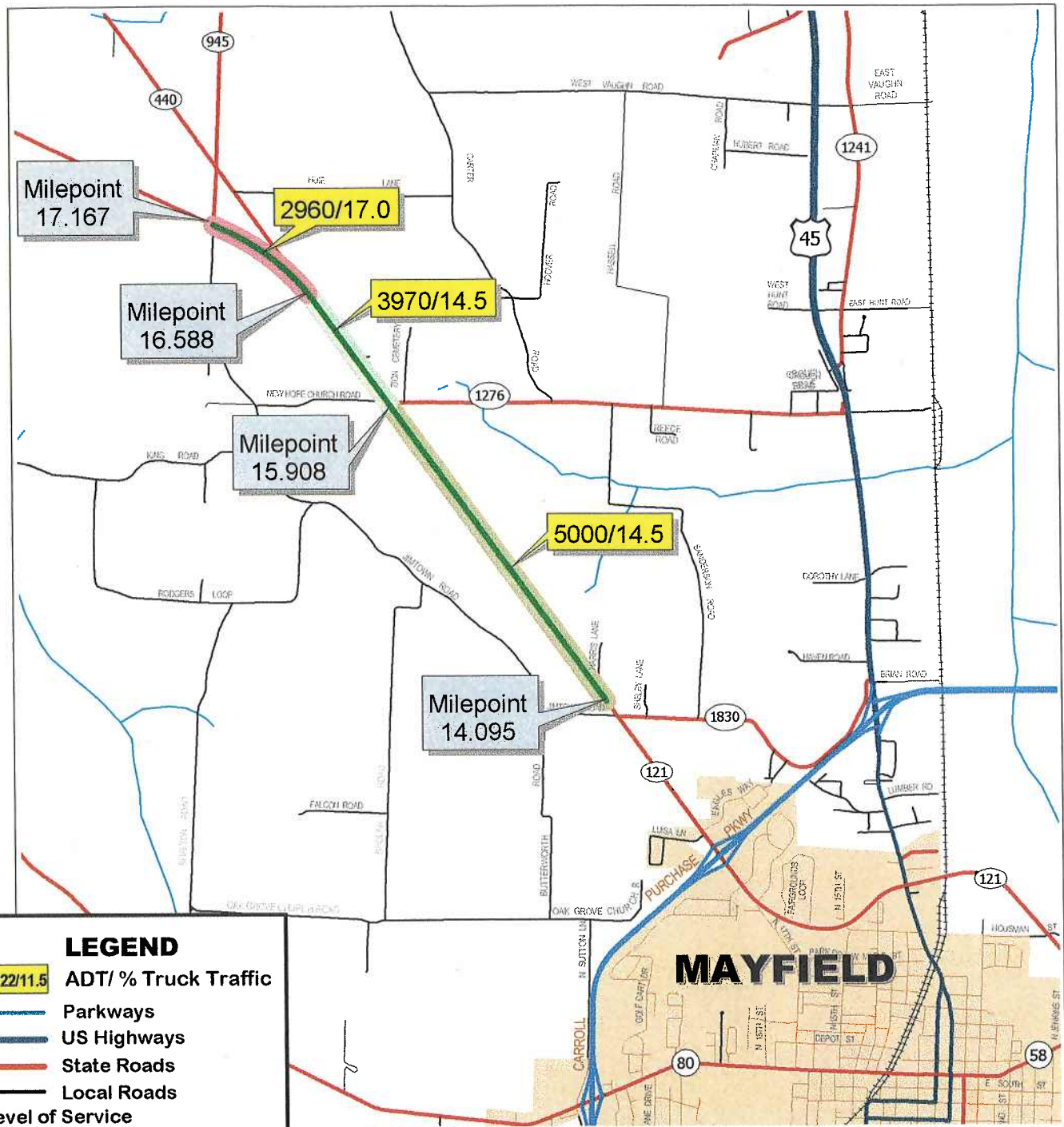


LEGEND

-  Project Area
-  Parkways
-  US Highways
-  State Roads
-  Local Roads
-  Streams
-  Railroad
-  Corporate Boundary



Project Location
 Graves County
 Item No. 1-8100.00
 KY 121 From 400' South
 of Harris Lane to the
 KY 945 Intersection



LEGEND

1122/11.5 ADT/ % Truck Traffic

— Parkways

— US Highways

— State Roads

— Local Roads

Level of Service

C or Better

D

E

F

MP 16.588 - 17.167

MP 15.908 - 16.588

MP 14.095 - 15.908

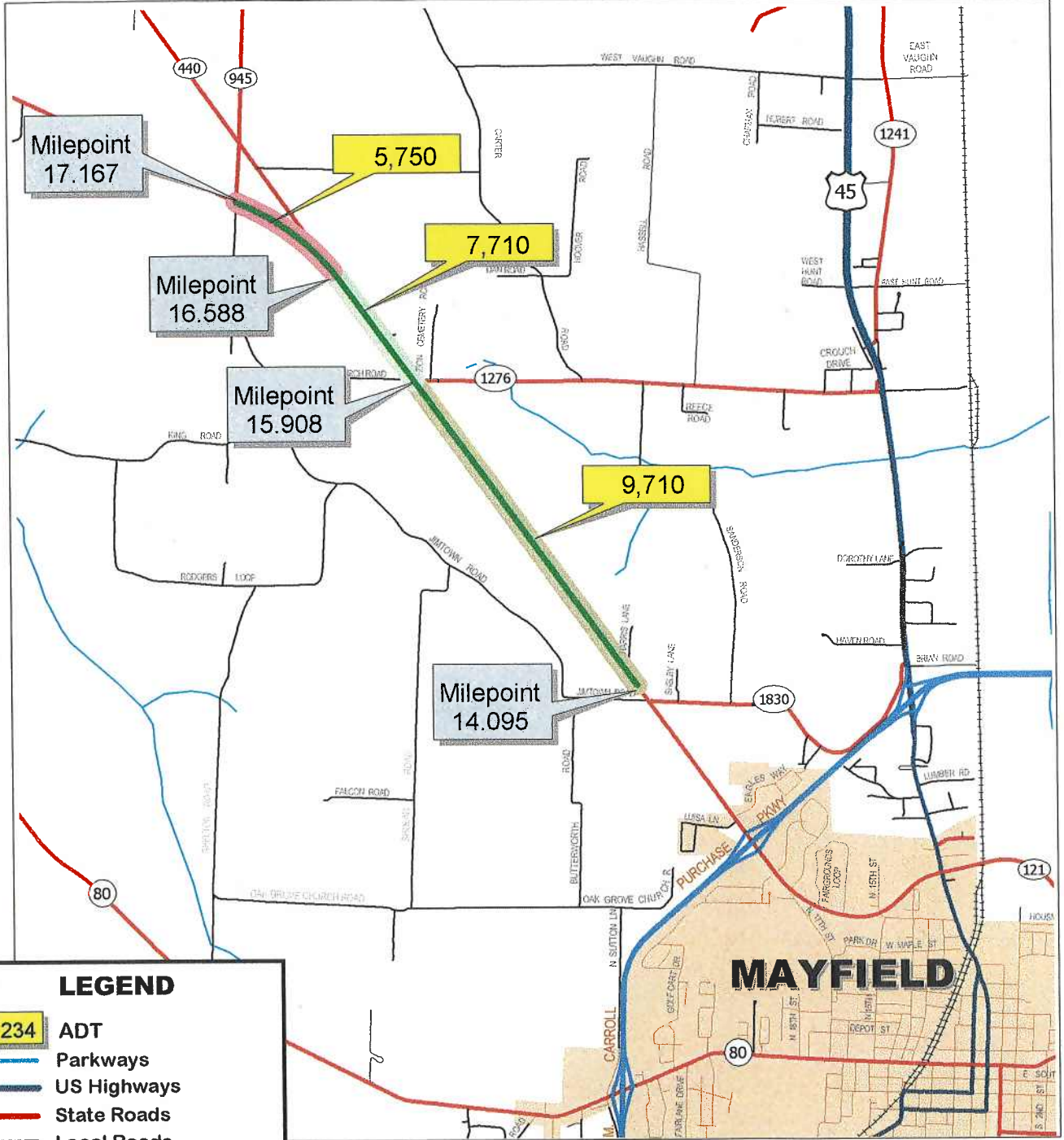
Streams

Railroad

Corporate Boundary



**Year 2002
Traffic and Level
of Service**
Graves County
Item No. 1-8100.00
KY 121 From 400' South
of Harris Lane to the
KY 945 Intersection

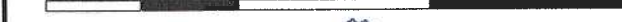


LEGEND

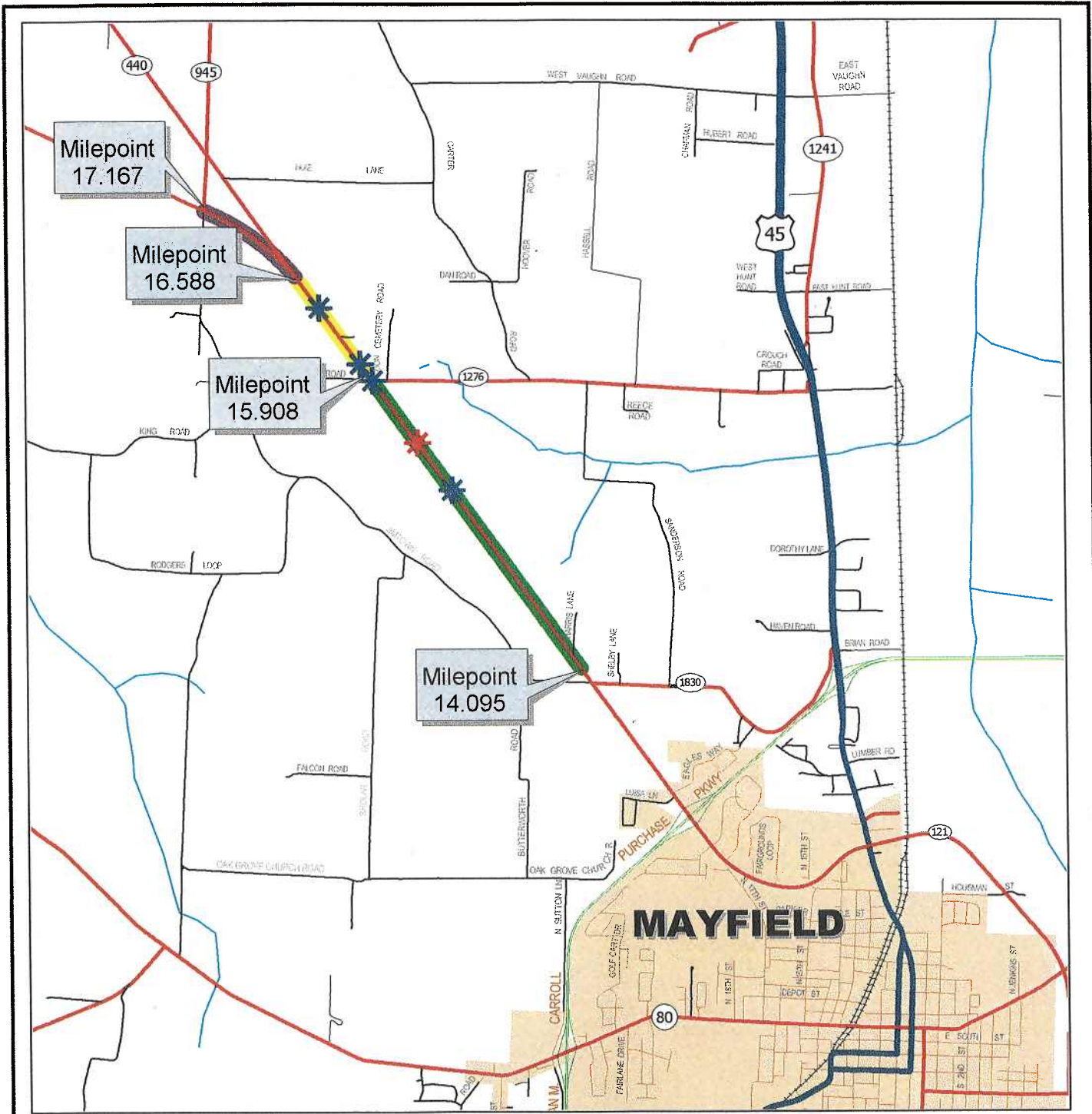
- 1234 ADT
- Parkways
- US Highways
- State Roads
- Local Roads
- Level of Service**
- C or Better
- D
- E
- F

- MP 16.588 - 17.167
- MP 15.908 - 16.588
- MP 14.095 - 15.908
- Streams
- Railroad
- Corporate Boundary

4000 0 4000 8000 Feet



**Year 2030
Traffic and Level
of Service
Graves County
Item No. 1-8100.00
KY 121 From 400' South
of Harris Lane to the
KY 945 Intersection**



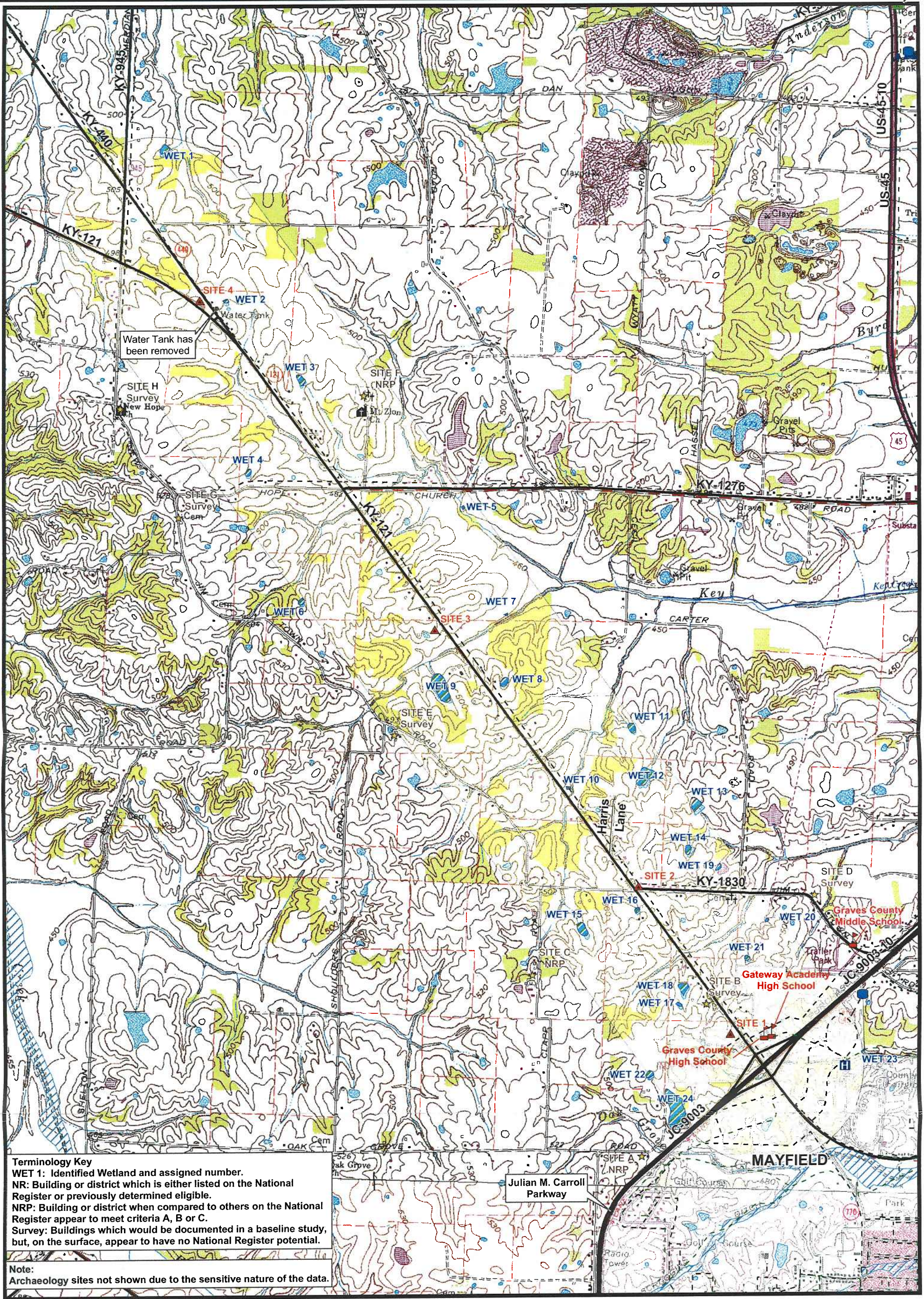
LEGEND

- 2 Crashes, CRF = 0.187
- 9 Crashes, CRF = 0.608
- 16 Crashes, CRF = 0.437
- Fatal Crash
- Injury Crash



Vehicle Crash Information By Severity
 Jan. 1, 2000 - Dec. 31, 2002
 Graves County
 Item No. 1-8100.00
 KY 121 From 400' South of Harris Lane to the KY 945 Intersection

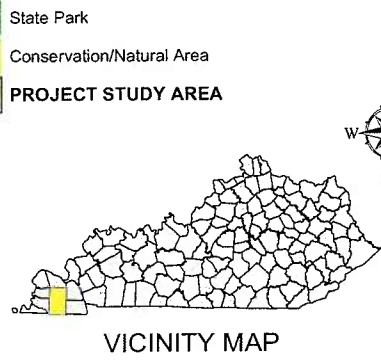
There are no High Crash Spots in the study corridor.



Terminology Key
 WET 1: Identified Wetland and assigned number.
 NR: Building or district which is either listed on the National Register or previously determined eligible.
 NRP: Building or district when compared to others on the National Register appear to meet criteria A, B or C.
 Survey: Buildings which would be documented in a baseline study, but, on the surface, appear to have no National Register potential.

Note:
 Archaeology sites not shown due to the sensitive nature of the data.

- | | | | |
|-----------------------------|------------------------|----------------------------|---------------------------|
| Airport | Landfill | Public Water Source | State Park |
| Church | Oil Well | Water Tank | Conservation/Natural Area |
| Park | Gas Well | Water Treatment Plant | PROJECT STUDY AREA |
| Populated Place | Combined Oil and Gas | Sewers | |
| Cemetery | Newly Permitted Well | Package Plant | |
| School | Dry and Abandoned Well | Wastewater Pump Station | |
| Hospital | Miscellaneous Well | Wastewater Treatment Plant | |
| Potential Historic Location | Waterline | Stream | |
| HAZMAT Site | Water Well | Wetlands | |
| | | Potential Flood Risk | |



1,800 900 0 1,800 Feet

Exhibit 1 Sheet 1 of 1

USGS Topographic Environmental Footprint
 KY 121
 400' South of Harris Lane to KY-945
 Graves County
 KYTC Item No. 1-8100.00



Terminology Key
 WET 1: Identified Wetland and assigned number.
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Note:
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- | | | | |
|-----------------------------|------------------------|----------------------------|---------------------------|
| Airport | Landfill | Public Water Source | State Park |
| Church | Oil Well | Water Tank | Conservation/Natural Area |
| Park | Gas Well | Water Treatment Plant | PROJECT STUDY AREA |
| Populated Place | Combined Oil and Gas | Package Plant | |
| Cemetery | Newly Permitted Well | Wastewater Pump Station | |
| School | Dry and Abandoned Well | Wastewater Treatment Plant | |
| Hospital | Miscellaneous Well | Stream | |
| Potential Historic Location | Waterline | Wetlands | |
| HAZMAT Site | Water Well | Potential Flood Risk | |

1,800 900 0 1,800 Feet

Exhibit 2 Sheet 1 of 1

KYOGIS Orthographic Environmental Footprint

KY 121
 400' South of Harris Lane to KY-945
 Graves County
 KYTC Item No. 1-8100.00

VICINITY MAP



Ross, Steve (KYTC)

From: Roberts, David C - (DMA) [robertsdc@bngc.dma.state.ky.us]
Sent: Thursday, February 19, 2004 5:31 PM
To: Ross, Steve (KYTC)
Cc: Coffey, Annette (KYTC)
Subject: Planning study/ State wide

Steve,

The following planning studies were reviewed for potential impact on any properties utilized by The Department of Military Affairs. None were found:

Graves County/ Item No. 01-8100.00
Jackson County/ Item No. 11-113.00
Harlan/Leslie/Perry County/ Item No. 11-137.00

A change of command occurred in January of this year making Mr. Donald C. Storm our Adjutant General. Please send all future correspondence to his attention.

Thanks

David C. Roberts
Assistant Director
Facilities Division
502-607-1543
Fax 502-607-1270



Reply to
Attention of:

DEPARTMENT OF THE ARMY
MEMPHIS DISTRICT CORPS OF ENGINEERS
167 NORTH MAIN STREET B-202
MEMPHIS TN 38103-1894

DIV OF PLANNING

2004 JAN 20 P 1: 46

January 12, 2004

Regulatory Branch

Ms. Annette Coffey, P. E., Director
Division of Planning
Kentucky Transportation Cabinet
125 Holmes Street
Frankfort, Kentucky 40622

Dear Ms. Coffey:

This is in response to your letter of November 21, 2003, requesting comments on a planning study for the proposed reconstruction of KY 121 from 400 feet south of Harris Lane to the intersection with KY 945 in Graves County, Kentucky (see attached map).

The only comment the Regulatory Branch has concerning the project is the need to address the stream crossings impacted by the project. Open water areas and wetlands have been adequately inventoried by the preliminary study. After the stream crossing have been documented, permitting requirements will need to be addressed for all wetlands, stream crossings, and open water areas before the project is constructed.

If you have questions, please contact Randy Clark at (901) 544-0735 .

Sincerely,

A handwritten signature in cursive script that reads "Larry D. Watson".

Larry D. Watson
Chief
Regulatory Branch

LAJUANA WILCHER
SECRETARY



ERNIE FLETCHER
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR SURFACE MINING RECLAMATION & ENFORCEMENT
FRANKFORT, KENTUCKY 40601
ALLEN LUTTRELL
COMMISSIONER

December 24, 2003

Annette Coffey, P.E. Director
Division of Planning
Kentucky Transportation Cabinet
Frankfort, KY 40601

RE: Planning Study
Graves County
KY 21 from, 400 feet South of Harris Lane to KY 945
Item No. 01-8100.00

Dear Ms. Coffey:

Thank you for the opportunity to review and comment on the above referenced proposed highway construction project.

Personnel from our department's field offices have not identified any specific issues or concerns regarding the proposed project at this time. However, given the dynamic nature of the stone industry and the development of the proposed highway, we will welcome the opportunity to further comment on the project in the future.

If my staff or I may be of any further assistance in this or any other matter, please do not hesitate to contact me at (502) 564-6940.

Sincerely,

A handwritten signature in black ink that reads "Allen Luttrell".

Allen Luttrell
Commissioner

AL:jm;aw



UNIVERSITY OF KENTUCKY

Kentucky Geological Survey

*Research and Graduate Studies
228 Mining and Mineral Resources Building
Lexington, KY 40506-0107
Phone: (859) 257-5500
Fax: (859) 257-1147
www.uky.edu/kgs*

December 24, 2003

Annette Coffey, P.E.
Director
Division of Planning
Kentucky Transportation Cabinet
125 Holmes Street
Frankfort, Kentucky 40622

Dear Ms. Coffey:

This letter is to summarize any geologic concerns for the planning study:

Graves County
Ky. 121 from 400 feet south of Harris Lane to Ky. 945.
Item No. 01-8100.00

Physiographic Region

The planning study area is in the Jackson Purchase (Gulf Embayment) Physiographic Region, which is a typical coastal plain made up of clays, silt, sand, and gravel.

Karst Potential

The planning study area probably would not encounter karst features such as sinkholes and caves.

Landslide Potential

The planning study area would probably encounter pre- and/or post-landslide hazards.

Unconsolidated Sediments

The planning study area would encounter clays, silt, sand, and gravel.

Resource Conflicts

The planning study area probably would not encounter any resource conflicts.

Materials Suitability

The gravel of the continental deposits might be suitable for construction stone.

Fault Potential

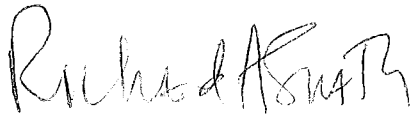
The planning study area would not encounter any faults.



Earthquake Zone

The planning study area has probable peak ground acceleration (PGA) due to earthquake ground motion of 0.40g. There would be a high potential for liquefaction or slope failure in the unconsolidated sediments.

Sincerely,

A handwritten signature in black ink that reads "Richard A. Smath". The signature is written in a cursive style with a large initial 'R'.

Richard A. Smath
Geologist

cc Richard Wilson



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

December 29, 2003

Ms. Annette Coffey, P.E., Director
Division of Planning
Kentucky Transportation Cabinet
125 Holmes Street
Frankfort, KY 40622

**RE: Planning Study - Graves Co. KY 121 South of Harris Lane to KY 945
NEPA Early Coordination**

Dear Ms. Coffey:

Thank you for your early coordination letter and attachments of November 21, 2003, regarding the scoping process for the Graves Co. KY 121 South of Harris Lane to KY 945 project. In your letter, you requested that EPA provide review and comments regarding the planning study you outlined. The purpose of this letter is to respond to that request.

The draft project goals you listed are: 1) improve traffic safety, 2) relieve congestion and improve capacity, and 3) accommodate increased truck use and promote regional connectivity. You also mentioned several major project issues, including environmental concerns. One of the concerns you mentioned was environmental justice (EJ). To assist you in your evaluation, four population maps of the project vicinity are enclosed. Coordination with the public should also include coordination with potentially impacted EJ communities. The forthcoming DEIS should clarify details of all the potential impacts, and potential measures for impact mitigation.

A rationale for rejecting alternatives should be provided in the EIS. These rationales should include environmental reasons, along with other considerations. The selected alternative should avoid/minimize adverse impacts, so that the need for mitigation of impacts will be lessened or eliminated. A critical factor of the alternatives analysis is the avoidance/minimization of adverse impacts.

We appreciate your early coordination with us, and look forward to reviewing the DEIS. If you have any questions or require technical assistance, you may contact Ramona McConney of my staff at (404) 562-9615.

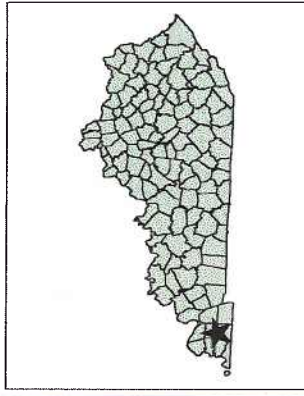
Sincerely,

A handwritten signature in black ink, appearing to read "Heinz J. Mueller".

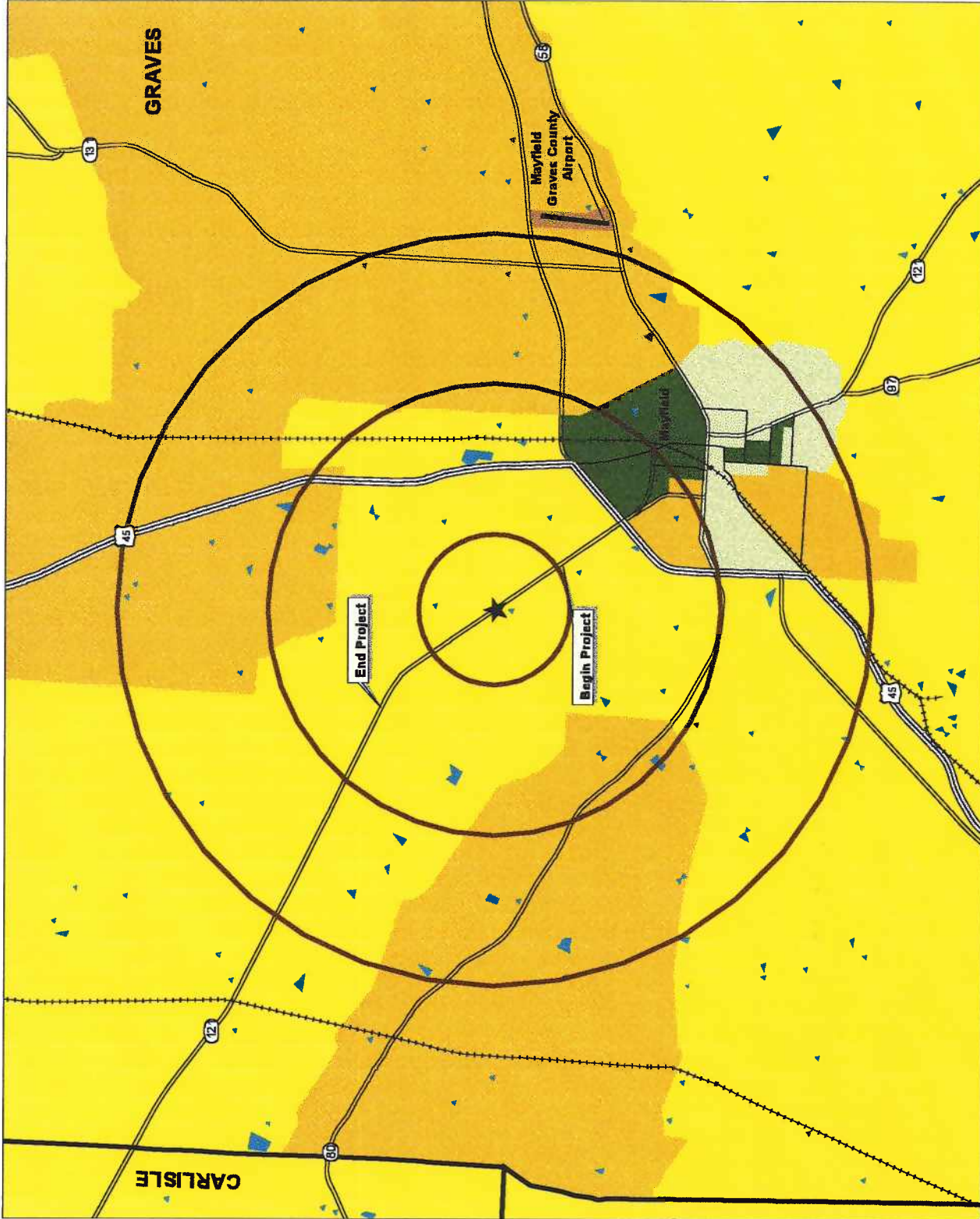
Heinz J. Mueller, Chief
NEPA Program Office

Enclosures

LOW INCOME PERCENTAGES AROUND PROJECT LOCATION, KENTUCKY



- ★ Project Location
- 1, 3, 5mi. Buffer Zones
- ▬ Major Streams
- ▬ Railroads
- ▬ County Boundaries
- % Low Income
 - 0 - 10
 - 10.01 - 20
 - 20.01 - 30
 - 30.01 - 40
 - 40.01 - 50
 - >50



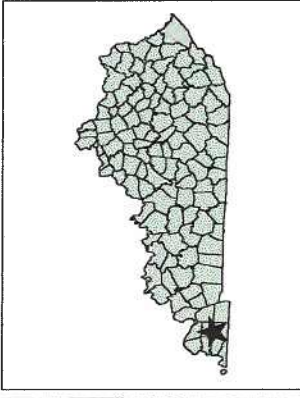
Source: 2000 U.S. Census Population and Housing Summary Tape File 3 (STF3) Data. Aggregated to Block Group Level.

Relative State Minority Threshold: 12.82%
 Relative State Low Income Threshold (20K): 36.02%

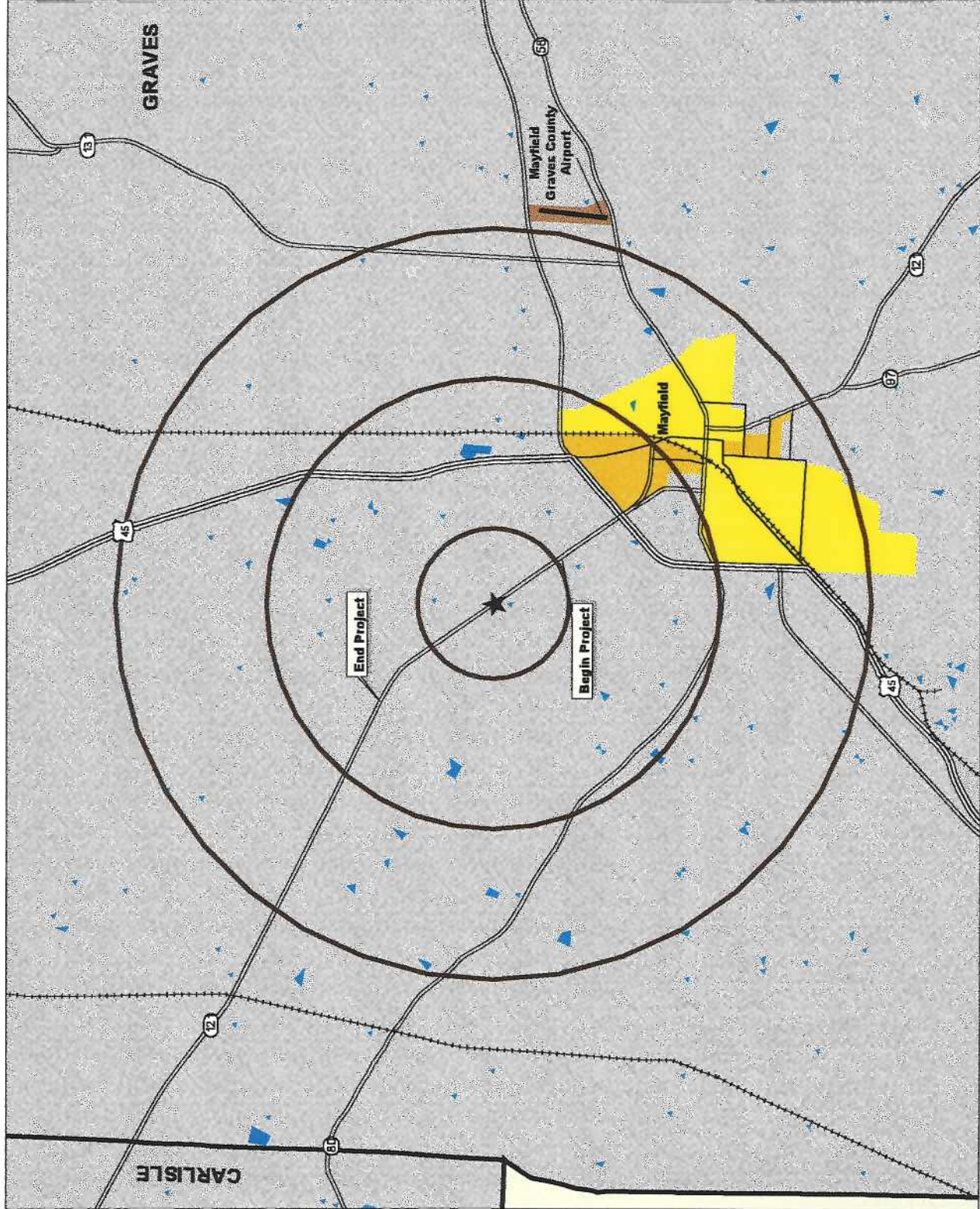


EPA REGION 4
 OFFICE OF ENVIRONMENTAL ACCOUNTABILITY

MINORITY PERCENTAGES AROUND PROJECT LOCATION, KENTUCKY



- ★ Project Location
- 1, 3, 5mi. Buffer Zones
- ▬ Major Streams
- ▬ Railroads
- ▬ County Boundaries
- % Minority
 - 0 - 10
 - 10.01 - 20
 - 20.01 - 30
 - 30.01 - 40
 - 40.01 - 50
 - >50

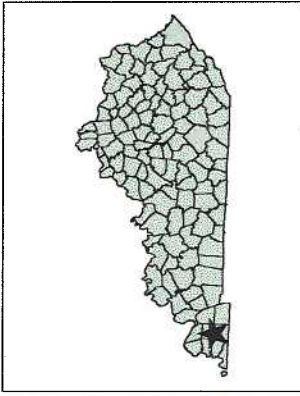
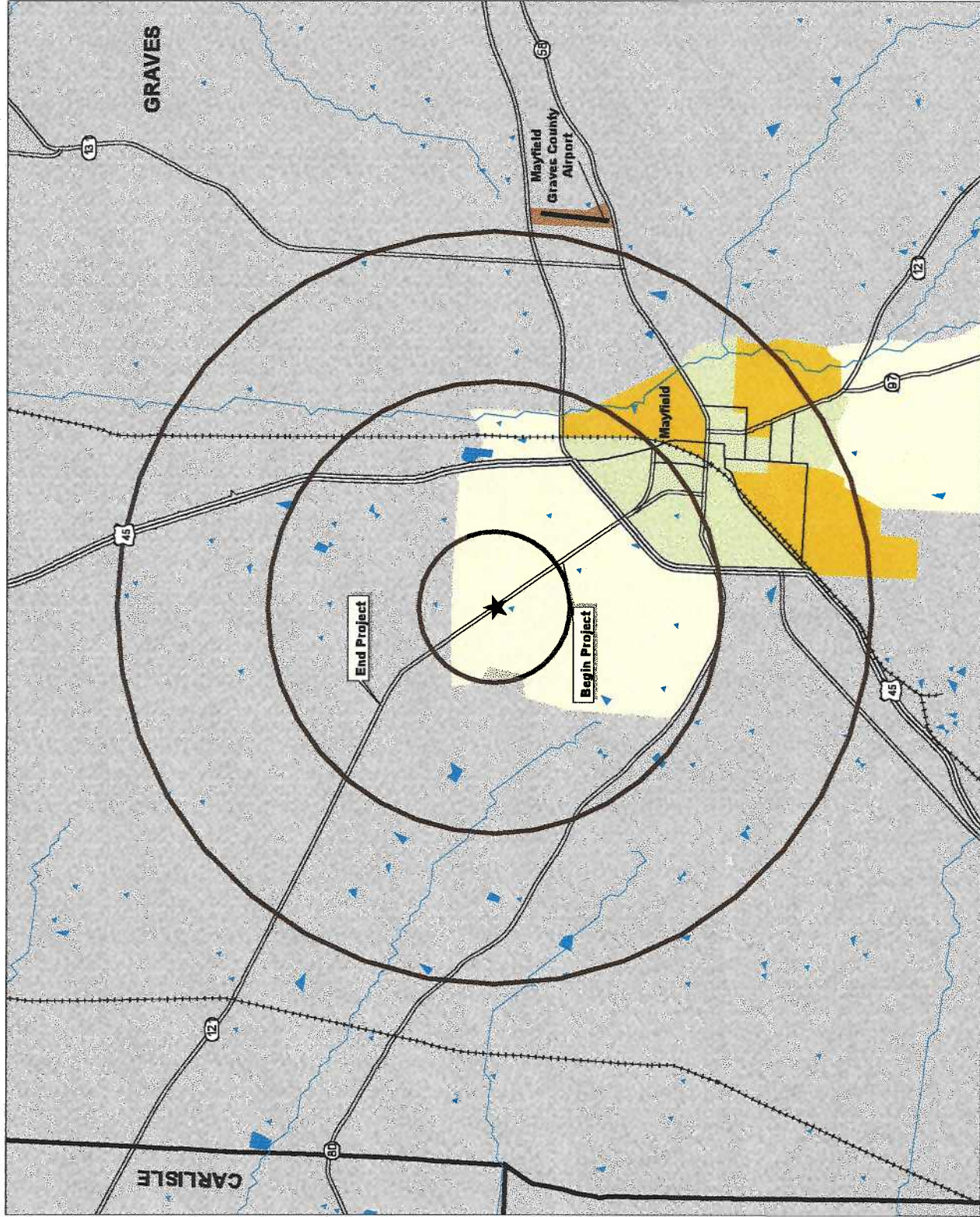


Source: 2000 U.S. Census Population and Housing Summary Tape File 3 (STF3) Data. Aggregated to Block Group Level.

Relative State Minority Threshold: 12.82%
 Relative State Low Income Threshold (20K): 36.02%



POPULATION DENSITY AROUND PROJECT LOCATION, KENTUCKY



- ★ Project Location
- 1, 3, 5mi. Buffer Zones
- ▬ Major Streams
- ▬ Railroads
- ▬ County Boundaries
- ▬ Indian Lands
- Population Density (per sq-mi)
 - 0 - 100
 - 101 - 250
 - 250 - 500
 - 501 - 1000
 - 1001 - 5000
 - >5000



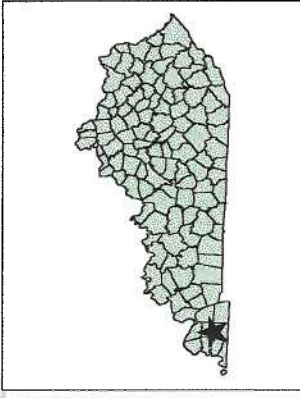
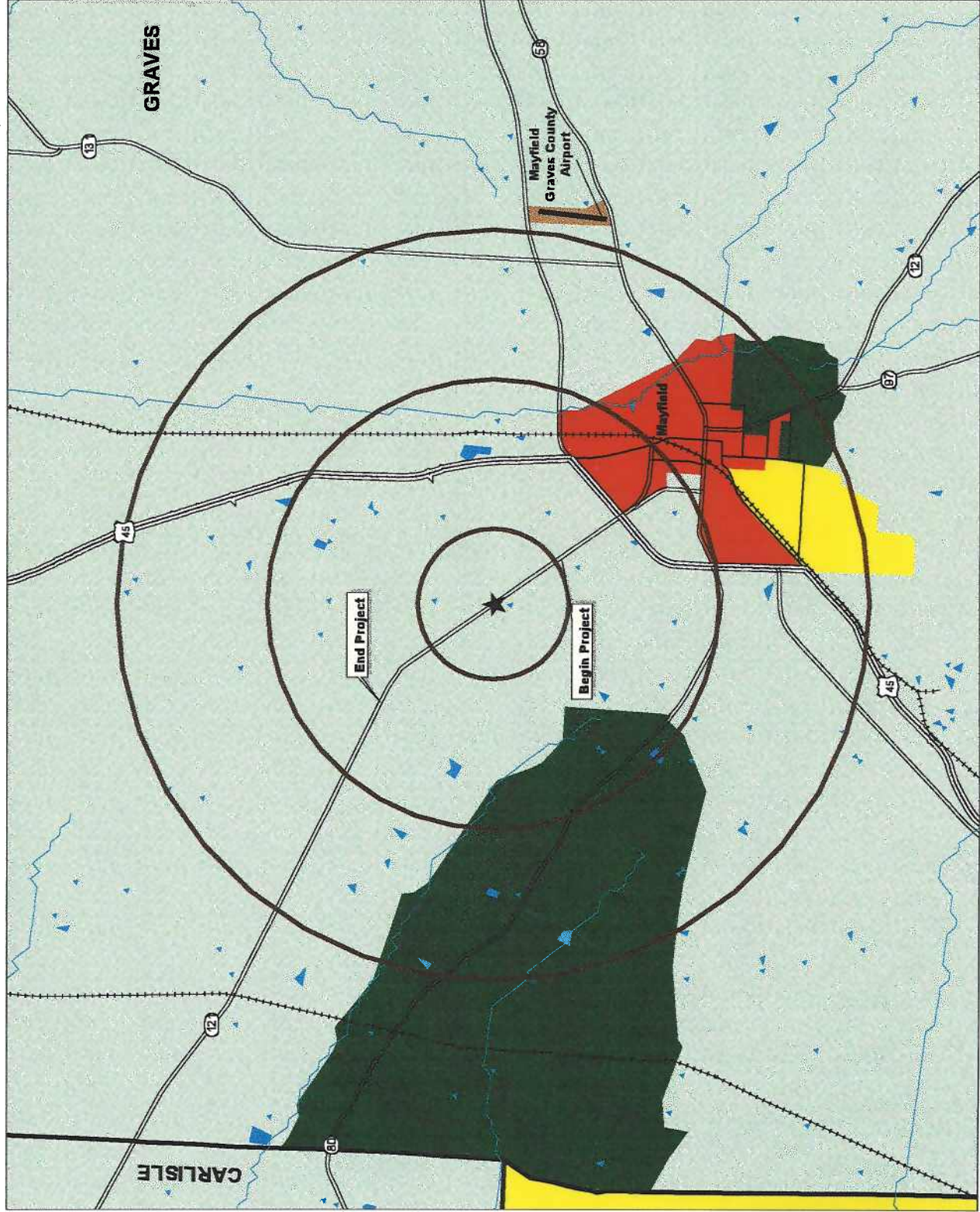
Source: 2000 U.S. Census Population and Housing Summary Tape File 3 (STF3) Data. Aggregated to Block Group Level.

Relative State Minority Threshold: 12.82%

Relative State Low Income Threshold (20K): 36.02%



POTENTIAL EJ AREAS AROUND PROJECT LOCATION, KENTUCKY



- ★ Project Location
- 1, 3, 5mi. Buffer Zones
- ▬ Major Streams
- ▬ Railroads
- County Boundaries
- Indian Lands
- Potential EJ Areas
- Low Income
- Minority
- Minority/Low Income
- Non-EJ Areas



Source: 2000 U.S. Census Population and Housing Summary Tape File 3 (STF3) Data. Aggregated to Block Group Level.

Relative State Minority Threshold: 12.82%
 Relative State Low Income Threshold (20K): 36.02%



EPA REGION 4
 OFFICE OF ENVIRONMENTAL ACCOUNTABILITY



Dave
Stuckert
PW

Commonwealth of Kentucky
Transportation Cabinet
Frankfort, Kentucky 40622

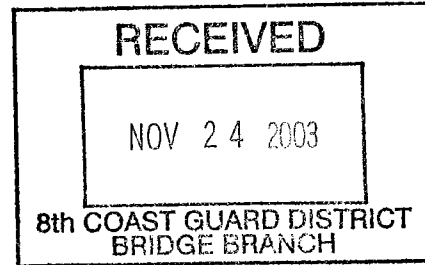
James C. Codell, III
Secretary of Transportation

Paul E. Patton
Governor

Clifford C. Linkes, P.E.
Deputy Secretary

November 21, 2003

Mr. Roger Wiebusch
Bridge Administrator
United States Coast Guard, Bridge Branch
1222 Spruce Street
St. Louis, MO 63103



SUBJECT: Planning Study
Graves County
KY 121 from 400 feet south of Harris Lane
To KY 945
Item No. 01-8100.00

Dear Mr. Wiebusch:

We are requesting your agency's input and comments on a planning study to determine the need and potential impacts for a proposed highway project. The Kentucky Transportation Cabinet has assembled a study team to evaluate the proposed reconstruction of KY 121 from 400 feet south of Harris Lane to the intersection with KY 945 in Graves County. The study is currently in the initial data-gathering stage.

We ask that you identify specific issues or concerns of your agency that could affect the development of the project. This planning study will include a scoping process for the early identification of environmental issues and impacts related to the proposed project. We believe that early identification of issues or concerns can help us develop improvement recommendations that avoid or minimize negative impacts.

We respectfully ask that you provide us with your comments by January 5, 2004 to ensure timely progress in this planning effort.

During the development of this planning study, comments will be solicited from Federal, state, and local agencies, in accordance with principles set forth in the National Environmental Policy Act (NEPA) of 1969. The Federal Highway Administration is partnering with us in these efforts.

EDUCATION PAYS
Pursuant to the Coast Guard Authorization Act of 1982, it has been determined this is not a waterway over which the Coast Guard exercises jurisdiction for bridge administration purposes. A Coast Guard bridge permit is not required.

KENTUCKY TRANSPORTATION CABINET
"PROVIDE A SAFE, EFFICIENT, ENVIRONMENTALLY SOUND, AND ECONOMICALLY SOUND TRANSPORTATION SYSTEM WHICH PROMOTES ECONOMIC GROWTH AND ENHANCES THE QUALITY OF LIFE IN KENTUCKY."
"AN EQUAL OPPORTUNITY EMPLOYER"
ROGER WIEBUSCH
Bridge Administrator
Eighth Coast Guard District (obr)
12/18/03 (Date)

United States Department of Agriculture



Natural Resources Conservation Service
771 Corporate Drive; Suite 210
Lexington, KY 40503-5479

Ms. Annette Coffey, P.E.
Director, Division of Planning
Kentucky Transportation Cabinet
125 Holmes Street
Frankfort, KY 40622

December 29, 2003

Dear Ms. Coffey:

In regards to the Planning Study for Graves County (KY 121 from 400 feet south of Harris Lane to KY 945, Item No. 01-8100.00), the USDA-Natural Resources Conservation Service (NRCS) is concerned with potential impacts that the proposed highway project might have upon prime farmland soils and additional farmlands of statewide importance. If federal dollars are to be used to convert important farmlands from agricultural uses to non-agricultural uses a Form AD-1006 (or Form NRCS-CPA-106 if the project is a corridor type project) must be submitted to the local NRCS office. These forms may be obtained from the local NRCS office and are also available as electronic forms on the web at http://www.nrcs.usda.gov/programs/fppa/pdf_files/AD1006.PDF and http://www.nrcs.usda.gov/programs/fppa/pdf_files/CPA106.pdf.

The contact person is:

Ron B. Froedge, District Conservationist
USDA-Natural Resources Conservation Service
59 Construction Road
Mayfield, KY 42066-6754

phone: (270) 247-9529

Mr. Froedge can help in identifying important farmlands in the proposed project area.

Sincerely,

A handwritten signature in black ink that reads "D. G. Sawyer acting for".

DAVID G. SAWYER
State Conservationist

cc: Ron B. Froedge, District Conservationist, Mayfield, KY
William E. Giesecke, Area Conservationist, Madisonville, KY



United States Department of the Interior

FISH AND WILDLIFE SERVICE
3761 GEORGETOWN ROAD
FRANKFORT, KY 40601

DIV OF PLANNING

2003 DEC 19 A 10:32

December 17, 2003

Ms. Annette Coffey
Kentucky Transportation Cabinet
Division of Planning
125 Holmes Street
Frankfort, Kentucky 40601

Subject: FWS #04-0317; Planning Study; KY 121 to KY 945, Graves County, Kentucky
KTC Item No. 01-8100.00

Dear Ms. Coffey:

Thank you for your correspondence of November 21, 2003, regarding the proposed reconstruction of KY 121 from 400 feet south of Harris Lane to the intersection with KY 945 in Graves County, Kentucky, as shown on the attachments to your correspondence. Fish and Wildlife Service (Service) personnel have reviewed the information submitted, and we offer the following comments.

In general, we are concerned that highway projects frequently accelerate erosion and sedimentation in streams, resulting in adverse effects to the aquatic environment. The use of heavy equipment to move earth and existing vegetation disrupts natural drainage patterns and exposes large areas of disturbed soil to erosion. Excessive sedimentation can clog stream channels and contribute to increased flooding. It can also increase water temperatures and cause oxygen demands that can damage or destroy fish and invertebrate populations. Deposition of sediment on the channel bottom also degrades aquatic habitat by filling in substrate cavities, burying demersal eggs, and smothering bottom organisms. In addition, turbidity, as induced by accelerated erosion and sedimentation, results in further damage to aquatic systems. Increased particulate matter suspended in the water column may drive fish from the polluted area by irritating the gills, concealing forage, and/or destroying vegetation that may be essential for spawning and cover habitat for particular species. Turbidity also degrades water quality by reducing light penetration, pH and oxygen levels, and the buffering capacity of the water. Degraded water quality may continue far downstream from the point where the erosion occurs.

Prevention of excessive sedimentation can occur only through application of Best Management Practices during daily construction activities. Rigid application of your agency's construction erosion control standards can preclude most sedimentation problems. In some cases, however, additional measures will need to be taken by on-site inspectors and construction representatives that are trained in erosion and sediment control methods. We request that you consider having an inspector on-site during all construction activities to ensure that work areas are stabilized on a

daily or regular basis.

Upon review of the proposed projects, we find that the information provided is insufficient to determine if the proposed actions will require U.S. Army Corps of Engineers' permits. Since permit applications could more thoroughly reveal the extent of construction activities affecting aquatic resources, we will provide additional comments during the 404 review process should the project necessitate Corps' permits. However, we would likely have no objection to the issuance of permits if any necessary stream channel work is held to a minimum and Best Management Practices are utilized and enforced, effectively controlling erosion, sedimentation, and other potential hazards. The following conditions are specifically recommended:

1. Erosion and sediment control measures, including but not limited to the following, should be implemented on all vegetatively denuded areas:
 - a. Preventive planning: A well-developed erosion control plan which entails a preliminary investigation, detailed contract plans and specifications, and final erosion and sediment control contingency measures should be formulated and made a part of the contract.
 - b. Diversion channels: Channels should be constructed around the construction site to keep the work site free of flow-through water.
 - c. Silt barriers: Appropriate use should be made of silt fences, hay bale and brush barriers, and silt basins in areas susceptible to erosion.
 - d. Temporary seeding and mulching: All cuts and fill slopes, including those in waste sites and borrow pits, should be seeded as soon as possible.
 - e. Limitation of in-stream activities: In-stream activities, including temporary fills and equipment crossings, should be limited to those absolutely necessary.
2. Channel excavations required for pier placement should be restricted to the minimum necessary for that purpose. Overflow channel excavations should be confined to one side of the channel, leaving the opposite bank and its riparian vegetation intact.
3. All fill should be stabilized immediately upon placement.
4. Streambanks should be stabilized with riprap or other accepted bioengineering technique(s).
5. Existing transportation corridors should be used in lieu of temporary crossings where possible.
6. Good water quality should be maintained during construction.

Efficient management practices can minimize adverse impacts associated with construction. It is important that these and other measures be monitored and stringently enforced. This will aid in preserving the quality of the natural environment.

According to our records, summer roost habitat and/or winter hibernacula for the endangered Indiana bat (*Myotis sodalis*) and gray bat (*Myotis grisescens*) may exist within the proposed project area. Based on this information, we believe that: (1) forested areas in the vicinity of and on the project area may provide potentially suitable summer roosting and foraging habitat for the Indiana bat and potentially suitable foraging habitat for the gray bat (if suitable roosting sites are present); and (2) caves, rockshelters, and abandoned underground mines in the vicinity of and on the project area may provide potentially suitable winter hibernacula habitat for the Indiana bat and/or potentially suitable summer roosting and winter hibernacula habitat for the gray bat. Our belief that potentially suitable habitat may be present, and possibly occupied by one or both of these species, is based on the information provided in your correspondence, the fact that much of the project site and surrounding areas contain forested habitats that are within the natural ranges of these species, and our knowledge of the life history characteristics of these species.

The Indiana bat utilizes a wide array of forested habitats, including riparian forests, bottomlands, and uplands for both summer foraging and roosting habitat. Indiana bats typically roost under exfoliating bark, in cavities of dead and live trees, and in snags (i.e., dead trees or dead portions of live trees). Trees in excess of 16 inches diameter at breast height (DBH) are considered optimal for maternity colony roosts, but trees in excess of 9 inches DBH appear to provide suitable maternity roosting habitat. Male Indiana bats have been observed roosting in trees as small as 3 inches DBH.

Prior to hibernation, Indiana bats utilize the forest habitat around the hibernacula, where they feed and roost until temperatures drop to a point that forces them into hibernation. This "swarming" period lasts, depending on weather conditions in a particular year, from about September 15 to about November 15. This is a critical time for Indiana bats, since they are acquiring additional fat reserves and mating prior to hibernation. Research has shown that bats exhibiting this "swarming" behavior will range up to five miles from chosen hibernacula during this time. For hibernation, the Indiana bat prefers limestone caves, sandstone rockshelters, and abandoned underground mines with stable temperatures of 39 to 46 degrees F and humidity above 74 percent but below saturation.

Gray bats roost, breed, rear young, and hibernate in caves year round. They migrate between summer and winter caves and will use transient or stopover caves along the way. For hibernation, the roost site must have an average temperature of 42 to 52 degrees F. Most of the caves used by gray bats for hibernation have deep vertical passages with large rooms that function as cold air traps. Summer caves must be warm, between 57 and 77 degrees F, or have small rooms or domes that can trap the body heat of roosting bats. Summer caves are normally located close to rivers or lakes where the bats feed. Gray bats have been known to fly as far as 12 miles from their colony to feed.

Because we have concerns relating to these species on this project and due to the lack of occurrence information available on these species relative to the proposed project area, we have the following recommendations relative to Indiana bats and gray bats.

1. Based on the presence of numerous caves, rockshelters, and underground mines in Kentucky, we believe that it is reasonable to assume that other caves, rockshelters, and/or abandoned underground mines may occur within the project area, and, if they occur, they could provide winter habitat for Indiana bats and/or summer and winter habitat for the gray bat. Therefore, we recommend that the KTC survey the project area for caves, rockshelters, and underground mines, identify any such habitats that may exist on-site, and avoid impacts to those sites pending an analysis of their suitability as Indiana bat habitat by this office.
2. We also recommend that the KTC only remove trees within the project area between October 15 and March 31 in order to avoid impacting summer roosting Indiana bats. However, if any Indiana bat hibernacula are identified on the project area or are known to occur within 10 miles of the project area, we recommend the KTC only remove trees between November 15 and March 31 in order to avoid impacting Indiana bat "swarming" behavior.

If these recommendations cannot be accomplished, then you should survey the project area to determine the presence or absence of the species within the project area in an effort to determine if potential impacts to these species are likely. A qualified biologist who holds the appropriate collection permits for these species must undertake such surveys, and we would appreciate the opportunity to approve the biologist's survey plan prior to the survey being undertaken and to review all survey results, both positive and negative. If any Indiana bats and/or gray bats are identified, we request written notification of such occurrence(s) and further coordination and consultation with you.

Surveys would not be necessary if sufficient site-specific information was available that showed: (1) that there is no potentially suitable habitat within the project area or its vicinity or (2) that the species would not be present within the project area or its vicinity due to site-specific factors. Please provide us with a written justification or explanation if either apply to the proposed project.

Thank you for the opportunity to comment on this proposed action. If you have any questions regarding the information which we have provided, please contact Mindi Brady at (502)/695-0468 (ext.229).

Sincerely,



Virgil Lee Andrews, Jr.
Field Supervisor



DIV OF PLANNING

2003 DEC 17 P 2:17

The Secretary for Health Services
COMMONWEALTH OF KENTUCKY
275 EAST MAIN STREET
FRANKFORT, KENTUCKY 40621-0001
(502) 564-7042

ERNIE FLETCHER
GOVERNOR

JAMES W. HOLSINGER, JR., M.D., PH.D.
SECRETARY

December 15, 2003

Annette Coffey, P.E., Director
Division of Planning
Kentucky Transportation Cabinet
125 Holmes Street
Frankfort, KY 40622

Dear Ms. Coffey:

This is in response to your request to review a planning study to determine the need and potential impacts for a proposed highway project in Graves County. Please be advised, this project will not impact the operations of the Cabinet for Health Services.

If I may be of further assistance to you, please feel free to contact this office.

Sincerely,

Ellen M. Heslen
Deputy Secretary

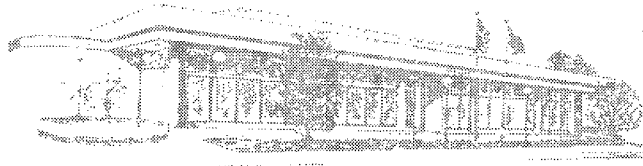
"...promoting and safeguarding the health and wellness of all Kentuckians."



EQUAL OPPORTUNITY EMPLOYER M/F/D

CITY OF MAYFIELD

Office of the Mayor
211 East Broadway
Mayfield, Kentucky 42066



Phone: (270) 247-1981
Fax: (270) 247-2485
E-mail: abyrn@cityofmayfield.org

December 8, 2003

Annette Coffey, P.E.
Director, Division of Planning
Kentucky Transportation Cabinet
125 Holmes Street
Frankfort, KY 40622

Dear Ms. Coffey:

As the Mayor of the City of Mayfield, I would like to offer the following comments on a planning study that is being used to determine the need and potential impacts for a proposed highway project that affects our community. The project is the proposed reconstruction of KY 121 from 400 feet south of Harris Lane to the intersection with KY 945 here in Graves County.

I believe this proposed construction would relieve congestion and improve capacity in this area. This point can be proven in the recently completed improvements on KY 121 from the Julian M. Carroll Parkway to just north of the Graves County High School entrance.

Also, I am convinced that this improvement would accommodate increased truck use and promote regional connectivity. Both Wickliffe and Mayfield are home to companies that generate significant numbers of trucks that travel the study corridor. KY 121 is on the National Truck Network and is the primary connector between Mayfield and Wickliffe. A Regional Industrial Park proposed north of Mayfield on US 45, if completed, could have a significant impact on traffic levels and truck percentages in the study corridor.

Please use these points as you continue to gather data for the study of this proposed improvement. If I can offer any other assistance, please do not hesitate to call.

Sincerely,

Arthur Byrn, Mayor
City of Mayfield, Kentucky

2003 DEC 15 A 11: 09
DIV OF PLANNING

FISH & WILDLIFE COMMISSION

Mike Boatwright, Paducah
Tom Baker, Bowling Green
Allen K. Gailor, Louisville
Ron Southall, Elizabethtown
Dr. James R. Rich, Taylor Mill, Chairman
Ben Frank Brown, Richmond
Doug Hensley, Hazard
Dr. Robert C. Webb, Grayson
David H. Godby, Somerset



COMMONWEALTH OF KENTUCKY
DEPARTMENT OF FISH AND WILDLIFE RESOURCES
C. THOMAS BENNETT, COMMISSIONER

December 2, 2003

Annette Coffey, P.E.
Division of Planning
Transportation Cabinet
125 Holmes St.
Frankfort, KY 40622

Re: Threatened/Endangered Species and Critical Habitat Review: KY121 Reconstruction,
Item No. 01-8100.00, Graves County, Kentucky

Dear Ms. Coffey:

The Kentucky Department of Fish and Wildlife Resources (KDFWR) has received your request for the above-referenced information. The Kentucky Fish and Wildlife Information System (KFWIS) indicates that no federally threatened or endangered species are known to occur in the Hickory 7.5 minute USGS quadrangle. The KFWIS indicates that state threatened or endangered (T&E) species are known to occur in the Hickory 7.5 minute USGS quadrangle, but are not found in the vicinity of this project. Please be aware that our database system is a dynamic one that only represents our current knowledge of the various species distributions.

Due to the nature of the project, KDFWR does not anticipate impacts to critical habitat or fish and wildlife.

I hope this information will be helpful to you. Should you require additional information, please contact me at (502) 564-7109, ext. 366.

Sincerely,

A handwritten signature in cursive script that reads "Brad Pendley".

Brad Pendley
Wildlife Biologist

cc: Environmental Section File

2003 DEC -4 P 2: 29
DIV OF PLANNING



HENRY C. LIST
SECRETARY



PAUL E. PATTON
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
DIVISION FOR AIR QUALITY
803 SCHENKEL LN
FRANKFORT KY 40601-1403

December 3, 2003

DIV OF PLANNING
2003 DEC -4 P 2:28

Ms. Annette Coffey, P.E.
Director, Division of Planning
Kentucky Transportation Cabinet
125 Holmes Street
Frankfort, Kentucky 40622

Dear Ms. Coffey,

The Division has reviewed the Planning Study for the proposed reconstruction highway project on KY 121 from 400 feet south of Harris Lane to the intersection with KY 945 in Graves County, Item Number 01-8100.00. The following Kentucky Administrative Regulations apply to this proposed project:

Kentucky Division for Air Quality Regulation **401 KAR 63:010** Fugitive Emissions states that no person shall cause, suffer, or allow any material to be handled, processed, transported, or stored without taking reasonable precaution to prevent particulate matter from becoming airborne. Additional requirements include the covering of open bodied trucks, operating outside the work area transporting materials likely to become airborne, and that no one shall allow earth or other material being transported by truck or earth moving equipment to be deposited onto a paved street or roadway. Please note the attached Fugitive Emissions Fact Sheet.

Kentucky Division for Air Quality Regulation **401 KAR 63:005** states that open burning is prohibited. Open Burning is defined as the burning of any matter in such a manner that the products of combustion resulting from the burning are emitted directly into the outdoor atmosphere without passing through a stack or chimney. However, open burning may be utilized for the expressed purposes listed on the attached Open Burning Fact Sheet incorporated by reference in 401 KAR 63:005 Section 3, Prohibition of Open Burning.

Finally, the projects listed in this document must meet the conformity requirements of the Clean Air Act as amended and the transportation planning provisions of Title 23 and Title 49 of United States Code.

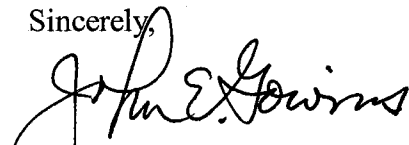


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Ms. Annette Coffey Letter
December 3, 2003
Page 2

Every effort should be made to maintain compliance with the preceding regulations and requirements. The Division also suggests an investigation into compliance with applicable regulations in the local governments. If there are any questions relating to this matter, please contact me at (502) 573-3382 extension 347.

Sincerely,

A handwritten signature in black ink that reads "John E. Gowins". The signature is written in a cursive style with a large, looping initial "J".

John E. Gowins
Supervisor, Evaluation Section
Program Planning & Administration Branch

JEG/jmf

Attachments

Kentucky Intergovernmental Review Process

Division for Air Quality – Fugitive Emissions Comments

The project to which this comment is attached involves construction, renovation, demolition, or some other activity, which might result in the generation of fugitive emissions. The Kentucky Division for Air Quality conditionally approves the proposed project, contingent upon conformance with regulatory requirements for fugitive emissions. The information listed below provides guidelines on Kentucky's fugitive emissions regulations:

Fugitive Emissions means the emissions of any air contaminant into the open air other than from a stack or air pollution control equipment exhaust.

Affected Facility means an apparatus, operation, road which emits or may emit fugitive emissions provided that the fugitive emissions from such facility are not elsewhere subject to an opacity standard within the administrative regulations of the Division for Air Quality.

Open Air means the air outside buildings, structures, and equipment.

Kentucky Division for Air Quality Regulation 401 KAR 63:010 states that no person shall cause, suffer, or allow any material to be handled, processed, transported, or stored; a building or its appurtenances to be constructed, altered, repaired, or demolished, or a road to be used without taking reasonable precaution to prevent particulate matter from becoming airborne. Such reasonable precautions shall include, when applicable, but not be limited to the following:

- Use, where possible, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operation, the grading of roads or the clearing of land.
- Application and maintenance of asphalt, oil, water, or suitable chemicals on roads materials stockpiles, and other surfaces which can create airborne dusts.
- Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials, or the use of water sprays or other measures to suppress the dust emission during handling. Adequate containment methods shall be employed during sandblasting or other similar operations.
- Covering at all times, when in motion, open bodied trucks transporting materials likely to become airborne.
- The maintenance of paved roadways in a clean condition.
- The prompt removal of earth or other material from a paved street, which earth or other material has been transported thereto by trucking or earth moving equipment or erosion by water.

- No person shall cause or permit the discharge of visible fugitive dust emissions beyond the lot line of the property on which the emissions originate.
- When dust, fumes, gases, mist, odorous matter, vapors, or any combination thereof escape from a building or equipment in such a manner and amount as to cause a nuisance or to violate any administrative regulation, the secretary may order that the building or equipment in which processing, handling, and storage are done be tightly closed and ventilated in such a way that all air and gases and air or gas-borne material leaving the building or equipment are treated by removal or destruction of air contaminants before discharge to the open air.
- The provisions of this administrative regulation shall not apply to agricultural practices, such as tilling of the land or application of fertilizers, which take place on a farm.
- At all times when in motion, open bodied trucks, operating outside company property, transporting materials likely to become airborne shall be covered.
- Agricultural practices, such as tillage of land or application of fertilizers, which take place on a farm shall be conducted in such a manner as to not create a nuisance to others residing in the area. Agricultural practices are not subject to the opacity standard.
- The provisions of Section 3(1) and (2) of this administrative regulation shall not be applicable to temporary blasting or construction operations.
- No one shall allow earth or other materials being transported by truck or earth moving equipment to be deposited onto a paved street or roadway.

The requirements for Fugitive Emissions may found in the following regulation:

401 KAR 63:010 Fugitive Emissions

Questions may be directed to the Division for Air Quality, Field Operations Branch, at 502-573-3382.

Kentucky Intergovernmental Review Process Division for Air Quality – Open Burning Comments

The project to which this comment is attached involves construction, renovation, demolition, or some other activity which might result in the accumulation of materials and/or debris which is subject to disposal. The Kentucky Division for Air Quality conditionally approves the proposed project, contingent upon conformance with open burning prohibitions. Open burning is generally prohibited and the information listed below provides guidelines on Kentucky's open burning regulations:

Open burning means the burning of any matter in such a manner that the products of combustion resulting from the burning are emitted directly into the outdoor atmosphere without passing through a stack or chimney.

Kentucky Division for Air Quality Regulation 401 KAR 63:005 states that no person shall open burn. Fires may be set for the following purposes, provided that they do not violate any of the provisions of KRS Chapter 149, 150, 227, or any other law of the Commonwealth of Kentucky, including local ordinances:

- Noncommercial food preparation for human consumption.
- Recreational or ceremonial purposes.
- Comfort heating, providing excessive or unusual smoke is not created.
- Weed abatement, disease, and pest prevention.
- Prevention of a fire hazard, including the disposal of dangerous materials where no safe alternative is available.
- Bona fide instruction and training of public and industrial employees in the methods of fighting fires.
- Recognized agricultural, silvicultural, range, and wildlife management practices.
- Burning of leaves by individual homeowners except in cities with populations greater than 8,000.
- Disposal of household paper products, originating at dwellings of five (5) family units or less, which fires are maintained by an occupant of the dwelling at the dwelling, except in cities with populations greater than 8,000.
- Disposing of accidental spills leaks of crude oil, petroleum products or other organic materials, and the disposal of absorbent material used in their removal, where no other economically feasible means of disposal is available and practical and provided permission is obtained from the Cabinet prior to burning.
- Disposal of natural growth for land clearing, and trees and tree limbs felled by storms, provided that no extraneous material such as tires or heavy oil which tend to produce dense smoke are used to cause ignition or aid combustion and the burning is done on sunny days with mild winds. With respect to particulate matter, the emissions from such fires shall not be equal to or greater than 40% opacity.

The Division of Forestry advises that precautions be taken when open burning materials which can be burned. Burn only between 4:30pm and midnight, if you are within 150 feet of the woods during spring and fall fire hazard season (March 1 – May 15 & October 1 – December 15). During other months of the year, the Division for Air Quality however, advises to burn legal materials on sunny days with mild winds, in order to have conditions for good dispersion of the pollutants.

The environmental concerns relating to air quality include the toxic emissions from the combustion of asphaltic shingles, painted or treated wood, insulation on wiring, and synthetic materials such as carpeting, carpet pads, and upholstery; lead from lead based painted materials; and asbestos emissions from pipe lagging, transite siding shingles, or asbestos contained in asphaltic roofing shingles. Applicable air quality regulations include:

401 KAR 63:005	Open burning;
401 KAR 63:020	Potentially hazardous matter or toxic substances;
401 KAR 63:022	New or modified sources emitting toxic air pollutants;
401 KAR 57:011	Asbestos standards (NESHAP); and
401 KAR 63:042	Requirements for asbestos abatement entities.

Questions may be directed to the Division for Air Quality, Field Operations Branch, at 502-573-3382.

C-17 Geotech
Blevins

A-2

MEMORANDUM

P-12-03 DIV OF PLANNING
2003 DEC -3 P 2: 46

TO: Annette Coffey, P.E.
Director
Division of Planning

FROM: William Broyles P. E.
Geotechnical Engineering
Branch Manager
Division of Materials

BY: Michael Blevins P. G. *MB*
Geotechnical Branch

DATE: December 2, 2003

SUBJECT: Graves County
FD04 040 0121 012 - 017 P
KY. 121, From 400 Feet South of Harris Lane to Ky. 945.
Item 01-8100.00
Mars # 73350 01 P
Planning Study

At your request, the Branch has completed a review of the project. The project is located on the Hickory Geologic Quadrangle. The area is underlain by Alluvium, Loess, Continental Deposits and the Claiborne Formation.

The Alluvium is composed of sand, silt and gravel and has a thickness of 0-35 feet. The Loess consist mainly of silt and is highly erosive, the thickness varies and may be up to 14 feet. Continental Deposits consist of sands, gravel and clay up to 100 feet in thickness. The Claiborne Formation consists of sand and clay and can be approximately 103 feet thick. The formation is also considered erosive. The material of the Claiborne will be the least encountered, as it is outcrops only in a few areas mainly in and along stream beds.

Listed below are the branches concerns for the project area:

1) A large portion of the project will encounter Loess and Continental Deposits, which are highly erosive. Cut slopes in these materials may require flatter slopes (2 ½:1 or flatter) especially in areas with high water tables. Slope protection may be required in some case to prevent erosion. The Loess deposits cover quite a large area of the quadrangle and any corridor chosen in the study area will likely encounter these deposits. Embankment fill slopes may require flatter than normal slopes for fills higher than 15 to 20 feet in height. Sub-grade stabilization will be required throughout the project.

Memorandum
Annette Coffey, P.E.
December 2, 2003
Page-2-

2) The project is located in Seismic Risk Zone 3 which is considered as a high risk for earthquake damage. Structures should be designed accordingly.

If there are any questions, please advise.



COMMONWEALTH OF KENTUCKY
KENTUCKY STATE POLICE
919 VERSAILLES ROAD
FRANKFORT KY. 40601

DIV OF PLANNING
2003 DEC 11 P 3: 06

PAUL E. PATTON
GOVERNOR

PATRICK N. SIMPSON
COMMISSIONER

December 4, 2003

Ms. Annette Coffey, P.E.
Director, Division of Planning
Kentucky Transportation Cabinet
125 Holmes Street
Frankfort, Kentucky 40622

Dear Ms. Coffey:

I am in receipt of your correspondence concerning a planning study on reconstructing KY 121 from 400 feet south of Harris Lane to the intersection with KY 945 in Graves County.

I have forwarded your remarks to Captain Steve Humphreys, Commander of the Mayfield Post. He can be reached at (270) 856-3721. Thank you for including our input during the planning stages of this development.

Sincerely,

A handwritten signature in black ink, appearing to read "Rodney W. Brewer".

Rodney W. Brewer, Lt. Colonel
Director, Division of Police Services

RB:DH:mls

cc: Patrick N. Simpson, Commissioner
Major Dean Hayes, West Troop Commander
Captain Steve Humphreys, Commander, Post 1



AN EQUAL OPPORTUNITY EMPLOYER M/F/D

HENRY C. LIST
SECRETARY



ERNIE FLETCHER
GOVERNOR

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET

DEPARTMENT FOR NATURAL RESOURCES

DIVISION OF FORESTRY

LEAH W. MACSWORDS, DIRECTOR

627 COMANCHE TRAIL

FRANKFORT, KENTUCKY 40601

December 10, 2003

Annette Coffey, P.E.
Director
Division of Planning
Kentucky Transportation Cabinet
125 Holmes Street
Frankfort, Kentucky 40622

Dear Ms. Coffey:

Re: Planning Study, Graves County
KY 121 From 400 Feet South of Harris Lane to KY 945
Item No. 01-8100.00

I asked the local district forester, Randy Hjetland, to examine this proposal and the area in concern. He reports that if the project stays within or adjacent to the current right-of-way, the Division of Forestry would have no immediate concerns. If portions of KY 121 were rerouted, some concerns would be the listed wetland and loss of forestland.

Thank you for the opportunity to comment.

Sincerely,

A handwritten signature in black ink, appearing to read "Leah W. MacSwords".

Leah W. MacSwords
Director

LWM:RH:fap

2003 DEC 11 P 3:06
DIV OF PLANNING



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DIV OF PLANNING

2003 DEC -2 P 2: 35

James C. Codell, III
Secretary of Transportation

Commonwealth of Kentucky
Transportation Cabinet
Frankfort, Kentucky 40622

Paul E. Patton
Governor

Clifford C. Linkes, P.E.
Deputy Secretary

MEMORANDUM

TO: Annette Coffey, P.E.
Director
Division of Planning

FROM: Phillip Mann *PM*
Acting Branch Manager *m:elc*
Permits Branch

DATE: December 2, 2003

RE: Graves County Study Team of KY 121 from 400 feet south of Harris Lane to KY 945
Item No. 01-8100-00

The Permits Branch has reviewed the data provided for subject study site and wish to offer the following.

1. We urge the Cabinet to classify this project and all new projects as partially controlled access facilities where possible.
2. Assuming the project is partial control access, we encourage all possible access points be set on the plans in accordance with 603 KAR 5:120, even if they are not to be constructed at that time.
3. In addition, we would like to make every effort possible to have the design speed to be the same as anticipated posted speed when the project is complete.
4. We would like to see access control fence installed with the project in the partial control access portion.
5. Please notify this office if the proposed roadway is to be placed on the National Highway System. This information is needed to assist us in regulating the installation of any outdoor advertising device.
6. If the proposed roadway is to be on the N. H. S., early notification of the final line and grade is needed. This enables us to monitor outdoor advertising devices prior to road construction being completed.
7. Please notify this office if the proposed roadway is to be placed on the National Highway System. This information is needed to assist this office in regulating the installation of any outdoor advertising device.

Thank you for the opportunity to verbalize our concerns.

DPM/elc



Ross, Steve (KYTC)

From: Greer, Daryl (KYTC)
Sent: Tuesday, November 25, 2003 12:25 PM
To: Ross, Steve (KYTC)
Subject: FW: KY 121 and Harris Lane in Graves County

-----Original Message-----

From: Coffey, Annette (KYTC)
Sent: Tuesday, November 25, 2003 12:01 PM
To: Greer, Daryl (KYTC)
Subject: FW: KY 121 and Harris Lane in Graves County

-----Original Message-----

From: Prewitt, Ben (KYTC)
Sent: Tuesday, November 25, 2003 11:58 AM
To: Annette Coffey
Cc: Arthur Pace
Subject: KY 121 and Harris Lane in Graves County

The Aeronautics Division views the subject, potential projects as unlikely to affect the Mayfield-Graves County Airport, or any other public use Kentucky airport.

Ross, Steve (KYTC)

From: Palmer-Ball, Brainard (NREPC, KSNPC)
Sent: Wednesday, November 26, 2003 8:44 AM
To: Ross, Steve (KYTC)
Subject: KSNPC response to planning study announcement

TO: Steve Ross/Annette Coffey, KTC/Division of Planning

FROM: Brainard Palmer-Ball, Jr., KSNPC

DATE: November 26, 2003

RE: Planning Study for KY 121 NW of Mayfield, Graves Co.

KSNPC has reviewed the Planning Study summary. A review of our natural heritage database revealed the presence of no KSNPC-listed species or unique natural areas that we believe would be directly impacted by implementation of the project

MINUTES

Programming Study –Team Meeting 2 Graves County, Item No. 01-8100 KY 121 from 440 Feet South of Harris Lane to Intersection KY 945

Meeting Location -Video Conference Sites: Kentucky State University, Frankfort; Paducah Community College, Paducah

Meeting Date: June 24, 2004

Introductions

The meeting began at 2:00 P.M. Eastern Daylight Time. Attendees introduced themselves. Those present were:

Paducah Video Conference Site
Stacey Courtney Purchase ADD
Tim Choate D-01 Preconstruction
Chris Kuntz D-01 Design
Jason Looper D-01 Operations
Allen Thomas D-01 Planning
Jeff Thompson D-01 Planning
Frankfort Video Conference Site
Stephen Hoefler CO Highway Design
Gary Bunch CO Environmental
Jim Wilson CO Planning
Steve Ross CO Planning

Project Purpose

Steve Ross gave a brief review of the first team meeting, project description, purpose, goals, and reviewed the agenda and objectives for this meeting. The purpose of the study is to evaluate the need to reconstruct KY 121 in Graves County from 400 feet south of Harris Lane to KY 945. The goals are to improve safety, relieve congestion and improve capacity, and to accommodate increased truck use and promote regional connectivity.

Environmental Overview

Steve Ross summarized the results of the Environmental Overview and Footprint prepared by consultant Qk4 for the study. There were no major environmental issues noted that might jeopardize reconstruction efforts. A review of the high points included:

- The topography and geology of the area consists of unconsolidated coastal plain sediments susceptible to rapid erosion.
- Of the culturally sensitive locations listed, only Mt. Zion Cemetery is within the study bounds, being 1200 feet off KY 121, shown as Site F on the north end of the study on the environmental footprint. An historic farm, Andrus Farm, is located somewhere in Mayfield, not known to be within the study area, but its exact location was not determined in the environmental overview. Meeting participants were not familiar with this farm or its location. There are no previously recorded archaeological sites but moderate potential for discovery of significant deposits.
- Thirty streams could be impacted by sedimentation from construction activities. There are 24 wetlands from 0.1 to 4.6 acres, most of which are probably created ponds
- Plant and animal life is considered typical for the area. The Kentucky Department of Fish and Wildlife Resources (KDFWR) indicated that the copperbelly water snake is known to occur in the Hickory quadrangle. It is federally listed as a threatened species in the northern part of its range but is not

federally listed in the southern part of its range, including Kentucky. It could require mitigation if suitable habitat land (i.e., wetlands) is impacted and may require more intensive field studies. The Kentucky State Nature Preserves Commission (KSNPC) identified two state threatened species from the study area: Compass plant (two sites near the study area, south side of KY 121) and Bachman's Sparrow (one site northwest and outside the study area).

- There is 40 to 50% prime farmland soil in the study area. About 31% of existing KY 121 crosses prime farmland. Some of the prime farmland value has already been compromised by development and roadway construction.
- Only two of the hazmat sites listed in the overview are within the study area: Vacant commercial property, formerly Turners Body Shop (Site 3 on footprint) has possible petroleum or hazmat from former operations and also possible asbestos containing building materials (ACBM); and Farmer's Co-op, a former gasoline station (Site 4 on footprint) has potential hazmat.
- The study area is in an air quality attainment area and improvements are not expected to adversely impact air quality in the region.
- Traffic noise should not adversely affect properties.
- The water tank on the north end of the project area near the KY 121/KY 440 intersection has been removed.

Environmental Justice

Stacey Courtney reviewed the Environmental Justice document he prepared for the study. There were no readily identifiable minority or low-income groups at the Census Tract or Block Group level. If taken down to the Census Block (CB) level, CB 4005 has a higher percentage minority population, 15.4%, than 7.9% Graves County, 9.5% Region (Purchase Area Development District), 9.4% Kentucky, but lower than 30.9% US. Note, at this level, the 15.4% represents a total minority population of only 4 (approximately one family) compared to a total CB population of 26. There is a higher percentage of elderly residents in the project area, 18.3% age 62+, compared to 14.9% Kentucky and 14.7% US, but lower than 18.8% Graves County and 19.1% Region. The numbers however, are evenly distributed with no specific concentrated populations identified. These findings should be noted in future project planning and design phases. The general conclusion is that there is no defined Environmental Justice community within the project area.

Real Estate/Relocation

Stacey Courtney supplied a handout and reviewed the real estate/relocation information he compiled for the study. There were seven deed transfers in the project area for 2002, a number he thought was higher than expected, but could be accounted for when considering that some involved property transfers between family members. Mr. Courtney reviewed other real estate market information including home characteristics, price ranges, number of homes built, number of homes on the market, available business relocations, dependence on existing location, and effect on farms and agricultural activities in the area and concluded that there are suitable relocations for residences. One lamp company indicated it would need to be located within a three to four mile radius due to other lamp businesses being located in Mayfield and competitive pressures. Mr. Courtney noted that the Eagles Club and Langston Trucking properties are located within the project area and were not included in the compiled information. Langston Trucking is located within the Y-intersection of KY 121 and KY 440. The impact to farms is expected to be minimal.

Resource Agency Coordination Responses

Steve Ross distributed a handout with a summary of all resource agency responses. The following highlights were discussed:

- The Department of the Army noted that the open water areas and wetlands have been adequately inventoried but that stream crossings would need to be documented and permitting requirements addressed for all wetlands.

- The Kentucky Geological Survey responded that the project would probably encounter pre- and or post-landslide hazards and unconsolidated sediments. They noted that no faults would be encountered but that the project is in an earthquake zone and there would be a high potential for liquefaction or slope failure in the unconsolidated sediments.
- The United States Environmental Protection Agency forwarded four population maps. No potential environmental justice areas were shown on the maps.
- The United States Department of Agriculture (USDA), Natural Resources Conservation Service responded with concerns about potential impacts upon prime farmland soils.
- The United States Department of the Interior, Fish and Wildlife Service expressed concerns over accelerated erosion and sedimentation in streams that would be most effectively prevented through Best Management Practices. Fish and Wildlife also noted that the Indiana and Gray Bat may exist within the study area.
- The City of Mayfield favors reconstruction of KY 121.
- The Kentucky Department of Fish and Wildlife does not anticipate impacts to critical habitats of fish and wildlife.
- The Division of Air Quality, Department of Environmental Protection, Natural Resources and Environmental Protection Cabinet wrote that project activities should include measures to prevent particulate matter from becoming airborne.
- KYTC Geotechnical Branch noted that highly erosive continental deposits would be encountered requiring flatter than normal cut and fill slopes. The project is located in Seismic Zone 3, which is considered a high risk for earthquake damage.
- The KYTC Permits Branch recommends all new projects be classified as partially controlled access and set all possible access points on the plan. The project team discussed this. The team had agreed in the initial team meeting that it would probably be best to recommend improvements for an access by permit facility. The team noted during this meeting that it would not be practical to classify this, or any number of other projects as partial control access, but the consideration of doing so would be documented in the report write-up.
- The Kentucky State Nature Preserves Commission (KSNPC) responded that no KSNPC-listed species or unique natural areas would be directly impacted.

Related Projects

- **I-66** – While the study to recommend alternatives for the location of an I-66 corridor is not yet complete, no additional project development phases are currently scheduled. That study team has looked at different locations for an Ohio or Mississippi River crossing. There are flood control features just south of the confluence of these two rivers that the Army Corps of Engineers wants to avoid. The Coast Guard also recommends a four-mile recovery distance downstream from the confluence, which will most likely set the recommended location of a new bridge. Just south of this location, on the Kentucky side, are two National Register listed historic sites that must be avoided. There are also concerns with the possibility of having to maintain the existing bridge at Wickliffe in addition to a new bridge. If a Mississippi River crossing is recommended, then KY 121 northwest of Mayfield may be a logical consideration for part of that future I-66 corridor. The team noted that the segment of KY 121 that we are studying now would probably not be included. It would be more likely to tie a future I-66 from the Julian M. Carroll Purchase Parkway into KY 121 significantly north and west of Mayfield to avoid the existing interchanges and associated development at the Parkway.
- **KY 1830** – The status of the KY 1830 reconstruction project was discussed. This project has not been deobligated but is a high priority with right-of-way acquisition going forward.
- **Regional Industrial Park** – Earlier bills to fund construction for a major regional industrial park in the Folsomdale/Viola area along US 45 north of Mayfield died in the House and Senate. More recently, \$5 million was allocated and this project is moving ahead with land acquisition.

- **I-69** – While the study to recommend an I-69 corridor is not complete, part of the I-69 corridor is expected to follow the Julian M. Carroll Purchase Parkway. If so, then traffic levels on KY 121 will probably rise more than those predicted using statewide average rates.

Study Recommendations

Steve Ross summarized issues and recommendations that were made in the February 2000 study prepared for the Division of Planning by Wilbur Smith Associates. That study looked at KY 121 between Mayfield and Wickliffe and broke the route down into priority segments, with the segment between the Julian M. Carroll Purchase Parkway and KY 440 being the top priority, recommending two-lane improvements on four-lane right-of-way. Improving the KY 440 intersection was Priority 2 from that study.

This study team suggested several different improvement alternatives, considering recent KY 121 improvements between the current study segment and the Julian M. Carroll Purchase Parkway. Also considered were new schools along KY 121 and KY 1830, planned improvements to KY 1830, a planned Regional Industrial Park north of Mayfield, future I-66 and I-69 corridors, crash statistics, current and projected traffic and levels of service, truck percentages, environmental issues, relative cost and available resources. Suggested improvements were, do nothing, spot, two-lane, two-lane on four-lane right-of-way, three-lane, four-lane, and super-two on five-lane right-of-way.

- **Do nothing** – This alternative does not address any of the project goals or purpose. No team members were in favor of a do-nothing recommendation.
- **Spot Improvements** – For this study segment of KY 121, the only spot location of serious concern to the team was the Y-intersection at KY 440. An extreme skew combine with a crest vertical curve to reduce the sight distance at this location. A short, “unofficial” cut-across just west of the intersection is used by local traffic to negotiate turning movements. The northern study terminus was extended to the KY 945 intersection since it also is on a skew and would possibly be affected by any improvements made at the KY 440 intersection. KY 1276 also intersects KY 121 on a skew. Statistically there are no crash problems at any of these intersections. While no team members recommended spot improvements as their first choice, most agreed that at the very least, improvements need to be made at the KY 440 intersection.
- **Two-lane** – Current level of service for the segment is D, as is the 2030 projected level of service. There are no crash problems on this segment compared to similar roads in Kentucky. KY 121 is on the National Truck Network (NN) and is the primary link between Mayfield and Wickliffe. Right-of-way funds have been allocated for a major Regional Industrial Park north of Mayfield along US 45 in the Viola-Folsomdale area. This industrial park, as well as a proposed I-66 and I-69 would most likely increase traffic levels and truck percentages along KY 121. Timing and specific locations for the proposed interstates are still undecided though we will look at traffic projections for the most likely location for I-69. I-66 could possibly use the KY 121 corridor in the future but will most likely tie in north and west of Mayfield from the Julian M. Carroll Purchase Parkway (future I-69). Two-lane improvements in the form of lane and shoulder widening would improve the ability to handle trucks on KY 121 but would not do anything significant to reduce congestion or improve level of service. No team members were in favor of two-lane only improvements.
- **Three-lane** - According to the Highway Capacity Manual, two-lane with two-way left-turn lane (TWLTL) improvements do not have a formal methodology for evaluating operational effectiveness. At current or projected traffic levels, no significant operational improvements are expected by adding a two-way left-turn lane (TWLTL). A TWLTL might be considered if there was a crash problem, especially a problem with rear-end crashes. No team members favored three-lane improvements.
- **Two-lane on four-lane right-of-way** – This was the recommendation made for this segment of KY 121 in the 2000 Wilbur Smith Associates study. Team members noted that this recommendation

would involve going off alignment due to the additional right-of-way needed, but would still fall within the project study corridor. This improvement would have the same advantages as the two-lane improvements noted above, with the added benefit of being able to provide additional capacity if needed in the future. The disadvantage would be the additional right-of-way costs. No team members favored of this alternative.

- **Four-lane** – Four lane improvements would involve either a four-lane rural divided section, or four-lane urban section with a TWLTL. The biggest advantage for either the rural or urban case, is that either would improve the current LOS from D to A, and would accommodate increases in traffic, improving the projected 2030 LOS from LOS D to A. The downside is that this improvement may be more than is needed given the traffic levels now and the uncertainty of what will be needed in the future. Several team members spoke in favor of four-lane improvements, suggesting urban improvements from KY 1830 out to KY 1276 and then either a rural or urban section west of KY 1276.
- **Super-two on five-lane right-of-way** - This alternative would have the same benefits as the two-lane improvements noted above with the advantages of being able to accommodate future increases in traffic if needed. The disadvantage is the same as that for the two-on-four case above, that it would require additional right-of-way. However, the right-of-way requirements would be less for the super-two compared to the two-on-four case and have a better chance to stay on the existing alignment. Several team members favored the super-two on five-lane right-of-way recommendation.

Before finalizing a recommendation, the team suggested getting KY 121 traffic projections taking into consideration a future I-69 corridor built along the Julian M. Carroll Purchase Parkway. The traffic projections will be requested from the Division of Multimodal Programs and evaluated to see if there is further justification to go to a four or five-lane recommendation. If not, the recommendation will be for a super-two on five-lane right-of-way.

The meeting adjourned at approximately 3:40 P.M. Eastern Daylight Time.

AGENDA
Team Meeting 2

Graves County, Item No. 01-8100
KY 121 from 400 South of Harris Lane to the KY 945 Intersection

Video Conference Locations: Paducah Community College
Sitecode: KC-Paducah CC Rm 101
4810 Alben Barkley Drive
Crounce Hall, Room 101
Paducah, KY 42002
Capacity: 94
Phone: (270) 534-3136
Room Phone: (270) 534-3141
Contact: Ellis Jones, Ruby Rodgers

Kentucky State University
Sitecode: OT-KSU509
University Drive, 275 E. Main St.
Academic Services Bldg., 5th Floor, Room 509
Frankfort, KY 40601
Capacity: 18
Phone: (502) 597-5050
Room Phone: (502) 597-5048
Contact: N'Namdi Paskins

Meeting Date: June 24, 2004

Meeting Time: 2:00 PM – 4:00 PM Eastern Time, (1:00 PM – 3:00 PM Central)

- 1) Introductions & Purpose
- 2) Environmental Overview
- 3) Environmental Justice
- 4) Resource Agency Coordination Responses
- 5) Related Projects
 - a) I66
 - b) KY 1830
 - c) Regional Industrial Park
- 6) Other
- 7) Study Recommendations

**Graves County Traffic Forecasts
KY 121 from 400' South of Harris Lane
to the KY 945 Intersection
Item # 1-8100.00**



Division of Multimodal Programs

October 12, 2004

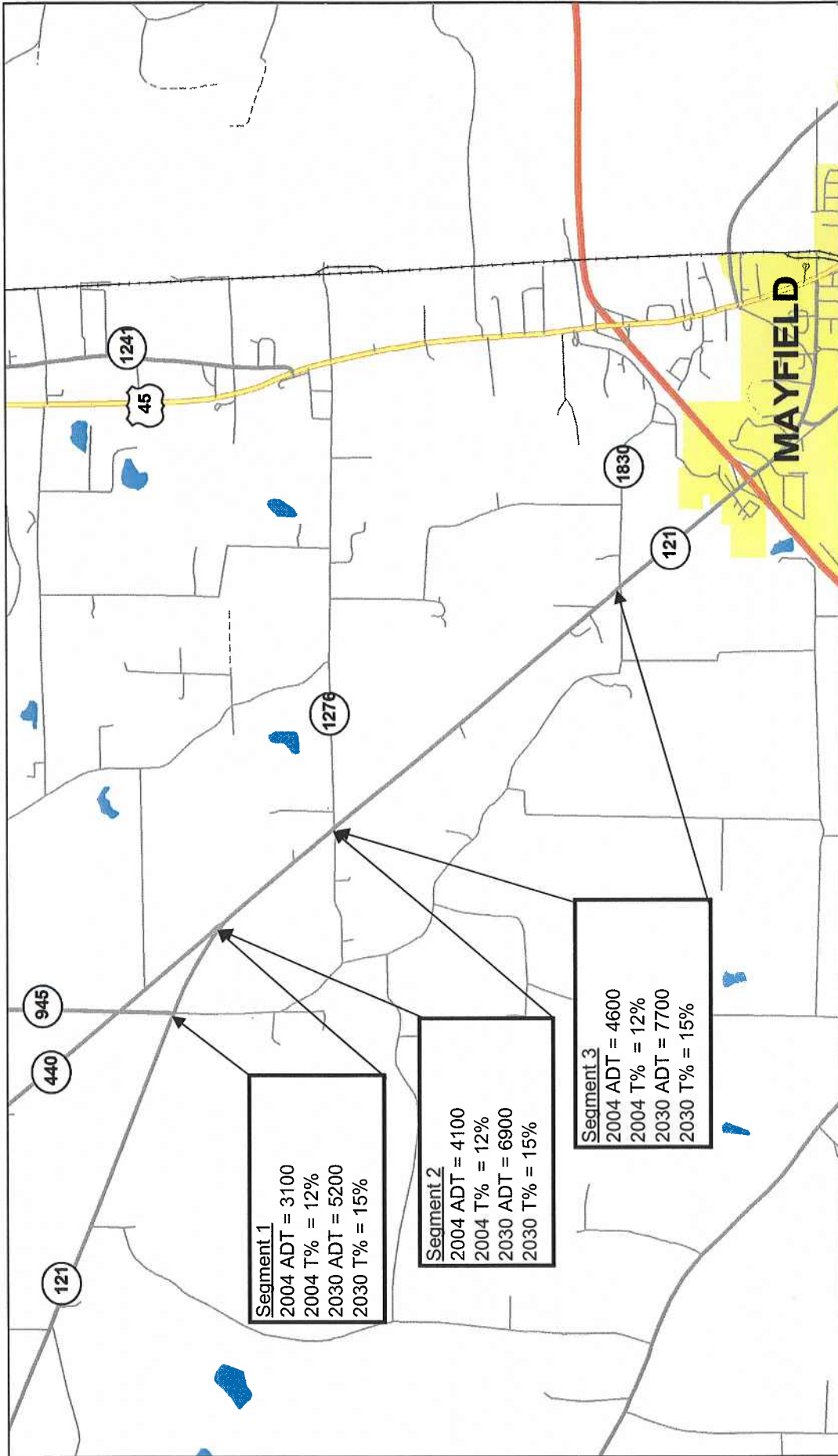
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Executive Summary

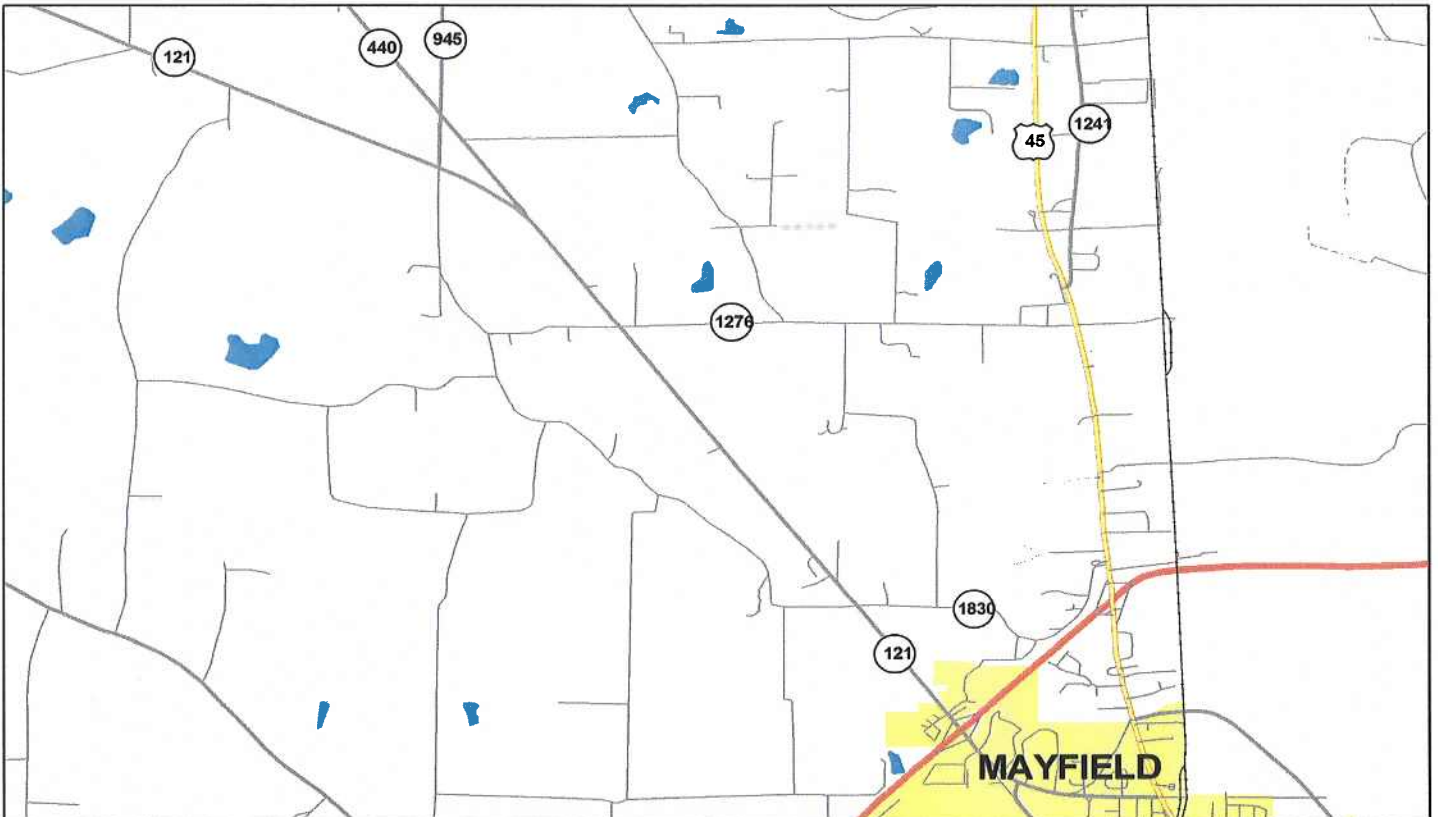
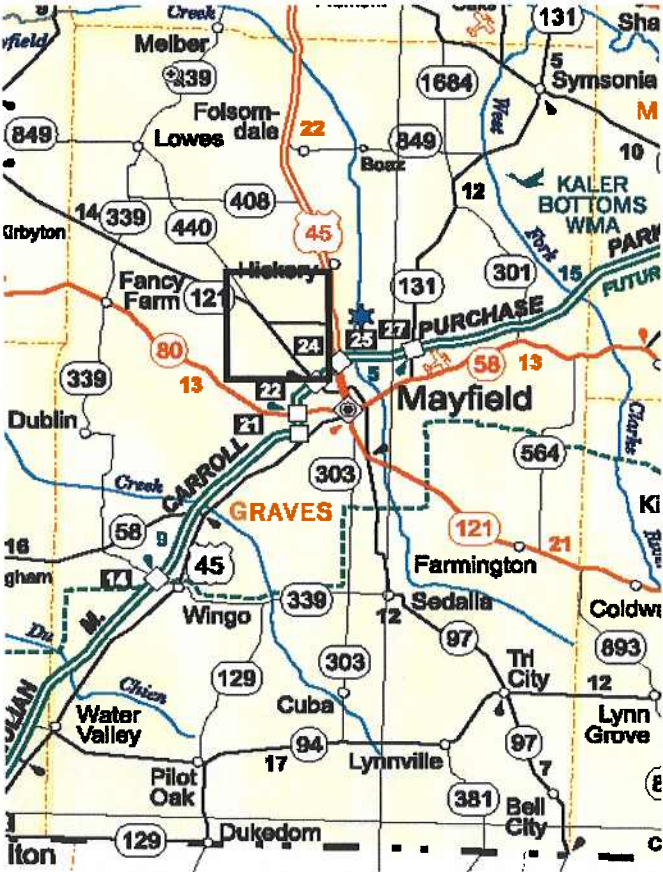
Vicinity Map

Traffic Forecasts Summary

Graves County
KY 121 from 400' South of Harris Lane to the KY 945 Intersection
Item # 1-8100.00 (Build)



Graves County
KY 121 from 400' South of Harris Lane to the KY 945 Intersection
Item # 1-8100.00
Vicinity Map



Executive Summary

Project Description

The purpose of this project is to conduct a planning study on KY 121 from 400' South of Harris Lane to the KY 945 intersection in Graves County.

Volumes

The current year volumes for this forecast were taken from CTS program.

Growth Rate

Growth Rate Used = 2.0%

- Trend Line Analysis showed an average of 1.1% for this section of KY 121.
- Population data from the Census and population estimates made by the State Data Center are reliable indicators of travel growth. The Graves County population growth rate projected 1% per year. Since the average population growth for Kentucky is 0.72%, it is reasonable to expect a higher growth rate than the trend line analysis rate of 1.1%.

Area	1990 (Census)	2000 (Census)	90-00 GR	2030 (Est.)	00-30 GR
KY	3,686,891	4,041,769	0.96%/year	5,006,885	0.72%/year
Graves	33,550	37,028	1%/year	50,203	1%/year

Truck Percentages

Truck Percentage Used = 12%

The truck percentage was based on the aggregate class average.

I-69 and I-66 Impacts

- The Kentucky Statewide Model with I-69 showed there is no traffic impact on KY 121.
- The Kentucky Statewide Model with both I-69 and I-66 also showed there is no traffic impact on KY 121.

Industrial Park Impacts

- An assumption was made that 1000 jobs and 2000 jobs will be created for current year 2004 and future year 2030 respectively. A trip generation rate of 3.34 trips per employee in land use type of industrial park was utilized based on the Trip Generation Handbook published by Institute of Transportation Engineers. Therefore, 3340 trips and 6680 trips are generated for the current year and the future year respectively. This resulted in an additional 100 trips on KY 121 for the current year, and an additional 200 trips for the future year.
- The Mayfield model was used to verify the above assumptions. An additional 2000 industrial jobs was added to a Traffic Analysis Zone. After executing the model, the assignments showed a slight increase in traffic volumes on KY 121.