

DNA Studies

**Providing a Foundation
for Project Development**



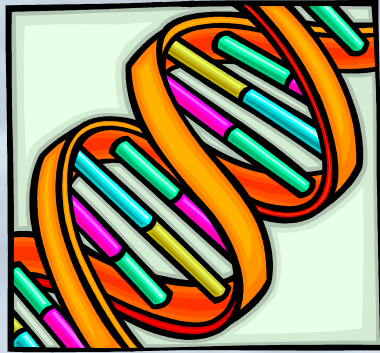
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KYTC Division of Planning

What is a DNA Study?




D a t a
N e e d s
A n a l y s i s


- Sets a direction for project development
- Different from other planning studies:
 - Low budget
 - Short time-frame
 - Limited public involvement
- Certain projects make good candidates.

Funding Highway Projects in Kentucky

Kentucky's FY2010-FY2012 Enacted Biennial Highway Plan
As Approved by the May 2010 General Assembly

**"TRANSPORTATION RELATIONSHIPS-
BALANCING RESOURCES AND MEETING THE NEEDS"**



**KENTUCKY
TRANSPORTATION
CABINET**

STEVEN L. BESHEAR
GOVERNOR
COMMONWEALTH OF KENTUCKY

JULY 2010

MICHAEL W. HANCOCK, P.E.
SECRETARY
KENTUCKY TRANSPORTATION CABINET

Goals of a DNA Study

- Establish Project Purpose & Need
- Identify and Evaluate potential alternatives
- Provide useful information to the Design Project Team

Purpose & Need

- Purpose: The problem statement
- Need: Data to justify the problem statement
- Purpose & Need: The backbone of the project



Elements of Purpose & Need

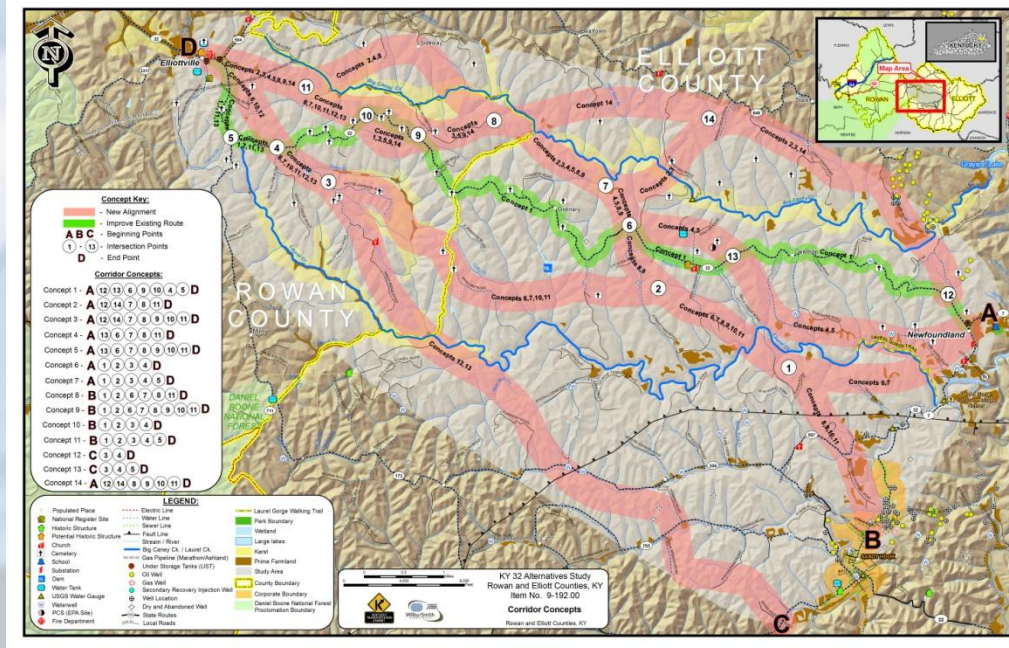
- FHWA Technical Advisory T 6640.8A,
“Guidance for Preparing and Processing
Environmental and Section 4(F) Documents”
- 9 Elements of Purpose & Need:
 - Project Status
 - Legislation
 - Social Demands/
Economic Development
 - Transportation Demand
 - Modal Interrelationships
 - System Linkage
 - Capacity
 - Safety
 - Roadway Deficiencies

Establishing Purpose & Need

- Determine Legislative Intent
- Examine Available Data:
 - Existing Geometrics vs. Current Design Standards
 - Condition of Structures
 - Crash Data
 - Existing and Projected Level of Service
- Generate Purpose & Need Statement

Identify & Evaluate Alternatives

- How well do alternatives address Purpose & Need?
- What is the estimated cost?



Provide Useful Information to the Design Project Team

- Existing & Projected Traffic Volumes
- Safety Issues
- Potential Environmental Concerns
- Flood Plain Maps
- Draft Purpose & Need Statement
- Range of Alternatives with Cost Estimates

Case Study: Springdale Road

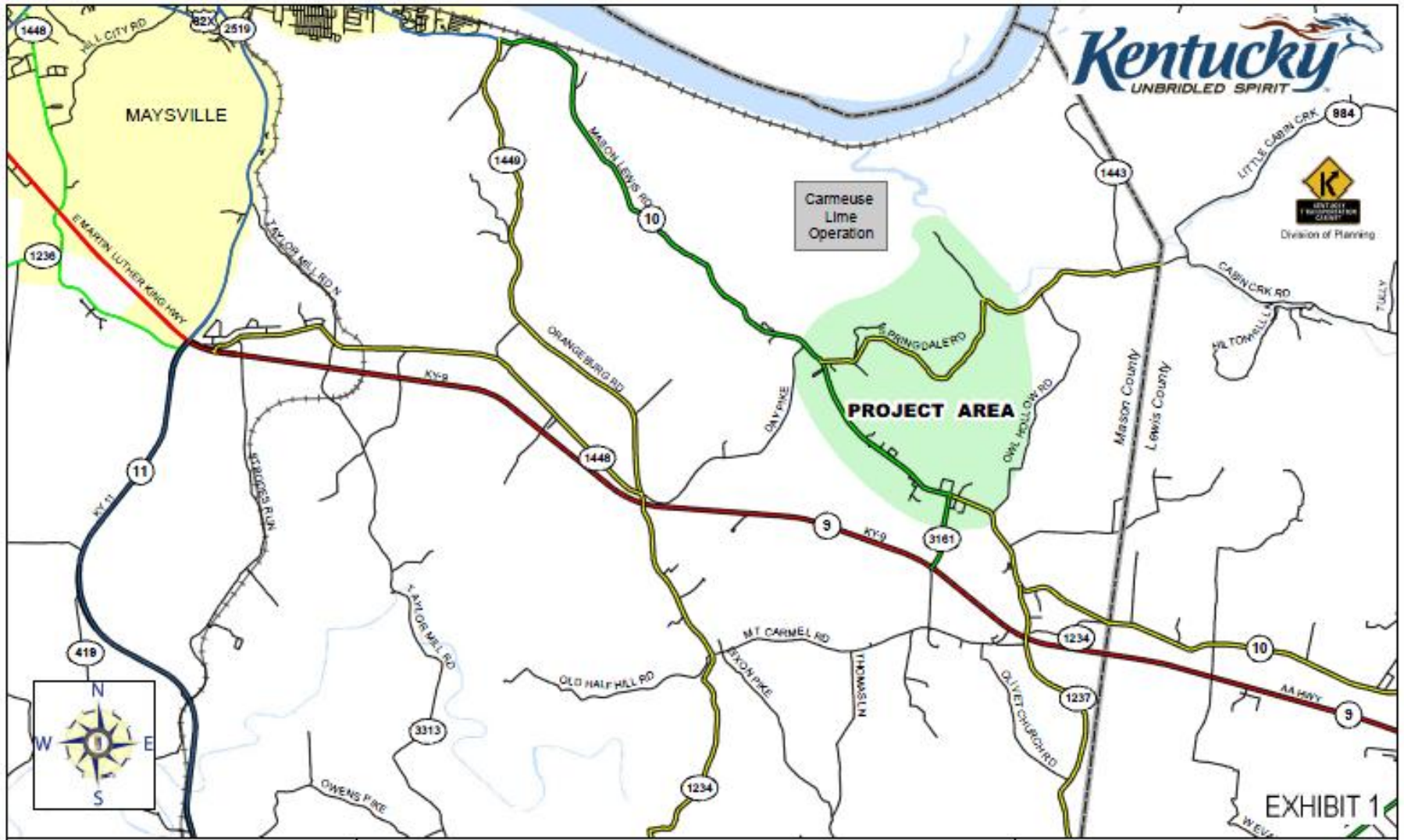
MASON	2008	09	8505.00	KY-3161
			Parent No.:	
	2008	09	8505.00	

CONSTRUCT A NEW ACCESS ROAD VIA KY-3161 (CARMUESE LINE). (08CCN)
 Mileposts: From:0 To: .579
 Purpose and Need: RELIABILITY / DESIGN ENGINEERING(O)

Total \$5,500,000

FUNDING	PHASE	YEAR	AMOUNT
SPB	D	2010	\$500,000
		Total	\$500,000

Project Location

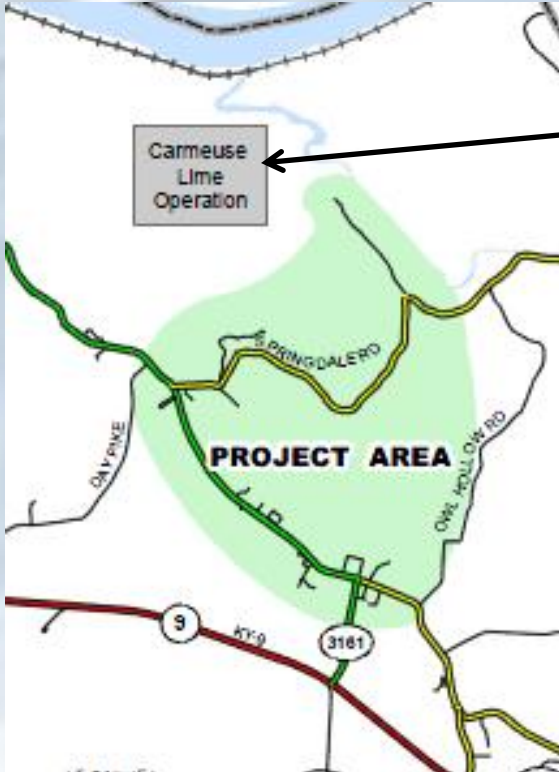


KY 3161



KY 3161 facing North

Carmeuse Lime Operation



Springdale Road

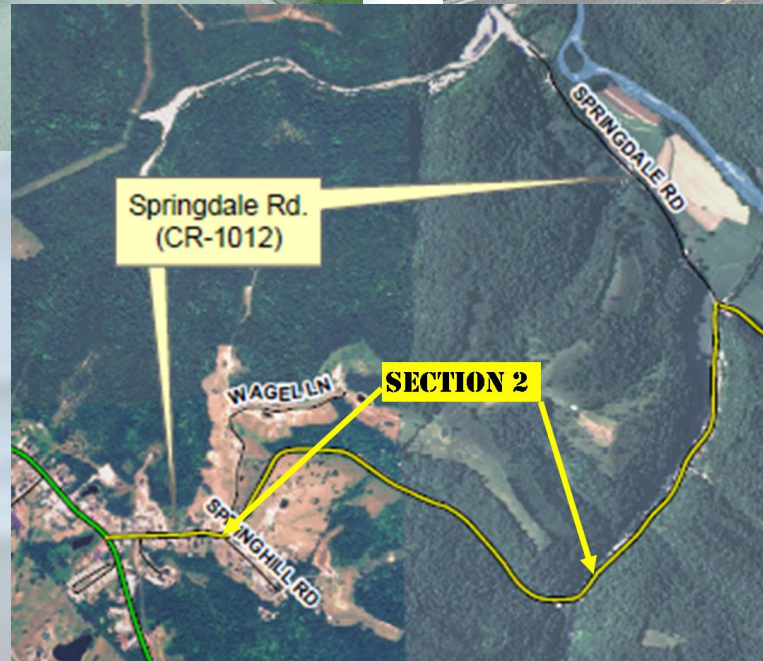


- Only way for trucks to access Carmeuse.
- County-maintained roadway
- Two 9' Lanes
- 1-3' shoulders
- Design speed: ~25 MPH at some locations
- Recommended: 40 MPH

Springdale Road



Springdale Road



Springdale Road

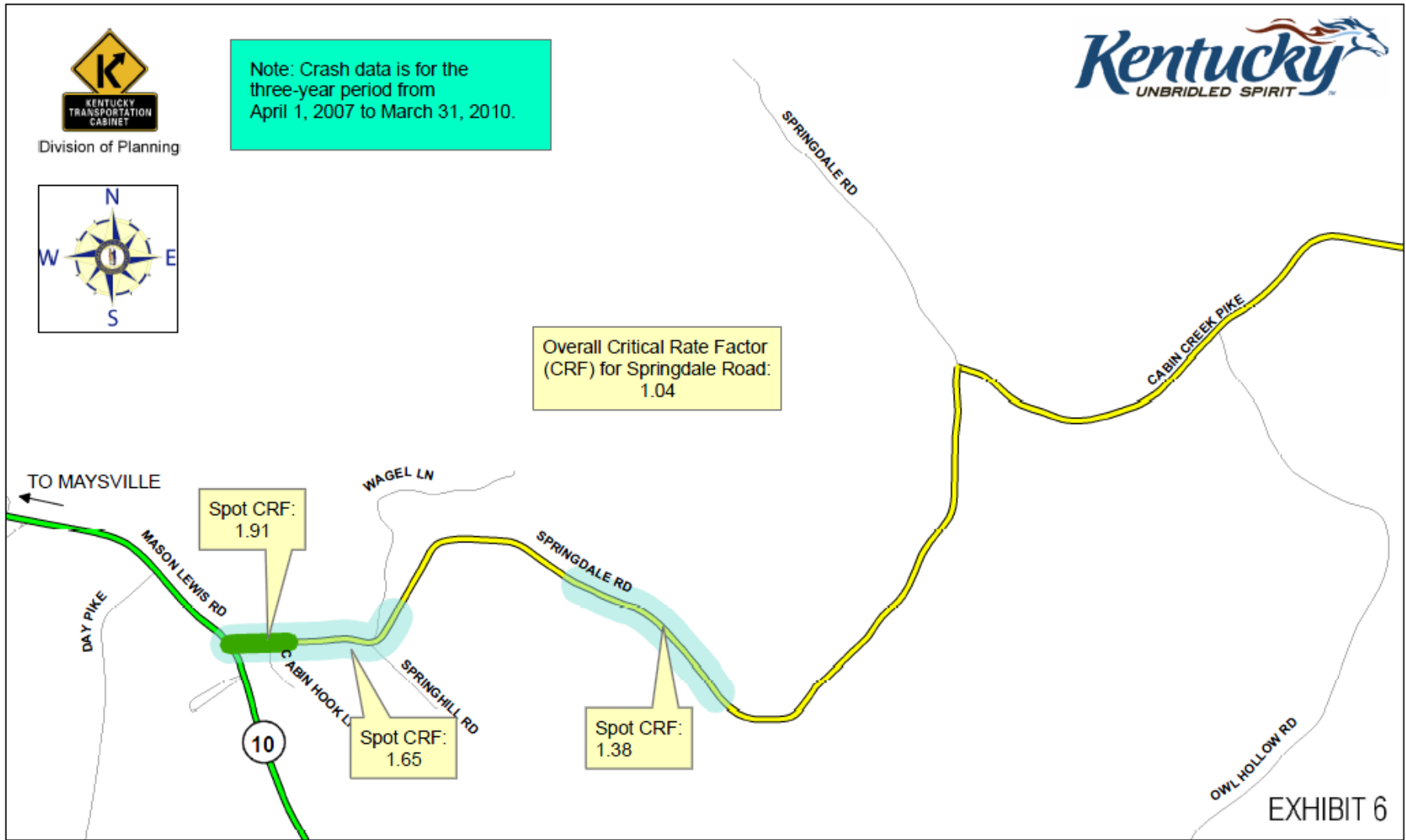


Traffic Data

- Year 2010: 1,140 VPD
- Year 2040: 1,540 VPD
- 24% Trucks



Crash Rates



Crash Details

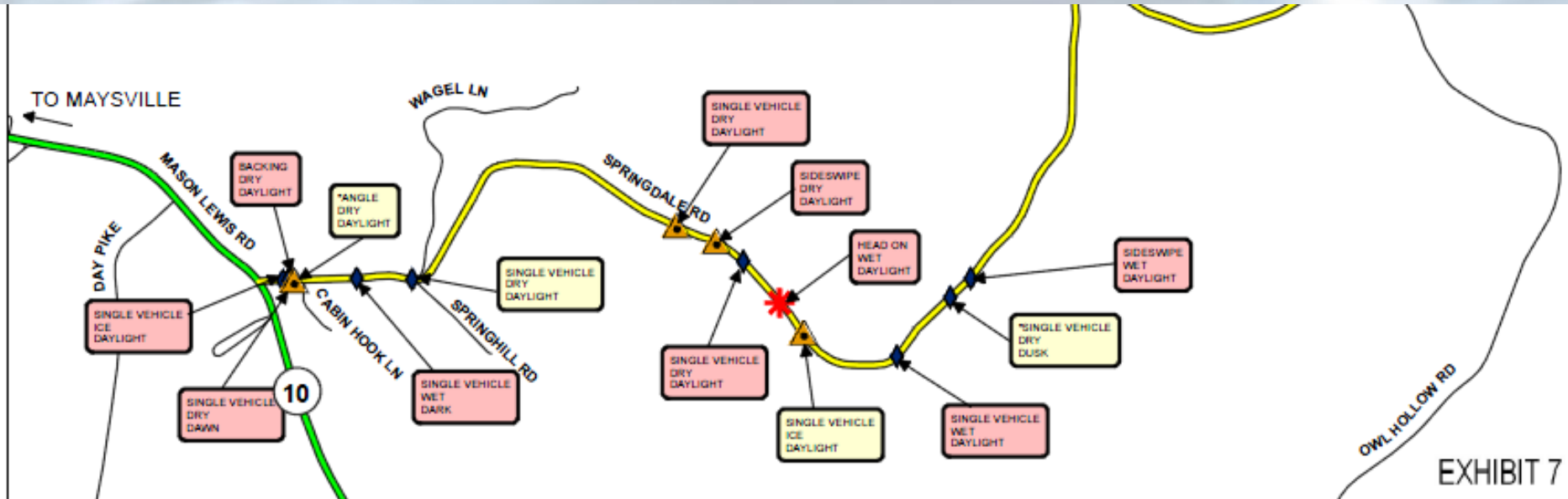


EXHIBIT 7



Legend

- Rural Major Collector
- Rural Minor Collector
- Other Roads
- Water Features

Crashes identified by a rose-colored box involved a heavy vehicle.

*Crashes identified by an asterisk may have involved a heavy vehicle; crash report was unavailable.

Crash Severity

- Fatality
- Injury
- Property Damage Only

CRASH DETAILS FOR SPRINGDALE ROAD

KY 3161 Access Road
KYTC Item No. 9-8505.00

Source: Kentucky State Police, July 2010

0 0.25 0.5 Miles

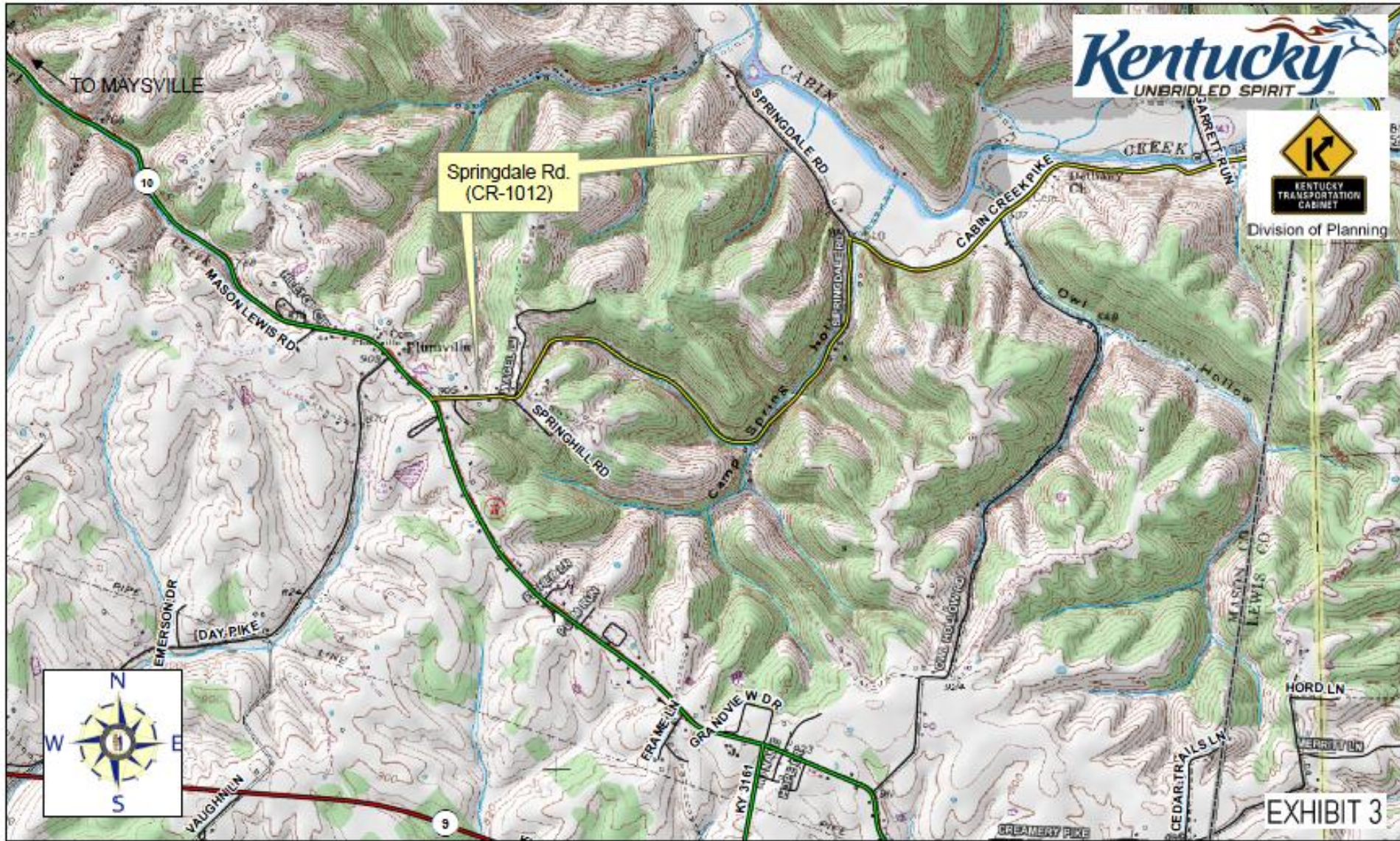
Draft Purpose & Need

- Purpose:
 - Improve access to the Carmeuse Lime operation, which is the largest employer in Mason County and surrounding counties.
 - Improve connectivity in northeastern Mason County
 - Improve safety on Springdale Road and other area roadways
 - Reduce maintenance issues on area roadways associated with high volumes of heavy vehicles.

Draft Purpose & Need

- Need:
 - There is currently poor access to the Carmeuse Lime operation due to substandard horizontal curves, vertical curves, and lane and shoulder widths.
 - Both bridges on Springdale Road are functionally obsolete.
 - Springdale Road is prone to flooding in the area near the Carmeuse Lime operation.
 - Springdale Road carries a high percentage of heavy vehicles.
 - Springdale Road has a high crash rate, with an overall critical rate factor greater than 1.00.
 - Better access is needed between the Carmeuse Lime operation and major arterials.

Development of Alternatives



Next Steps

- Final report to be made available to design consultants with RFP.
- Recommended alternative to be selected during design phase.

Conclusion:

Advantages of DNA Studies

- Win-Win for Consultants and KYTC
- Improved Early Communication with Operations
- Design Project Manager Familiar With Project Before Starting Design.
- Expand Legislature's Description to Better Define Project Scope
- Better Understanding of Project Expectations
- AASHTO President's Transportation Award