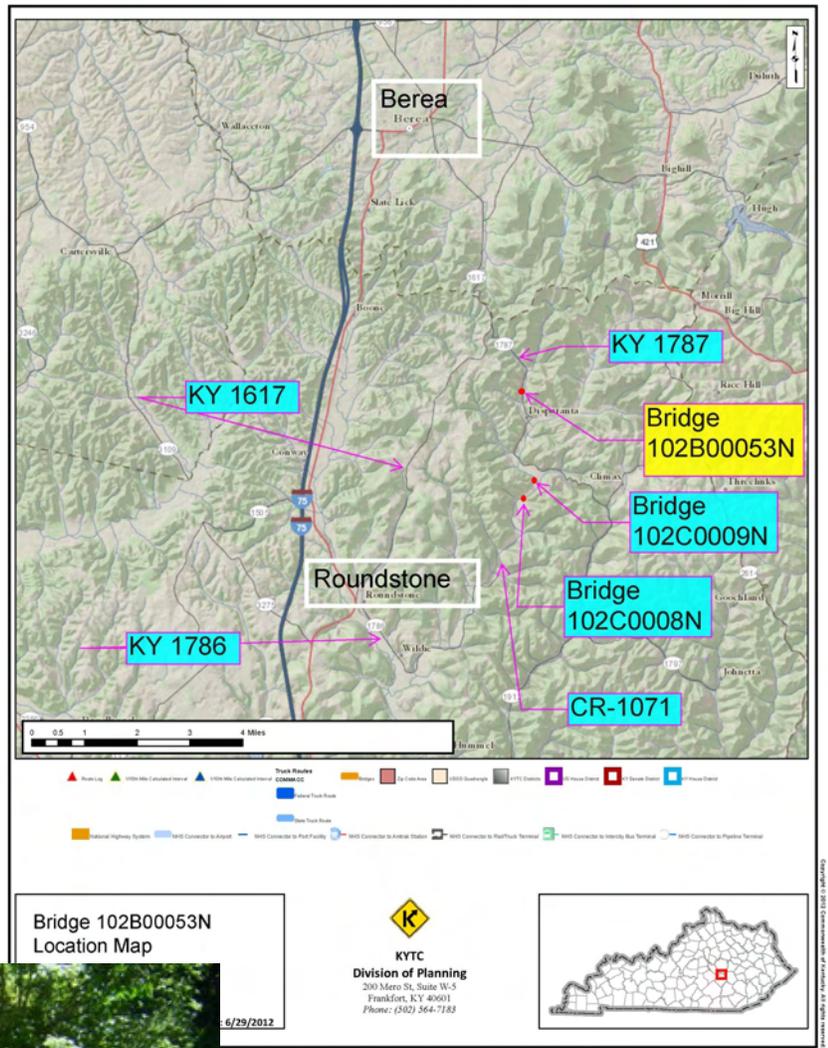


# Data Needs Analysis



**KY 1787—Rockcastle County  
Bridge Replacement  
102B00053N  
MP 3.614 to 3.654  
Item No. 8-1053.00**

Prepared by KYTC  
District 8  
Planning Section

July 2013



## Scoping Study

**I. PRELIMINARY PROJECT INFORMATION**

**County:** ROCKCASTLE **Item No.:** 8-1053.00  
**Route Number(s):** KY 1787 **Road Name:** DISPUTANTA RD.  
**Program No.:** 87560 **UPN:** FD52 102 1787 003-004  
**Federal Project No.:** BRO 0803(172) **Type of Work:** BRIDGE REPLACEMENT  
 2012 **Highway Plan Project Description:**

REPLACE BRIDGE ON KY 1787 OVER DAVIS BRANCH 0.07 S OF SALT SPRINGS HOLLOW RD. (CR-1048)  
102B00038N (should be 102B00053N)

**Beginning MP:** 3.614 **Ending MP:** 3.654 **Project Length:** 0.04  
**Functional Class.:**  Urban  Rural  Primary  Secondary  
 Collector  **State Class.:**  Primary  Secondary  
**Route is on:**  NHS  NN  Ext Wt  
**MPO Area:** Not Applicable **Truck Class.:** A  
 In TIP:  Yes  No **% Trucks:** unavailable  
**ADT (2011):** 170 **Terrain:** Mountainous  
**Access Control:**  None  Permit  Fully Controlled  Partial **Spacing:**   
**Median Type:**  Undivided  Divided (Type):   
**Existing Bike Accommodations:** Shared Lane **Ped:**  Sidewalk  
**Posted Speed:**  35 mph  45 mph  55 mph  Other (Specify):  
**KYTC Guidelines Preliminarily Based on :** 55 **MPH Proposed Design Speed**

**COMMON GEOMETRIC**

Roadway Data:	EXISTING	PRACTICES*	
No. of Lanes	2	2	<a href="#">Existing Rdwy. Plans available?</a> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Year of Plans: _____ <input type="checkbox"/> <a href="#">Traffic Forecast Requested</a> Date Requested: _____ <input type="checkbox"/> Mapping/Survey Requested Date Requested: _____ Type: _____
Lane Width	9'	11'	
Shoulder Width	1'	2'	
Max. Superelevation**		8%	
Minimum Radius**	1790'	965'	
Maximum Grade		9%	
Minimum Sight Dist.	<495'	495'	
Sidewalk Width(urban)			
Clear-zone***	<14'	14'-18'	

Project Notes/Design Exceptions?: AASHTO low volume road guidelines may be applicable in final design

\*Based on proposed Design Speed, \*\*AASHTO's A Policy on Geometric Design of Highways and Streets, \*\*\*AASHTO's Roadside Design Guide

**Bridge No.\*:** 102B00053N  
**Sufficiency Rating:** 30.6 **Existing Geotech data available?**  
**Total Length:** 32.2'  Yes  No  
**Width, curb to curb:** 18'  
**Span Lengths:** 2@16' each; concrete slab deck  
**Year Built:** 1935; BRIDGE SUBSTR. IS STACKED QUARRIED STONE BLOCK  
**Posted Weight Limit:** NONE  
**Structurally Deficient?:** YES  
**Functionally Obsolete?:** NO

**II. PROJECT PURPOSE AND NEED**

**A. Legislation**

FROM 2012 ENACTED HWY PLAN	<i>Funding</i>	<i>Phase</i>	<i>Year</i>	<i>Amount</i>
	BRO	D	2013	\$300,000
	BRO	R	2014	\$40,000
	BRO	U	2014	\$110,000
	BRO	C	2015	\$690,000

**B. Project Status**

2012 ENACTED HWY PLAN HAS BRIDGE ID INCORRECTLY LABELED. SHOULD BE 102B00053N. NO UNSCHEDULED NEED "PIF" EXISTS FOR THIS PROJECT. SEE PART A ABOVE FOR FUNDING SCHEDULE OF OUTLYING YEARS.

**C. System Linkage**

KY 1787 IS A RURAL ROUTE BETWEEN BERE A AND THE COMMUNITIES OF DISPUTANTA AND CLIMAX IN ROCKCASTLE. LOCAL TRAFFIC FROM THE COMMUNITIES OF CLIMAX AND DISPUTANTA LIKELY USE THIS ROUTE TO TRAVEL TO THE RENFRO VALLEY/MT. VERNON AND BERE A AREAS. THIS ROUTE WILL CONTINUE TO FUNCTION AS A RURAL COLLECTOR AFTER THIS PROJECT IS COMPLETED. TWO OTHER BRIDGE REPLACEMENT PROJECTS ARE LOCATED APPROX. 2 MILES SOUTH FROM THIS PROJECT ON CR-1071 WILDIE ROAD (ITEM NO. 8-1057.00 AND 8-1058.00). A U.S.G.S. BENCHMARK DISC (S161??) DATED 1950 (EL. 1047.941') IS MOUNTED IN THE CONCRETE CURB OF THE BRIDGE

**D. Modal Interrelationships**

LOCAL FARM RELATED ACTIVITIES USE THIS ROUTE.

**E. Social Demands & Economic Development**

CLIMAX DRINKING WATER BOTTLING FACILITY LIKELY USES THIS ROUTE TO SHIP THEIR PRODUCT.

**F. Transportation Demand**

DEMAND SHOULD REMAIN THE SAME FOR THE FOREESEABLE FUTURE.

## II. PROJECT PURPOSE AND NEED (cont.)

### G. Capacity

NO KNOWN ISSUES AT THIS TIME OR EXPECTED IN THE FUTURE.

### H. Safety

UPON SEARCHING THE KSP CRASH DATABASE BEGINNING YEAR 2000 AND UP TO JUNE 2012, TWO DOCUMENTED CRASHES ARE ON THIS ROAD FROM MP 2.5 TO 4.5. ONE OF THE CRASHES OCCURRED AT THIS BRIDGE LOCATION. DRIVER TRAVELLING SOUTH ON KY 1787 DURING DRY CONDITIONS RAN OFF ROAD AT BRIDGE EDGE AND LANDED ON ITS TOP IN CREEK. THE OTHER CRASH WAS FROM A VEHICLE HITTING A DOWNED TREE IN ROADWAY FROM STORM.

### I. Roadway Deficiencies

EXISTING ROADWAY WIDTH, SIGHT DISTANCE, CLEAR ZONE, AND HORIZONTAL CURVATURE DEFICIENCIES EXIST ALONG THIS ROUTE. THIS BRIDGE IS STRUCTURALLY DEFICIENT. FUNDING FOR THIS PROJECT IS THE FEDERAL BRIDGE REPLACEMENT PROGRAM, THUS, MAJOR APPROACH REALIGNMENT SHOULD ONLY BE CONSIDERED IF THE NEW BRIDGE LOCATION IS OTHER THAN THE EXISTING LOCATION. PHOTOS ARE INCLUDED IN APPENDIX A OF THIS REPORT.

### Draft Purpose and Need Statement:

**Need:** Bridge 102B00053N has a poor condition substructure, a sufficiency rating of 30.6 and is structurally deficient. The project need is to eliminate the low sufficiency rating and structural deficiencies of the existing bridge.

**Purpose:** The purpose of this study is to address the low sufficiency rating of this structurally deficient bridge.

### III. PRELIMINARY ENVIRONMENTAL OVERVIEW

#### A. Air Quality

Project is in:  Attainment area  Nonattainment or Maintenance Area  PM 2.5 County

STIP Pg. #: [redacted] TIP Pg. #: [redacted]

#### B. Archeology/Historic Resources

Known Archeological or Historic Resources are present

The existing bridge over Davis Branch (102B00053N) was constructed in 1935 and is potentially a historic structure. There may be some RoW required for this project depending on the alternate selected. Aside from the bridge itself, a complete determination of historical and archaeological impacts cannot be completed until the environmental documentation process is completed for this project.

#### C. Threatened and Endangered Species

There may be potential habitat for Indiana bat, Virginia big-eared bat, Virginia spiraea and six mussel species, however this is a preliminary statement. Until a habitat assessment is completed a full determination of biological and ecological impacts cannot be determined.

#### D. Hazardous Materials

Potentially Contaminated Sites are present  Potential Bridge or Structure Demolition

There does not appear to be potentially contaminated sites within the project area, however given the age of the structure, an asbestos survey will be required to determine if suspect ACM is present.

#### E. Permitting

Check all that may apply:  Waters of the US  MS4 area  Floodplain Impacts  Navigable Waters of the US Impacts  
Are 401/404 Permits likely to be required?  Yes  No Impacts to:  Wetlands  Stream/Lake/Pond  
 ACE LON  ACE NW  ACE IP  DOW IWQC  Special Use Waters

An LON is anticipate on this project.

#### F. Noise

Are existing or planned noise sensitive receptors adjacent to the proposed project?  Yes  No  
Is this considered a "Type I Project" according to the [KYTC Noise Analysis and Abatement Policy?](#)  Yes  No

#### G. Socioeconomic

Check all that may apply:  Low Income/Minority Populations affected  Relocations  Local Land Use Plan available  
There are no relocations on this project.

#### H. Section 4(f) or 6(f) Resources

The following are present on the project:  Section 4(f) Resources  Section 6(f) Resources

This will not be determined until the environmental documentation process has begun on this project.

Anticipated Environmental Document:

CE Level 1



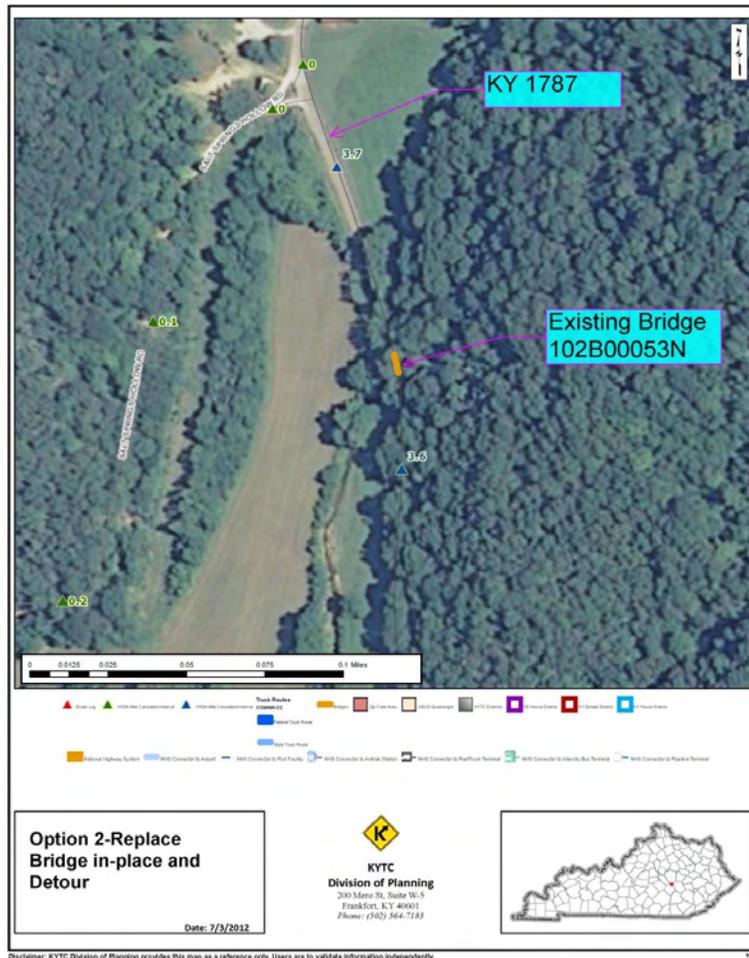
**IV. POSSIBLE ALTERNATIVES**

**A. Alternative 1: No Build**

THIS OPTION SHOULD BE CARRIED FORWARD INTO DESIGN, BUT DOES NOT ADDRESS THE PROJECT NEEDS.

**B. Alternative 2A & 2B-Replace Bridge In-Place and Detour Traffic**

REPLACE ENTIRE BRIDGE IN-PLACE WITH: 1. A SINGLE SPAN CONCRETE BEAMS AND CONCRETE DECK OR 2. A PRE-FABRICATED ALUMINUM BRIDGE STRUCTURE. THE SPAN LENGTH IS TOO LONG FOR SLAB BRIDGE. SEE DETOUR LOOP MAP AT END OF THIS REPORT. APPROX. CONSTRUCTION TIME IS **90** DAYS FOR CONCRETE OPTION AND **14** DAYS FOR PRE-FABRICATED STRUCTURE.



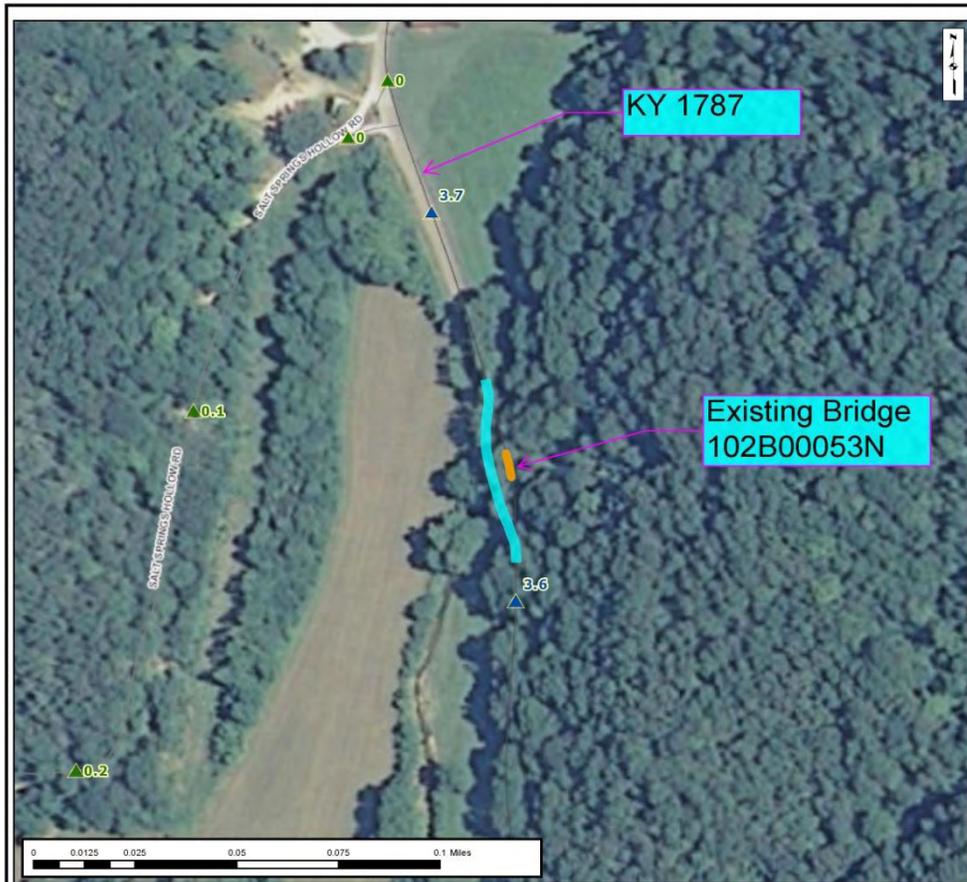
**Planning Level Cost Estimates:**

<u>Alternative 2A</u>		<u>Alternative 2B</u>	
<u>Phase</u>	<u>Estimate</u>	<u>Phase</u>	<u>Estimate</u>
Design	\$100,000	Design	\$75,000
R/W	\$8,000	R/W	\$8,000
Utilities	\$110,000	Utilities	\$110,000
Const	\$345,000	Const	\$340,000
	INCL. \$50K FOR ENV. PERMITTING/IN-LIEU FEES		INCL. \$50K FOR ENV. PERMITTING/IN-LIEU FEES
<b>Total</b>	<b>\$563,000</b>	<b>Total</b>	<b>\$533,000</b>
	concrete option		pre-fab Alum. option

**IV. POSSIBLE ALTERNATIVES (cont.)**

**C. Alternative 2C-Replace Bridge In-Place and Construct Temp. Diversion**

REPLACE ENTIRE BRIDGE IN-PLACE WITH A SINGLE SPAN CONCRETE BEAMS AND CONCRETE DECK AND CONSTRUCT TEMP. DIVERSION ON DOWNSTREAM SIDE. APPROX. CONSTRUCTION TIME IS 120 DAYS.



**Option 2C-Replace Bridge in-place Construct Temp. Diversion**  
 Date: 7/3/2012

**KYTC**  
 Division of Planning  
 200 Mero St, Suite W-5  
 Frankfort, KY 40601  
 Phone: (502) 564-7183



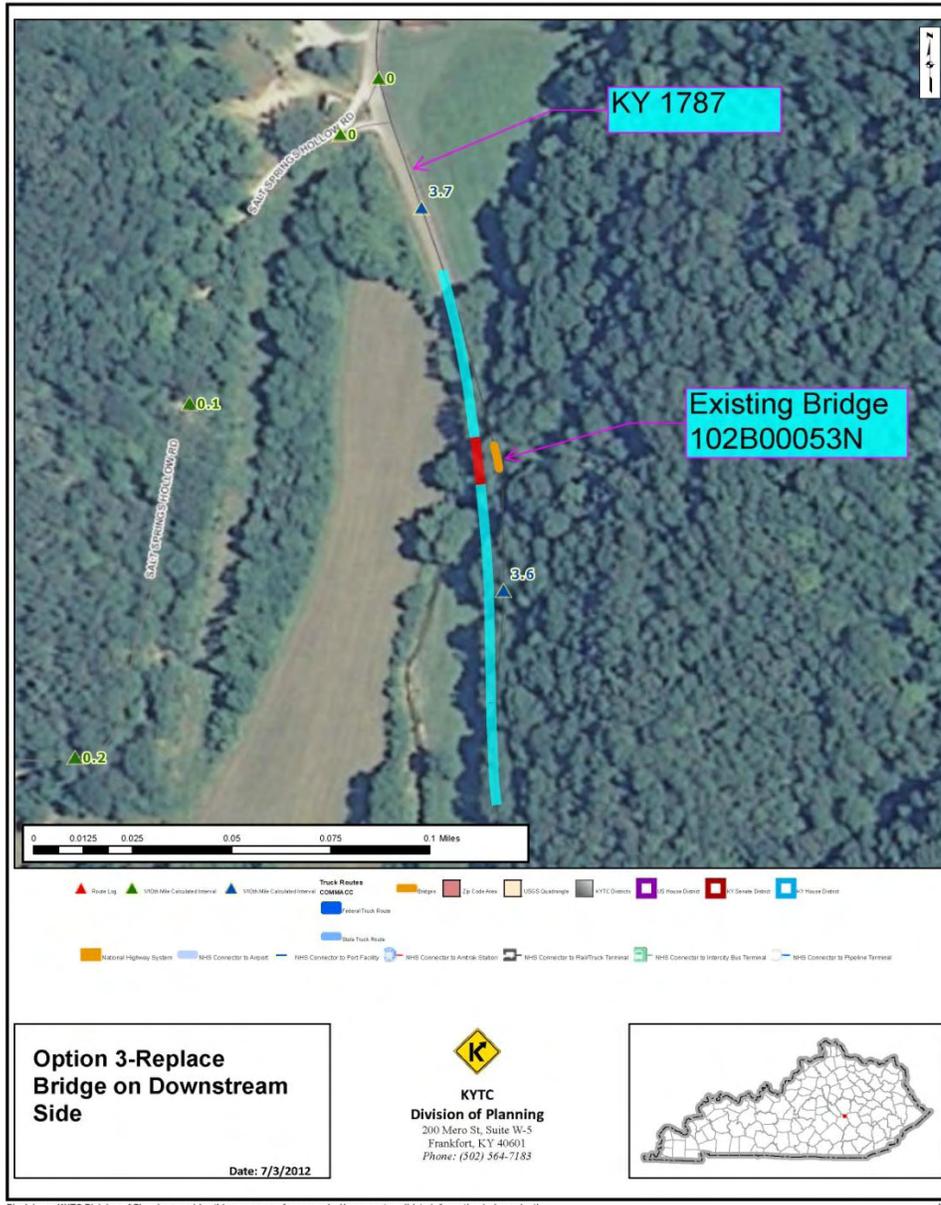
Disclaimer: KYTC Division of Planning provides this map as a reference only. Users are to validate information independently.

Phase	Estimate	
Design	\$200,000	
R/W	\$20,000	
Utilities	\$110,000	
Const	\$630,000	
<b>Total</b>	<b>\$960,000</b>	INCL. \$100K FOR ENV. PERMITTING/IN-LIEU FEES

**IV. POSSIBLE ALTERNATIVES (cont.)**

**D. Alternative #3-Leave Existing Open and Construct New Bridge on Downstream Side**

CONSTRUCT NEW BRIDGE ON DOWNSTREAM SIDE AND LEAVE EXISTING BRIDGE OPEN UNTIL NEW BRIDGE AND APPROACHES ARE COMPLETED. EXISTING BRIDGE AND APPROACHES TO BE REMOVED. APPROX. CONSTRUCTION TIME IS 90 DAYS. UPSTREAM SIDE OPTION NOT CONSIDERED DUE TO HILLSIDE.



Planning Level Cost Estimate:

Phase	Estimate
Design	\$250,000
R/W	\$30,000
Utilities	\$110,000
Const	\$676,000
<b>Total</b>	<b>\$1,066,000</b>

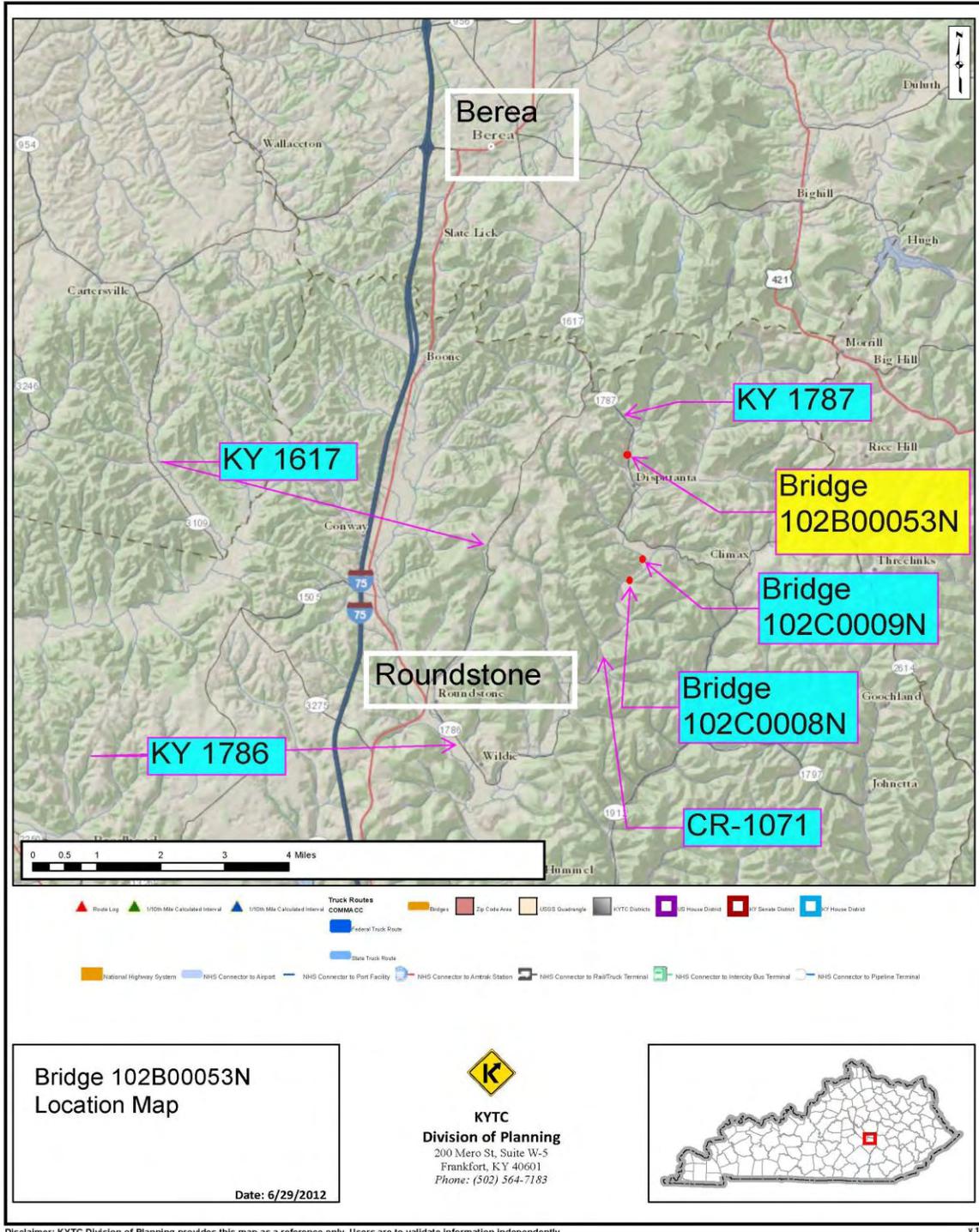
INCL. \$100K FOR ENV. PERMITTING/IN-LIEU FEES

**V. Summary**

THE PURPOSE OF THIS DNA STUDY IS TO ADDRESS THE LOW SUFFICIENCY RATING OF THE EXISTING BRIDGE. THE 2012 ENACTED HWY PLAN INCLUDES THIS PROJECT AS ITEM 8-1053.00. IN CONSIDERATION OF THE VARIOUS OPTIONS BELOW AND CONSIDERING CLOSING THE ROAD FOR AN EXTENDED PERIOD OF TIME IS UNDESIRABLE, IT IS RECOMMENDED TO SELECT AN OPTION THAT INCLUDES A DIVERSION OR LEAVING THE EXISTING OPEN DURING CONSTRUCTION.

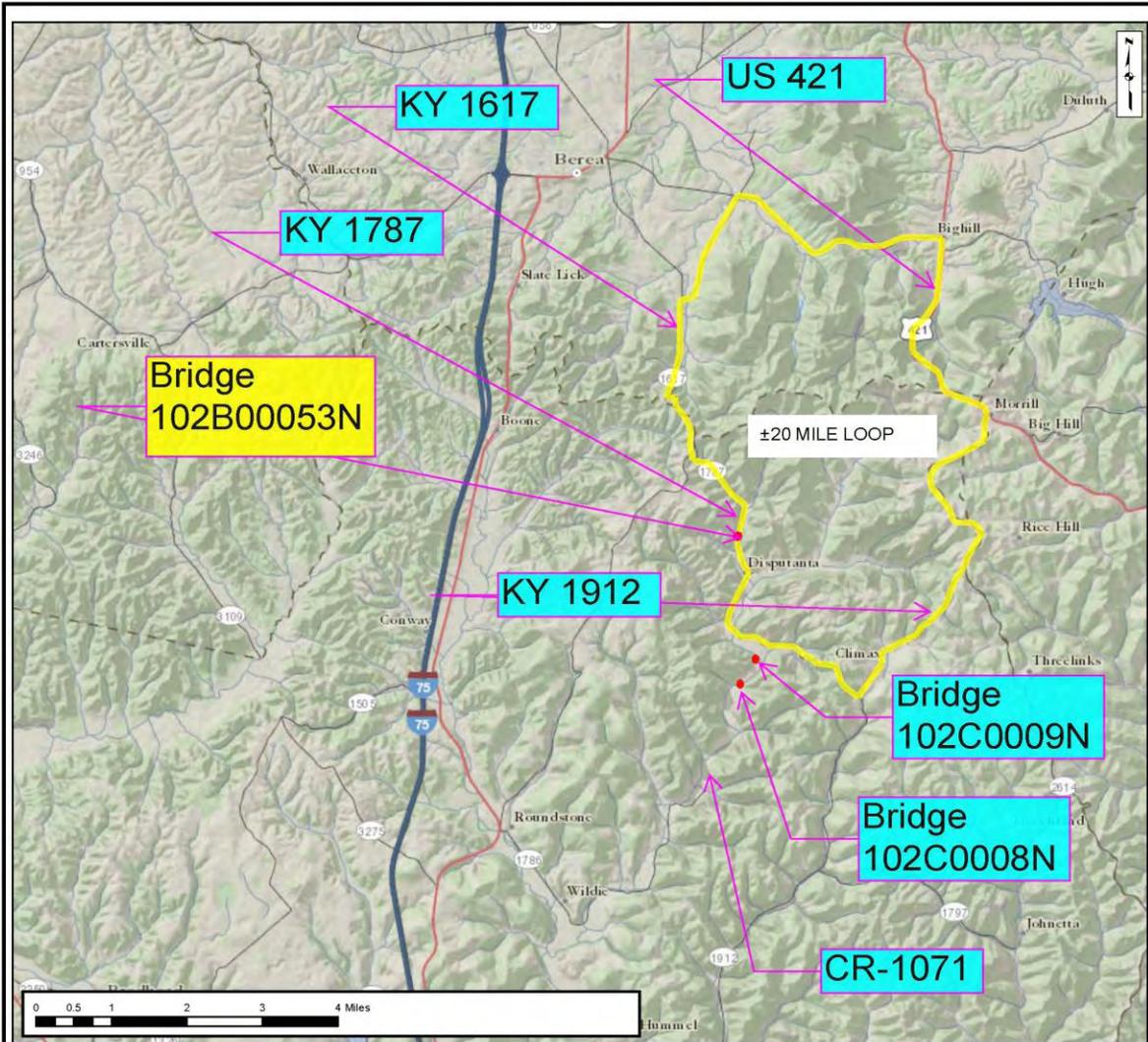
Alt #	Description	D (\$)(2013)	R (\$)(2014)	U (\$)(2014)	C (\$)(2015)	Total (\$)
1	NO BUILD	-	-	-	-	-
2A	REPLACE IN-PLACE WITH CONCRETE, TEMP. CLOSE ROAD & DETOUR	\$100,000	\$8,000	\$110,000	\$345,000	\$563,000
2B	REPLACE IN-PLACE WITH ALUM. BOX CULVERT, TEMP. CLOSE ROAD & DETOUR	\$75,000	\$8,000	\$110,000	\$340,000	\$533,000
2C	REPLACE IN-PLACE AND CONSTRUCT TEMP. DIVERSION	\$200,000	\$20,000	\$110,000	\$630,000	\$960,000
3	CONSTRUCT NEW BRIDGE ON DOWNSTREAM SIDE, KEEP EXISTING OPEN, REALIGN APPROACHES	\$250,000	\$30,000	\$110,000	\$676,000	\$1,066,000
-	Current Hwy Plan Estimated Cost	\$300,000	\$40,000	\$110,000	\$690,000	\$1,140,000
-	Current Pre-Con Estimated Cost					

VI. Tables and Exhibits



Disclaimer: KYTC Division of Planning provides this map as a reference only. Users are to validate information independently.

Exhibit 1: Project Location Map



- |           |                                 |                                 |                         |                          |                                |                                 |                                      |   |                                    |                   |
|-----------|---------------------------------|---------------------------------|-------------------------|--------------------------|--------------------------------|---------------------------------|--------------------------------------|---|------------------------------------|-------------------|
| Route Log | 1/10th Mile Calculated Interval | 1/10th Mile Calculated Interval | <b>Truck Routes</b>     | Bridges                  | Zip Code Area                  | USGS Quadrangle                 | KYTC Districts                       | US House District                       | KY Senate District                 | KY House District |
|           |                                 |                                 | Federal Truck Route     | State Truck Route        |                                |                                 |                                      |   |                                    |                   |
|           |                                 |                                 | National Highway System | NHS Connector to Airport | NHS Connector to Post Facility | NHS Connector to Amtrak Station | NHS Connector to Rail/Truck Terminal | NHS Connector to Intercity Bus Terminal | NHS Connector to Pipeline Terminal |                   |

Bridge 102B00053N  
 Location Map

Date: 6/29/2012



**KYTC**  
 Division of Planning  
 200 Mero St, Suite W-5  
 Frankfort, KY 40601  
 Phone: (502) 564-7183



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v.1.0

**Exhibit 2: DETOUR ROUTE MAP**

## Appendices

<b><u>Appendix A</u></b>	<b><u>Pages</u></b>
Photos of Existing Bridge 6-26-12:	1-9
Planning Level Construction Cost Estimates:	10-17
KSP CRASH Data:	18
Bridge Inspection Report	19-22