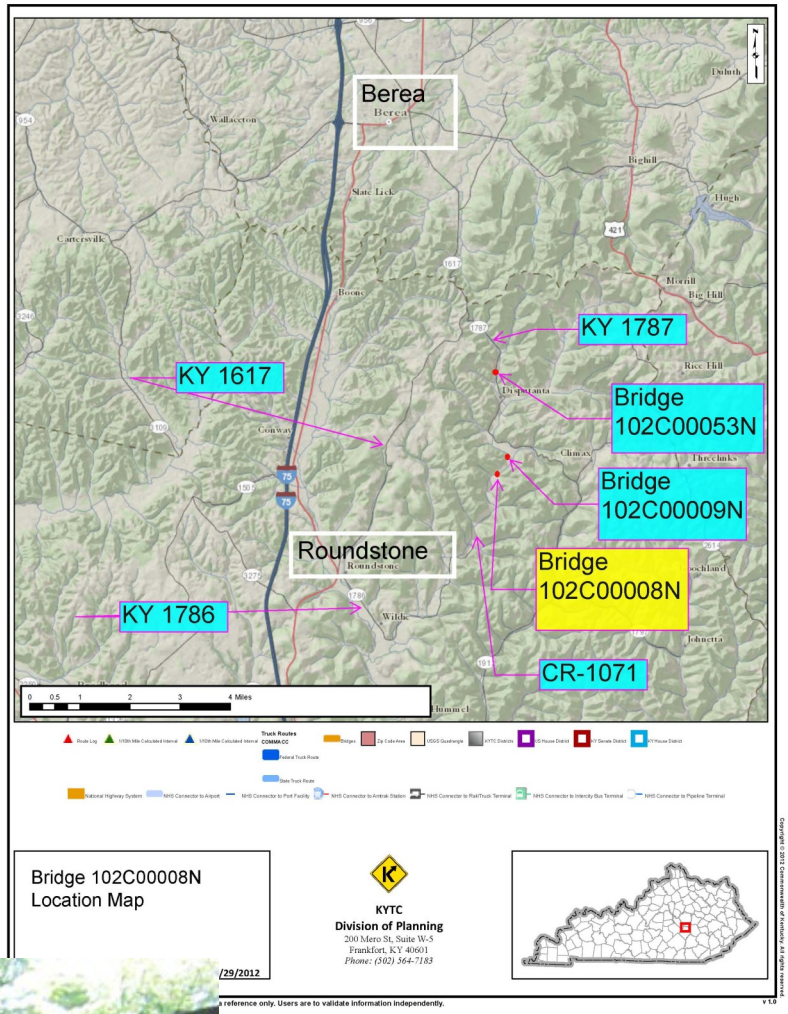
Data Needs Analysis



Scoping Study

CR-1071—Rockcastle County
Bridge Replacement
102C00008N
MP 1.713 to 1.753
Item No. 8-1057.00

Prepared by KYTC
District 8
Planning Section

July 2013

I. PRELIMINARY PROJECT INFORMATION

County:	ROCKCASTLE	**Item No.:**	8-1057.00			
Route Number(s):	CR 1071	**Road Name:**	WILDIE			
Program No.:	87956	**UPN:**	FD52	102	1071	001-002
Federal Project No.:	BRZ 0803(176)	**Type of Work:**	BRIDGE REPLACEMENT			

2012 **Highway Plan Project Description:**

REPLACE BRIDGE ON WILDIE ROAD (CR 1071) OVER CLEAR CREEK 0.67 MILES SOUTH OF DISPUTANTA RD. (KY 1787) 102C00008N

Beginning MP: 1.713 **Ending MP:** 1.753 **Project Length:** 0.04

Functional Class.: ☐ Urban ☑ Rural Local

State Class.: ☐ Primary ☐ Secondary

Route is on: ☐ NHS ☐ NN ☐ Ext Wt

MPO Area: Not Applicable

Truck Class.: 10 TON POSTED LIMIT

In TIP: ☐ Yes ☐ No

% Trucks:

ADT (2009): 117

Terrain: Rolling

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): not posted

KYTC Guidelines Preliminarily Based on : 45 **MPH Proposed Design Speed**

Roadway Data:	**EXISTING**	**COMMON GEOMETRIC PRACTICES***
No. of Lanes	2	2
Lane Width	8'	10'
Shoulder Width	<1'	2'
Max. Superelevation**	N/A	8%
Minimum Radius**	±265'	600'
Maximum Grade	<9%	9%
Minimum Sight Dist.	<200'	360'
Sidewalk Width(urban)		
Clear-zone***	<12'	12-14'

Existing Rdwy. Plans available?
☐ Yes ☑ No
Year of Plans:

☐ Traffic Forecast Requested
Date Requested:

☐ Mapping/Survey Requested
Date Requested:

Type:

Project Notes/Design Exceptions?: AASHTO GUIDELINES FOR LOW VOLUME LOCAL ROADS MAY BE CONSIDERED 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.*:	102C00008N
Sufficiency Rating	28.5
Total Length	58'
Width, curb to curb	16'
Span Lengths	2@28' (CONCRETE SLAB DECK)
Year Built	1936; BRIDGE SUBSTR. IS STACKED QUARRIED STONE BLOCK
Posted Weight Limit	10 TON
Structurally Deficient?	YES
Functionally Obsolete?	NO

Existing Geotech data available?
☐ Yes ☑ No

II. PROJECT PURPOSE AND NEED

A. Legislation

FROM 2012 ENACTED HWY PLAN	*Funding*	*Phase*	*Year*	*Amount*
	BRZ	D	2013	$250,000
	BRZ	R	2014	$50,000
	BRZ	U	2014	$100,000
	BRZ	C	2015	$560,000

B. Project Status

NO UNSCHEDULED NEED "PIF" EXISTS FOR THIS PROJECT. SEE PART A ABOVE FOR FUNDING SCHEDULE OF OUTLYING YEARS.

C. System Linkage

THIS COUNTY ROAD IS 2.417 MILES LONG AND RUNS BETWEEN KY 1786 AND KY 1787. LOCAL TRAFFIC FROM THE COMMUNITIES OF CLIMAX AND DISPUTANTA LIKELY USE THIS ROUTE TO TRAVEL TO THE RENFRO VALLEY/MT. VERNON AREAS. THIS ROUTE WILL CONTINUE TO FUNCTION AS A RURAL LOCAL ROUTE AFTER THIS PROJECT IS COMPLETE. TWO OTHER BRIDGE REPLACEMENT PROJECTS ARE LOCATED NEARBY. ONE IS APPROX. 2 MILES NORTH FROM THIS PROJECT ON KY 1787 AT MP (ITEM NO. 8-1053.00) AND THE OTHER IS APPROX. 0.2 MILES NORTH OF THIS PROJECT ON CR-1071 WILDIE ROAD (ITEM NO. 8-1058.00). SEE THE DETOUR ROUTE MAP AT THE END OF THIS REPORT FOR THE LOCATIONS OF ALL THREE BRIDGE PROJECTS RELATIVE TO ONE ANOTHER. ALSO, RESIDENCES EXIST ON THE PORTION OF CR-1071 BETWEEN THE TWO BRIDGE PROJECTS ON CR-1071.

D. Modal Interrelationships

LOCAL FARM RELATED ACTIVITIES USE THIS ROUTE.

E. Social Demands & Economic Development

A SMALL PARK/SHELTER IS LOCATED ON THIS ROAD. SHELTER AREA SHOWN IN PICTURE BELOW IS HELD IN A FAMILY TRUST PER INFO OBTAINED FROM COUNTY JUDGE CARLOFTIS. CONTACT PERSON FOR SHELTER IS WARREN BERRY 6473 WILDIE ROAD MT. VERNON KY 40456 PHONE 606-256-1701.

F. Transportation Demand

ADT IN 2009 WAS 117. ADDITIONAL HISTORIC TRAFFIC VOLUMES ARE NOT AVAILABLE. 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

NO DOCUMENTED CRASHES COULD BE FOUND IN THE CRASH DATABASE.

I. Roadway Deficiencies

EXISTING ROADWAY WIDTH, CLEAR ZONE, AND HORIZONTAL CURVATURE DEFICIENCIES EXIST ALONG THIS ROUTE. THIS BRIDGE AND THE OTHER LOCATED APPROX. 0.2 MILES AWAY ARE BOTH STRUCTURALLY DEFICIENT AND FUNCTIONALLY OBSOLETE. 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.

Draft Purpose and Need Statement:

Need: Bridge 102C00008N has a sufficiency rating of 28.5 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.#: **TIP Pg.#:**

B. Archeology/Historic Resources

☑ Known Archeological or Historic Resources are present

The existing bridge over Clear Creek (102C0008N) was constructed in 1936 and is potentially a historic structure. There may be some RoW required for this project depending on which alternate is 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 anticipated 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

The presence of 4(f) and/or 6(f) resources will not be determined until the environmental documentation process has begun. It should be noted that there appears to be a small community park (pavillion/restroom facilities) within the project area.

Anticipated Environmental Document: CE Level 1

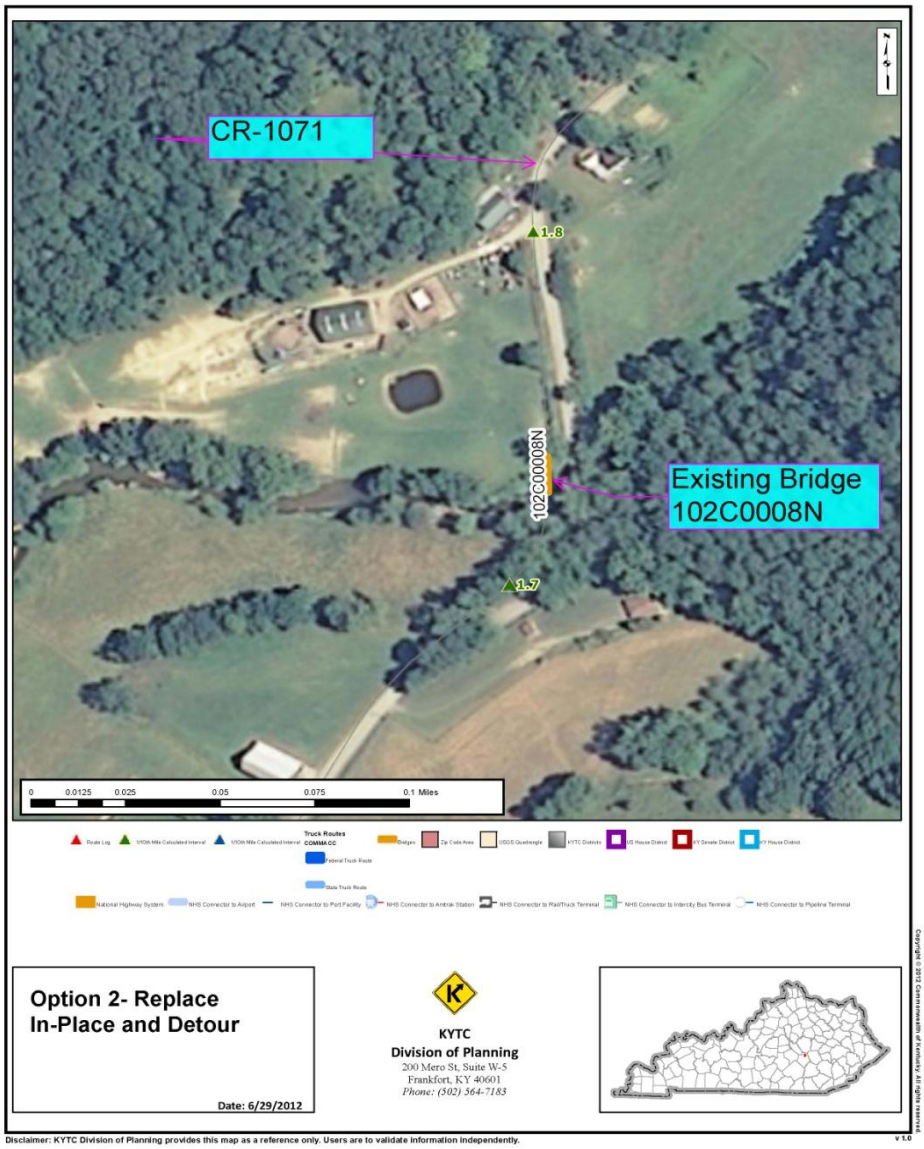
IV. POSSIBLE ALTERNATIVES

A. Alternative 1: No Build

NO BUILD OPTION DOES NOT ADDRESS THE PURPOSE AND NEED OF THE PROJECT.

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

REPLACE ENTIRE BRIDGE IN-PLACE AND DETOUR TRAFFIC. SEE DETOUR ROUTE MAP AT END OF THIS REPORT. APPROX. CONSTRUCTION TIME IS **120** DAYS.



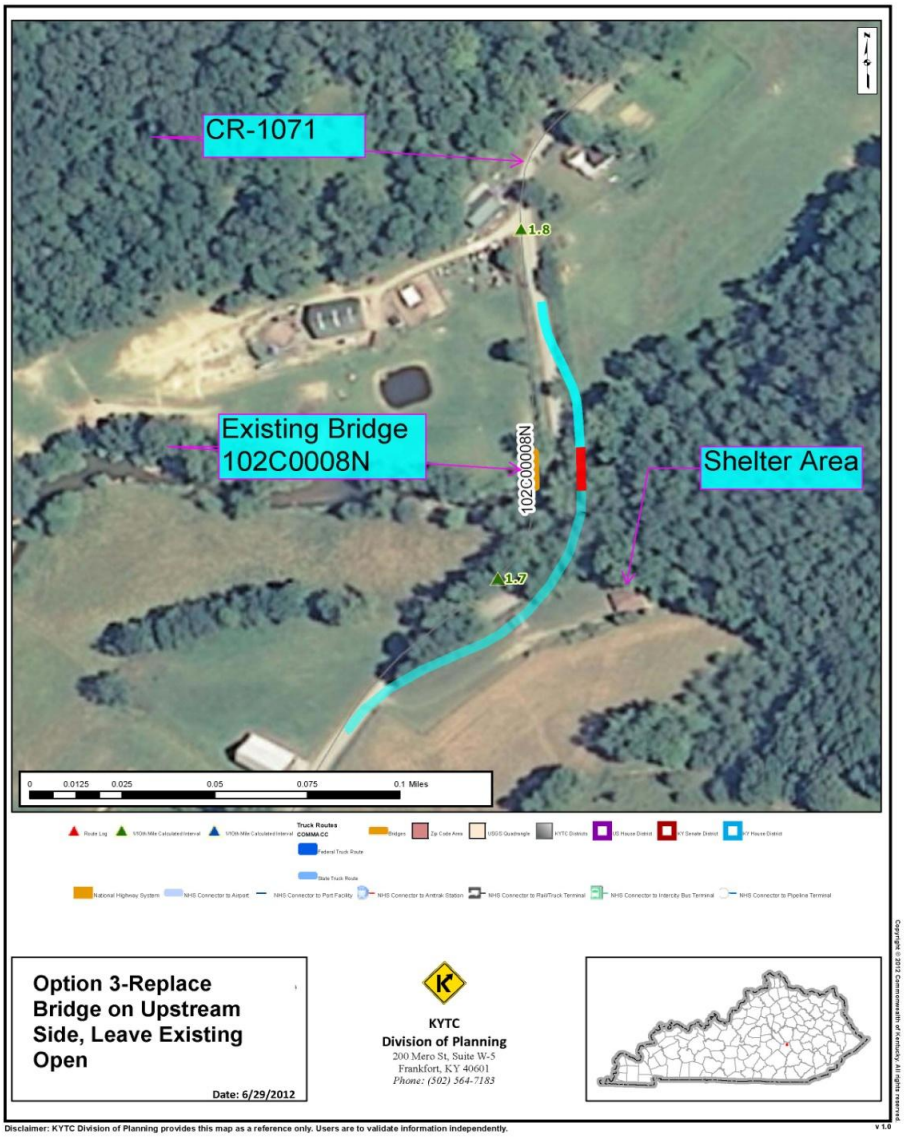
Planning Level Cost Estimate:

Phase	Estimate	
Design	$125,000	
R/W	$8,000	
Utilities	$100,000	
Const	$364,000	INCL. $50K FOR ENV. PERMITTING/IN-LIEU FEES
Total	**$597,000**	

IV. POSSIBLE ALTERNATIVES (cont.)

C. Alternative #3-Leave Existing Open and Construct New Bridge on Upstream Side

CONSTRUCT NEW BRIDGE ON UPSTREAM SIDE AND LEAVE EXISTING BRIDGE OPEN UNTIL NEW BRIDGE AND APPROACHES ARE COMPLETED. EXISTING BRIDGE AND APPROACHES TO BE REMOVED. APPROX. CONSTRUCTION TIME IS **120** DAYS. SHELTER AREA SHOWN IN PICTURE BELOW IS HELD IN A FAMILY TRUST. CONTACT PERSON IS WARREN BERRY 6473 WILDIE ROAD MT. VERNON KY 40456 PHONE 606-256-1701.



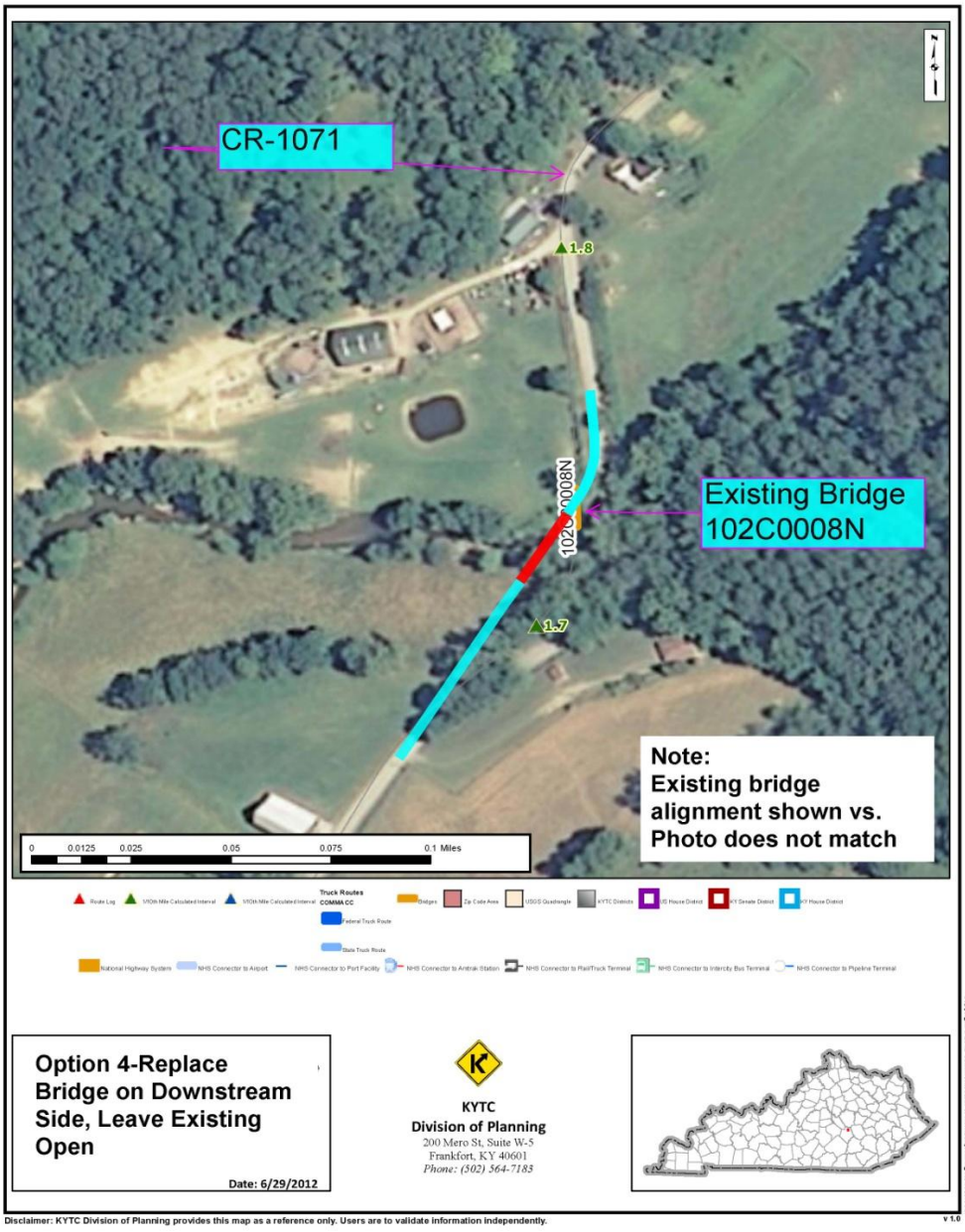
Planning Level Cost Estimate:

Phase	Estimate	
Design	$225,000	
R/W	$25,000	
Utilities	$100,000	
Const	$561,000	INCL. $100K FOR ENV. PERMITTING/IN-LIEU FEES
Total	**$911,000**	

IV. POSSIBLE ALTERNATIVES (cont.)

D. Alternative #4-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 **120** DAYS.



Planning Level Cost Estimate:

Phase	Estimate	
Design	$225,000	
R/W	$25,000	
Utilities	$100,000	
Const	$658,000	INCL. $100K FOR ENV. PERMITTING/IN-LIEU FEES
Total	**$1,008,000**	

IV. POSSIBLE ALTERNATIVES (cont.)

E. Alternative #5-Replace in-place and Construct Temp. Diversion on Downstream Side

REPLACE ENTIRE BRIDGE IN-PLACE AND CONSTRUCT TEMP. DIVERSION ON DOWNSTREAM SIDE. APPROX. CONSTRUCTION TIME IS **120** DAYS.

Planning Level Cost Estimate:

Phase	Estimate	
Design	$200,000	
R/W	$15,000	
Utilities	$100,000	
Const	$576,000	INCL. $100K FOR ENV. PERMITTING/IN-LIEU FEES
Total	**$891,000**	

V. Summary

THIS 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 8-1057.00. IN CONSIDERATION OF THE VARIOUS OPTIONS BELOW, IT IS RECOMMENDED TO SELECT AN ALTERNATE THAT DOES NOT DETOUR TRAFFIC DUE TO THE LONG DETOUR ROUTE THAT WOULD HAVE TO BE TAKEN. ALSO, OTHER NEARBY BRIDGE PROJECTS MAY BE UNDER CONSTRUCTION AS WELL (8-1058.00 AND 8-1053.00). SEE EXHIBIT 2. RESIDENCES EXIST BETWEEN THIS PROJECT AND 8-1058.00 ALONG THIS SAME COUNTY ROAD CR 1071 (SEE EXHIBIT 3).

Alt #	Description	D ($)(2013)	R ($)(2014)	U ($)(2014)	C ($)(2015)	Total ($)
1	NO BUILD	-	-	-	-	-
2	REPLACE IN-PLACE, CLOSE ROAD & DETOUR TRAFFIC	$125,000	$8,000	$100,000	$364,000	$597,000
3	CONSTRUCT NEW BRIDGE ON UPSTREAM SIDE; KEEP EXISTING OPEN DURING CONSTRUCTION	$225,000	$25,000	$100,000	$561,000	$911,000
4	CONSTRUCT NEW BRIDGE ON DOWNSTREAM SIDE; KEEP EXISTING OPEN DURING CONSTRUCTION	$225,000	$25,000	$100,000	$658,000	$1,008,000
5	REPLACE IN-PLACE AND CONSTRUCT TEMP. DIVERSION	$200,000	$15,000	$100,000	$576,000	$891,000
-	Current Hwy Plan Estimated Cost	$250,000	$50,000	$100,000	$560,000	$960,000
-	Current Pre-Con Estimated Cost					

VI. Tables and Exhibits

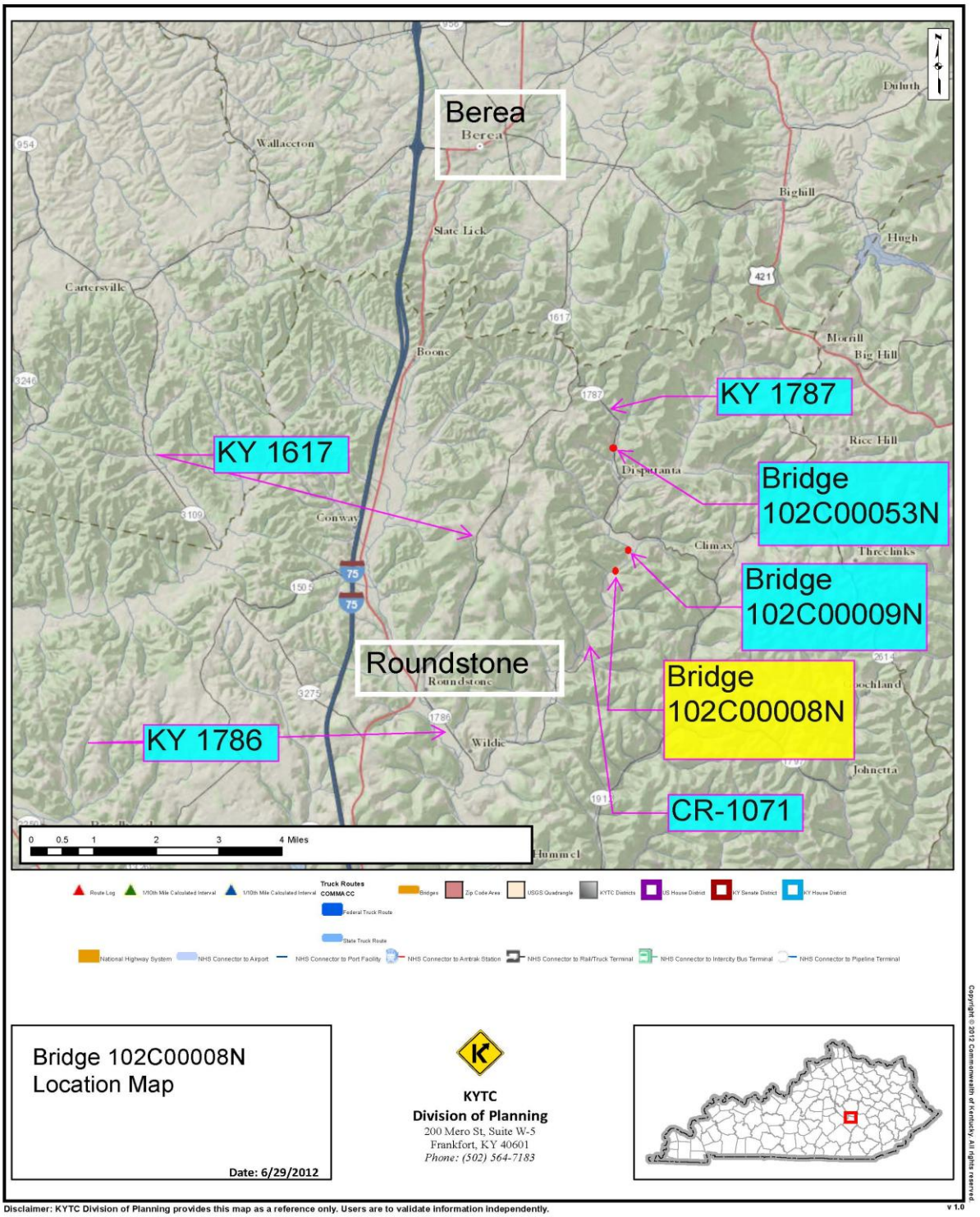


Exhibit 1: Project Location Map

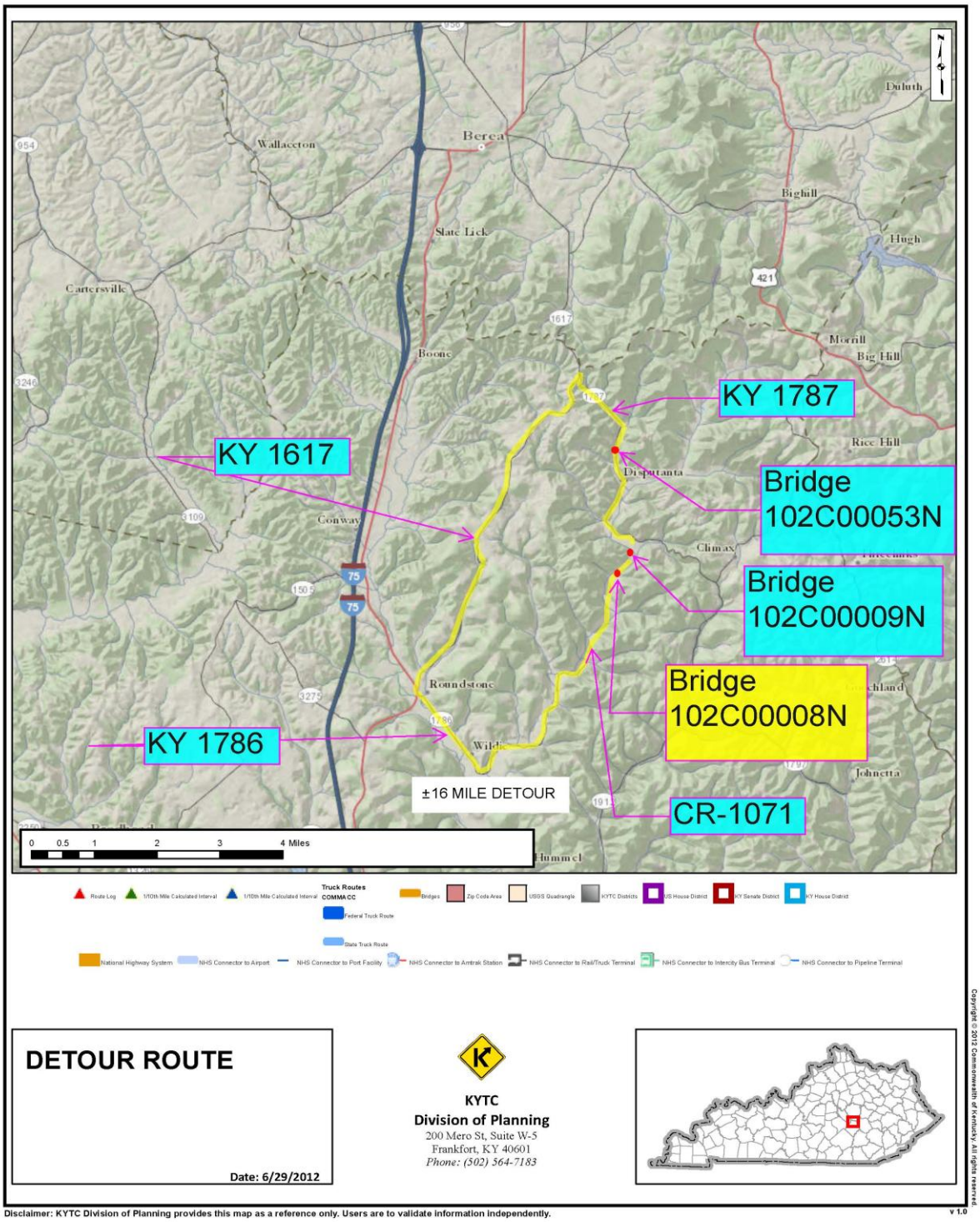


Exhibit 2: DETOUR ROUTE MAP

VI. Tables and Exhibits

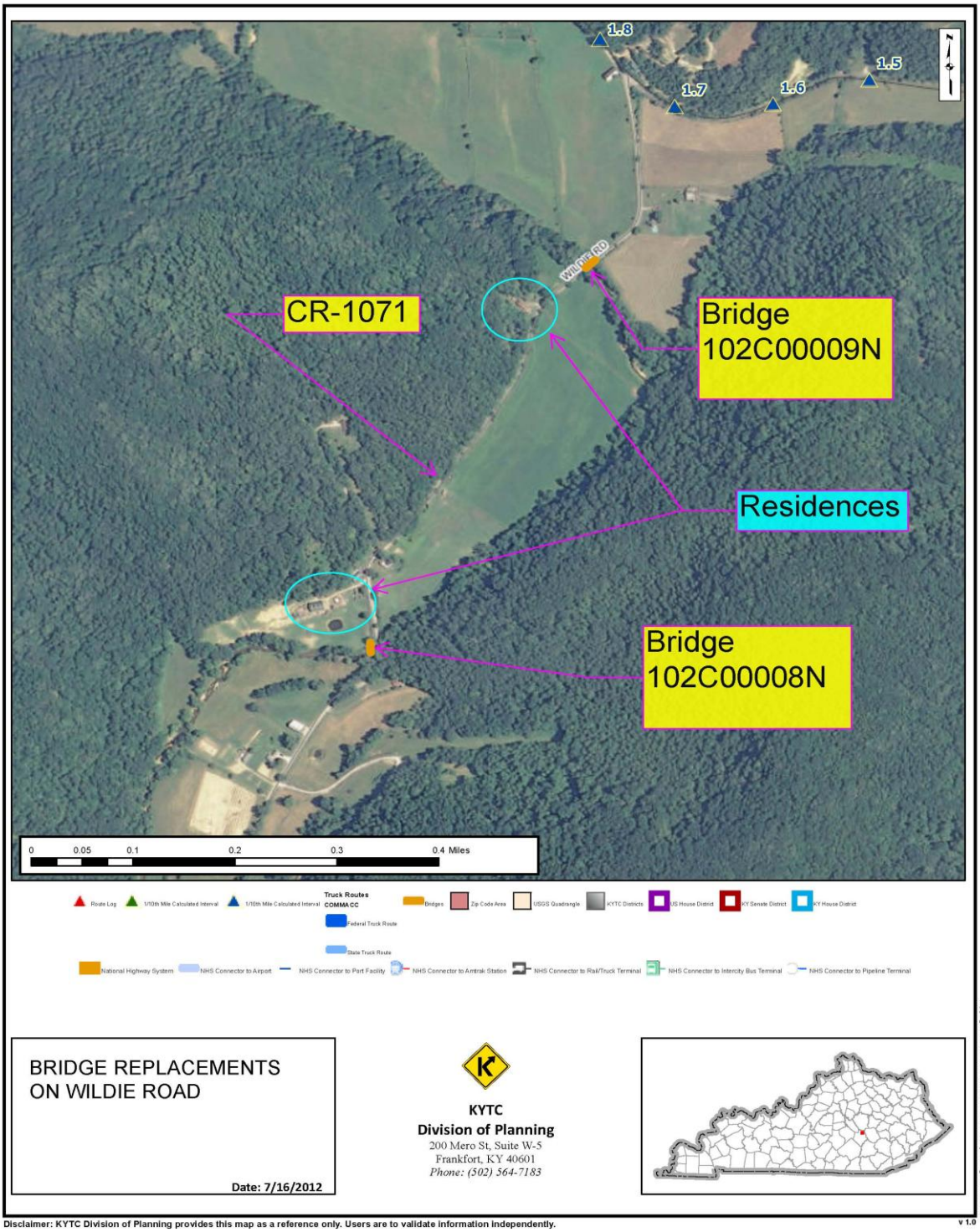
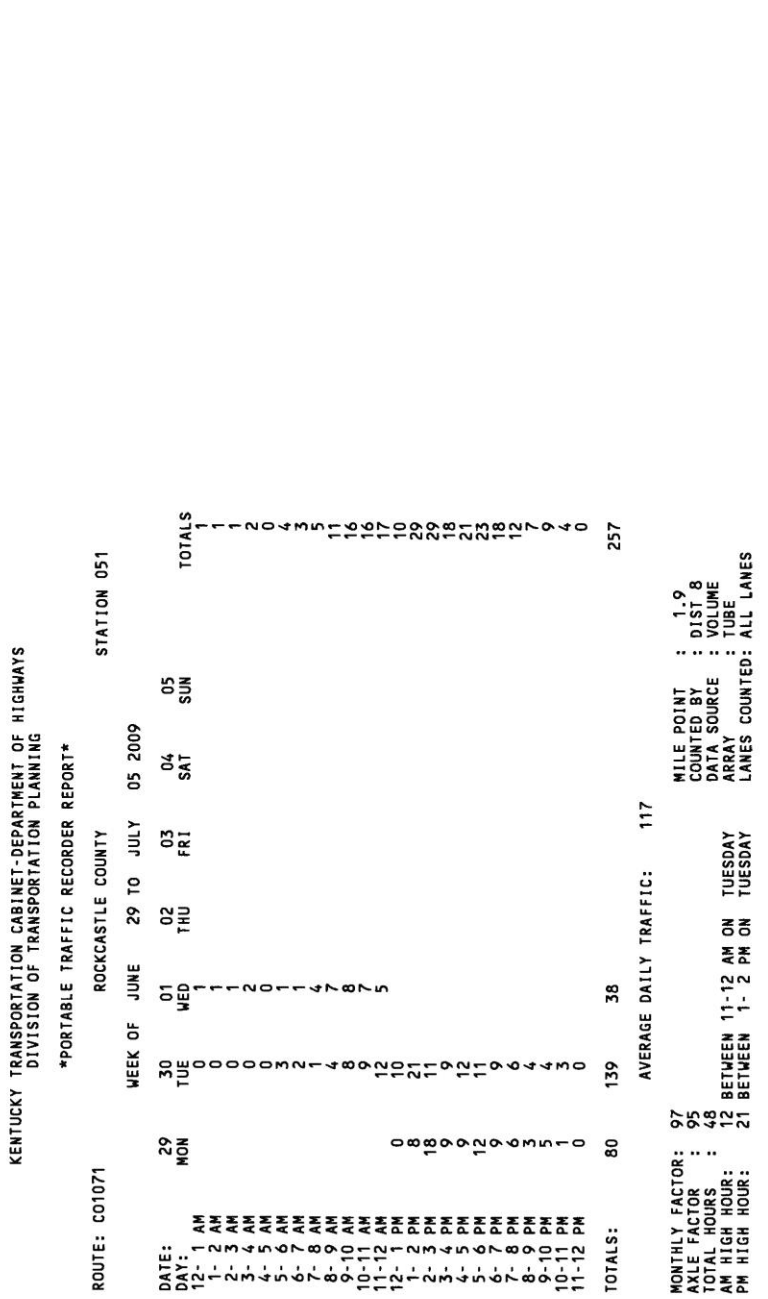


Exhibit 3: View of Both Bridges and Residences

VI. Tables and Exhibits



KENTUCKY TRANSPORTATION CABINET-DEPARTMENT OF HIGHWAYS
DIVISION OF TRANSPORTATION PLANNING

PORTABLE TRAFFIC RECORDER REPORT

ROUTE: CO1071 ROCKCASTLE COUNTY STATION 051

WEEK OF JUNE 29 TO JULY 05 2009

DATE:	29	30	01	02	03	04	05	
DAY:	MON	TUE	WED	THU	FRI	SAT	SUN	TOTALS
12- 1 AM		0	1					1
1- 2 AM		0	1					1
2- 3 AM		0	1					1
3- 4 AM		0	2					2
4- 5 AM		0	0					0
5- 6 AM		3	1					4
6- 7 AM		2	1					3
7- 8 AM		1	4					5
8- 9 AM		4	7					11
9-10 AM		8	8					16
10-11 AM		9	7					16
11-12 AM		12	5					17
12- 1 PM	0	10						10
1- 2 PM	8	21						29
2- 3 PM	18	11						29
3- 4 PM	9	9						18
4- 5 PM	9	12						21
5- 6 PM	12	11						23
6- 7 PM	9	9						18
7- 8 PM	6	6						12
8- 9 PM	3	4						7
9-10 PM	5	4						9
10-11 PM	1	3						4
11-12 PM	0	0						0
TOTALS:	80	139	38					257

AVERAGE DAILY TRAFFIC: 117

MONTHLY FACTOR: 97
AXLE FACTOR : 95
TOTAL HOURS : 48
AM HIGH HOUR: 12 BETWEEN 11-12 AM ON TUESDAY
PM HIGH HOUR: 21 BETWEEN 1- 2 PM ON TUESDAY

MILE POINT : 1.9
COUNTED BY : DIST 8
DATA SOURCE : VOLUME
ARRAY : TUBE
LANES COUNTED: ALL LANES

Exhibit 4: 2009 TRAFFIC COUNT

APPENDICES

Appendix A	Pages
Photos of Existing Bridge 6-26-12:	1-11
1/3/2013 Bridge Inspection Report	12-17