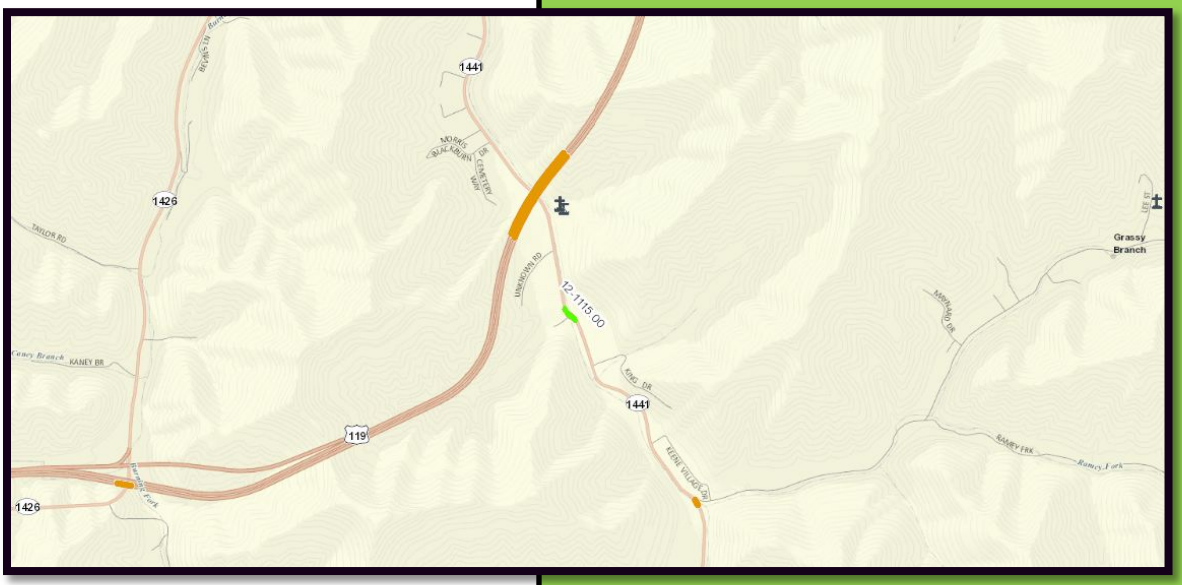
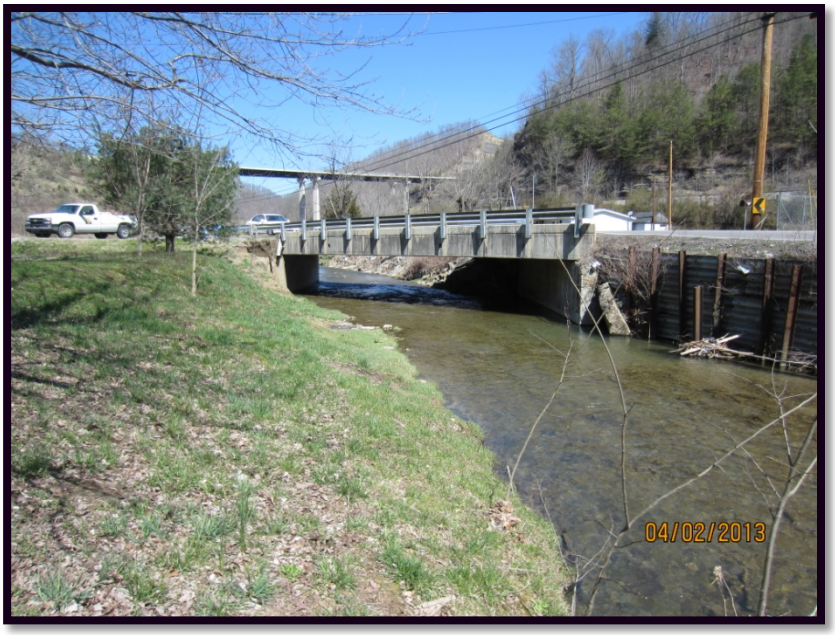
Data Needs Analysis



Scoping Study



KENTUCKY TRANSPORTATION CABINET

Bridge Replacement
Pike County
Replace Bridge on Fishtrap Road (KY 1441) Over Raccoon Creek at Intersection with Coon Creek (CR 1371)(SR 37.9) 0098B00093N
Item Number 12-1115.00

Prepared by KYTC
Division of Planning
District 12

June 2013

I. PRELIMINARY PROJECT INFORMATION

County: Pike **Item No.:** 12-1115.00
Route Number(s): KY 1441 **Road Name:** Fishtrap Road
Program No.: 8750701D **UPN:** FD52 098 1441 010-011
Federal Project No.: BRO 1203 (353) **Type of Work:** Bridge Replacement

2012 **Highway Plan Project Description:**

Replace Bridge on Fishtrap Road (KY 1441) Over Raccoon Creek at Intersection with Coon Creek (CR 1371)(SR 37.9) 098B00093N

Beginning MP: 10.279 **Ending MP:** 10.319 **Project Length:** 0.04 Miles

Functional Class.: ☐ Urban ☑ Rural **State Class.:** ☐ Primary ☑ Secondary

Route is on: ☐ NHS ☑ NN ☐ Ext Wt

MPO Area: Not Applicable **Truck Class.:**

In TIP: ☐ Yes ☐ No **% Trucks:** N/A

ADT (current): 3310 (2011) **Terrain:**

Access Control: ☐ None ☑ Permit ☐ Fully Controlled ☐ Partial Spacing:

Median Type: ☑ Undivided ☐ Divided (Type):

Existing Bike Accommodations: **Ped:** ☐ Sidewalk

Posted Speed: ☐ 35 mph ☑ 45 mph ☐ 55 mph ☐ Other (Specify):

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

Roadway Data:	**EXISTING**	**COMMON GEOMETRIC PRACTICES***
No. of Lanes	2	2
Lane Width	10'	12'
Shoulder Width	2'	4'
Max. Superelevation**	N/A	4%
Minimum Radius**	N/A	660'
Maximum Grade	N/A	9%
Minimum Sight Dist.	N/A	1625
Sidewalk Width(urban)	N/A	N/A
Clear-zone***	N/A	N/A

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

☐ Traffic Forecast Requested
Date Requested:

☑ Mapping/Survey Requested
Date Requested:
Type:

Project Notes/Design Exceptions?:

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

Bridge No.*:	098B00093N	(Bridge #2)
Sufficiency Rating	40.1	
Total Length	55.1'	
Width, curb to curb	22.6'	
Span Lengths	51.8'	
Year Built	1969	
Posted Weight Limit	No Restriction	
Structurally Deficient?	Yes	
Functionally Obsolete?	No	
Existing Bridge Type	Prestressed concrete	

Existing Geotech data available?
☐ Yes ☑ No

Detour Length(s): 14.3 mi.

*If more than two bridges are located on the project, include additions sheets.

II. PROJECT PURPOSE AND NEED

A. Legislation

This following funding was listed in the 2012 General Assembly's Enacted Highway Plan.

Funding	*Phase*	*Year*	*Amount*
BRO	D	2013	$375,000
BRO	R	2014	$400,000
BRO	U	2014	$225,000
BRO	C	2016	$950,000

B. Project Status

Design funds for this project have been authorized.

C. System Linkage

KY 1441 is a rural collector located in the central part of Pike County that connects KY 1426 at Zebulon and US 460 at Millard.

D. Modal Interrelationships

There are presently no bike or pedestrian facilities along this section of highway.

E. Social Demands & Economic Development

Although there is no economic development anticipated in this area, potential for coal mines or related industries are always a possiblility.

F. Transportation Demand

KY 1441 serves as a connection for businesses and residences between KY 1426 and US 460. There are alternate connections between Zebulon and Millard, but this is the only direct connection.

II. PROJECT PURPOSE AND NEED (cont.)

G. Capacity

There are no congestion issues that would contribute to the need of this project.

H. Safety

A 10 year review of collisions was conducted of the project area finding ten (10) total collisions. Two (2) collision were sideswipes on the bridge. Six (6) were located within the curves on either side of the bridge that was due to loss of control.

I. Structure Deficiencies

The deck rating of the bridge went up due to asphalt overlay, however, the asphalt is cracking through at the bridge joints and allowing seepage to the underside of the beams. The grout joints of beams were spalled and filled with soil prior to asphalt overlay. The underside has minor spalling around the drains. The third beam from the upstream side has numerous transverse cracks near midspan. Downstream exterior beam has a longitudinal crack that runs between the drains. The second beam from the downstream side has several hairline transverse cracks with one small spall that shows rusted rebar. Abutment #1 has some spalling at the edge of the abutment/wingwall on the downstream side. Both abutments have some staining and rust stains from wall ties. The curbs have vertical cracks and very small spalls are present.

Draft Purpose and Need Statement:

Need: Replace two-lane bridge that has a Sufficiency Rating of 40.1 which is structurally deficient and make improvements to correct geometric deficiencies in the roadway alignment.

Purpose: Improvements through replacement that will address the safety concerns associated with the project.

III. PRELIMINARY ENVIRONMENTAL OVERVIEW

A. Air Quality

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

STIP Pg.#: 81 of 127 **TIP Pg.#:**

FY 2013-2016

B. Archeology/Historic Resources

☐ Known Archeological or Historic Resources are present

No Section 106 notifications have been generated from the District at this point. If the historical survey indicates that there may be an impact to historical sites, then the 106 process will be started.

C. Threatened and Endangered Species

The Indiana Bat (Myotis Sodalis) and Gray Bat (Myotis Grisescens) are listed as threatened or endangered species in the project area. A BA may be required to satisfy Section 7 requirements for all species or an IBCMOA or tree-cutting restrictions may be utilized to compensate for any potential habitat loss for the Indiana Bat.

D. Hazardous Materials

☐ Potentially Contaminated Sites are present ☑ Potential Bridge or Structure Demolition

With the bridge being demolished, an inspection of the bridge for asbestos containing materials will be required.

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

ACE LON will be required from impacts associated with bridge replacement

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

One possible relocation associated with project. Will need to complete relocation survey to determine if any low income or minority populations are affected.

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

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

No anticipated 4(f) or 6(f) impacts associated with project.

Anticipated Environmental Document: CE Level 1

IV. PROJECT SCOPING

One alignment has been considered for this project.

Alternate 1 Estimate

Phase	Estimate
Planning	
Design	$375,000
R/W	$400,000
Utilities	$225,000
Const	$950,000
Total	**$1,950,000**

The alternative would allow for construction of a new two-lane structure at a location that is adjacent to the existing bridge either on the upstream or downstream side. By changing the location of the bridge, the existing bridge would remain open and removed upon completion of the new structure. Advantages of this alternative are that the existing bridge would stay open to traffic and the costs associated with creating a detour could be avoided. Improvements could be made to the alignment of KY 1441 to correct geometric deficiencies in this location.

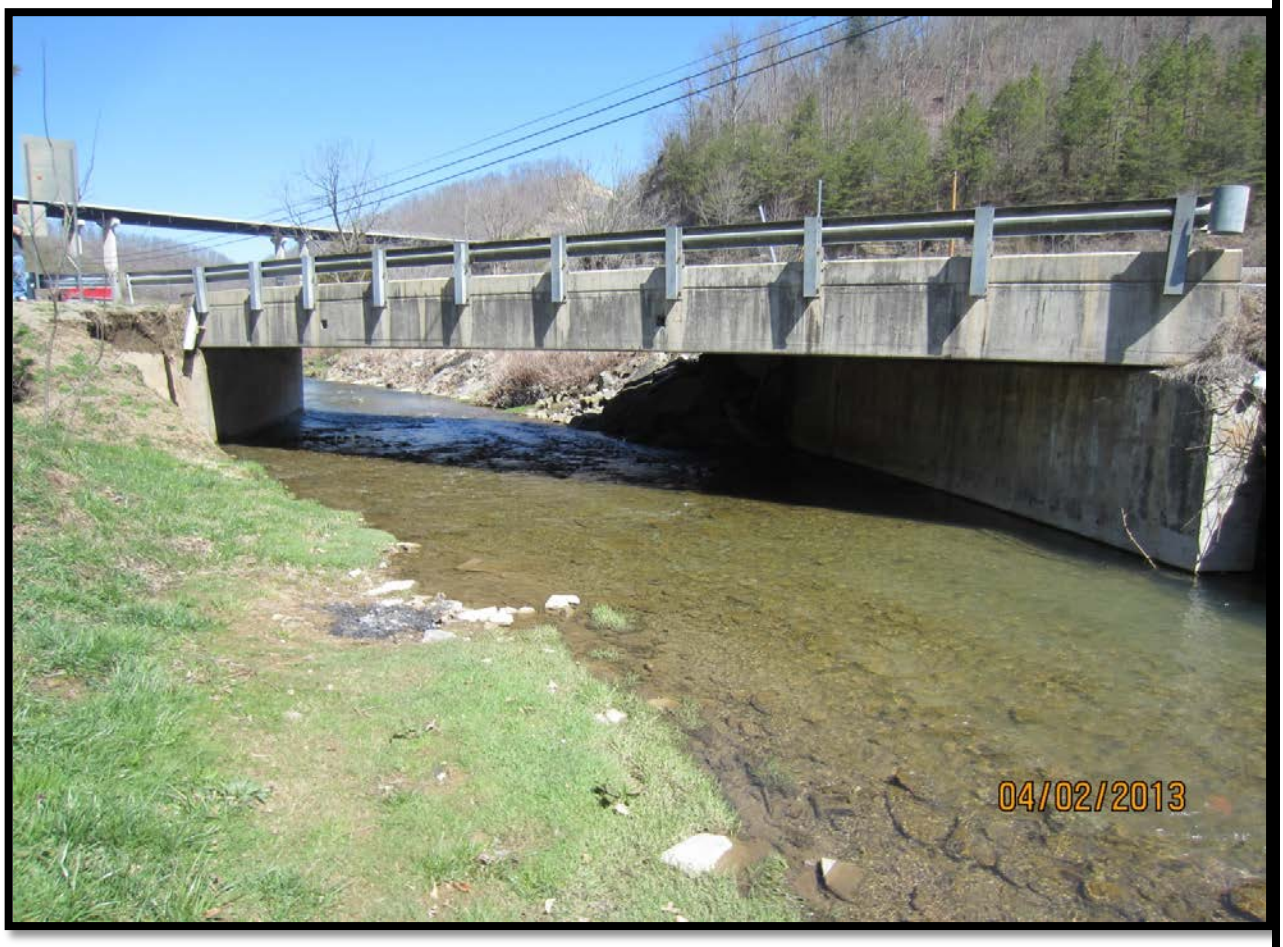


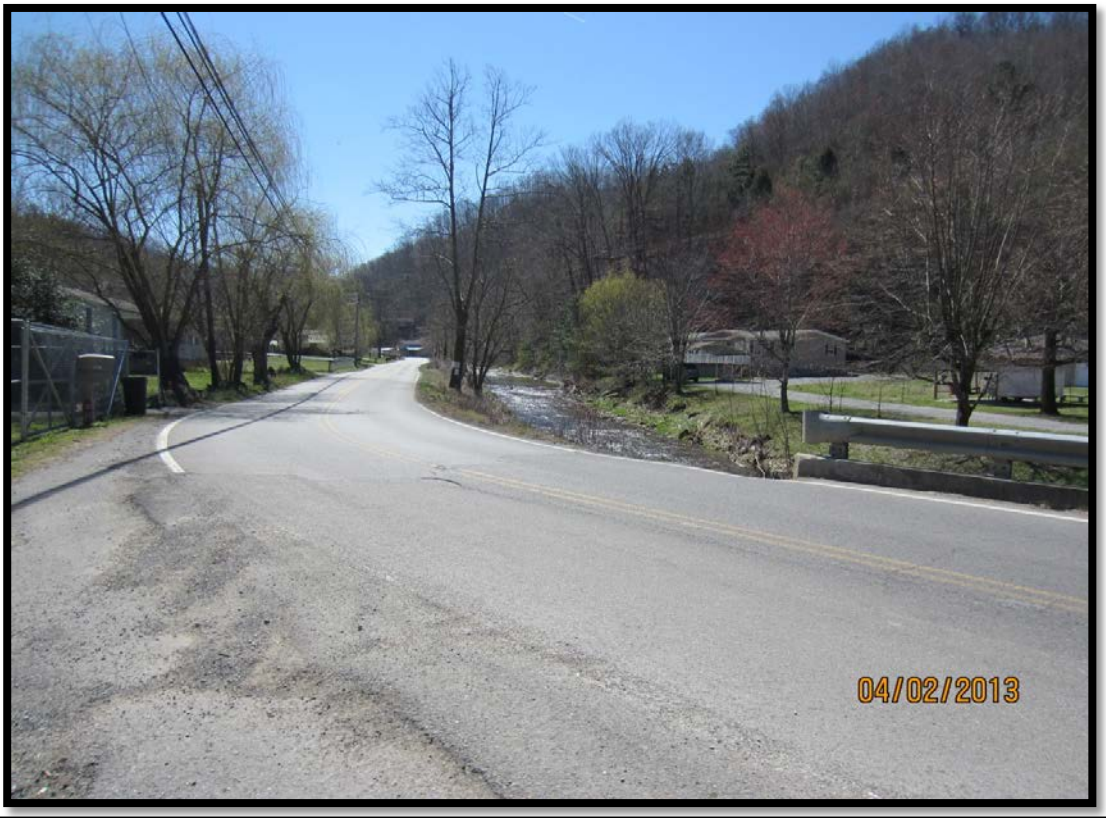
Exhibit 1

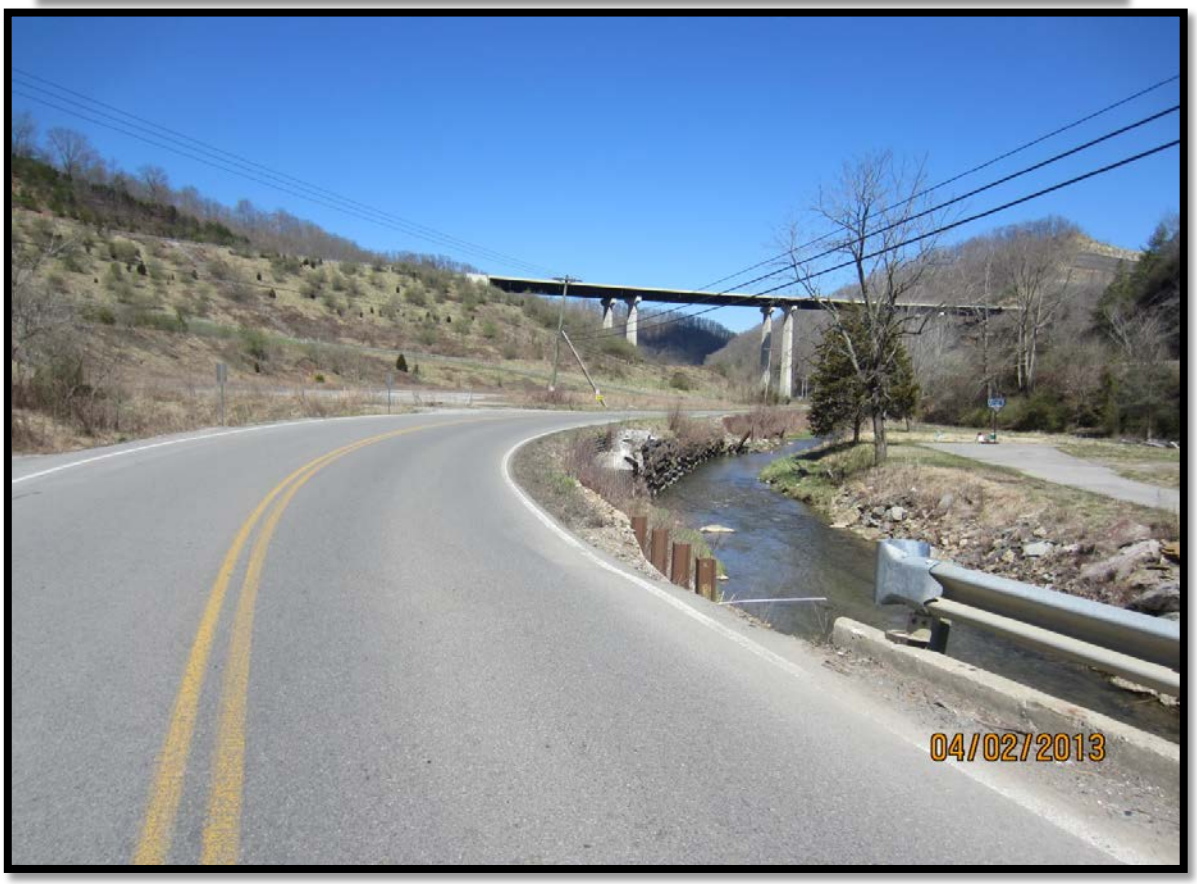
V. Summary

This study is a Data Needs Analysis (DNA) of a reconstruction project to address structure and functional deficiencies of the bridge at Raccoon in Pike County, Item Number 12-1115.00. Through analysis of the existing roadway geometrics, crash data, site visits, and discussion with the Project Team, several needs were identified within the project limits. The following were identified as project needs:

- The No Build Alternative is not feasible due to the poor Sufficiency Rating of the bridge.
- The proposed design shall be a two (2) lane bridge.

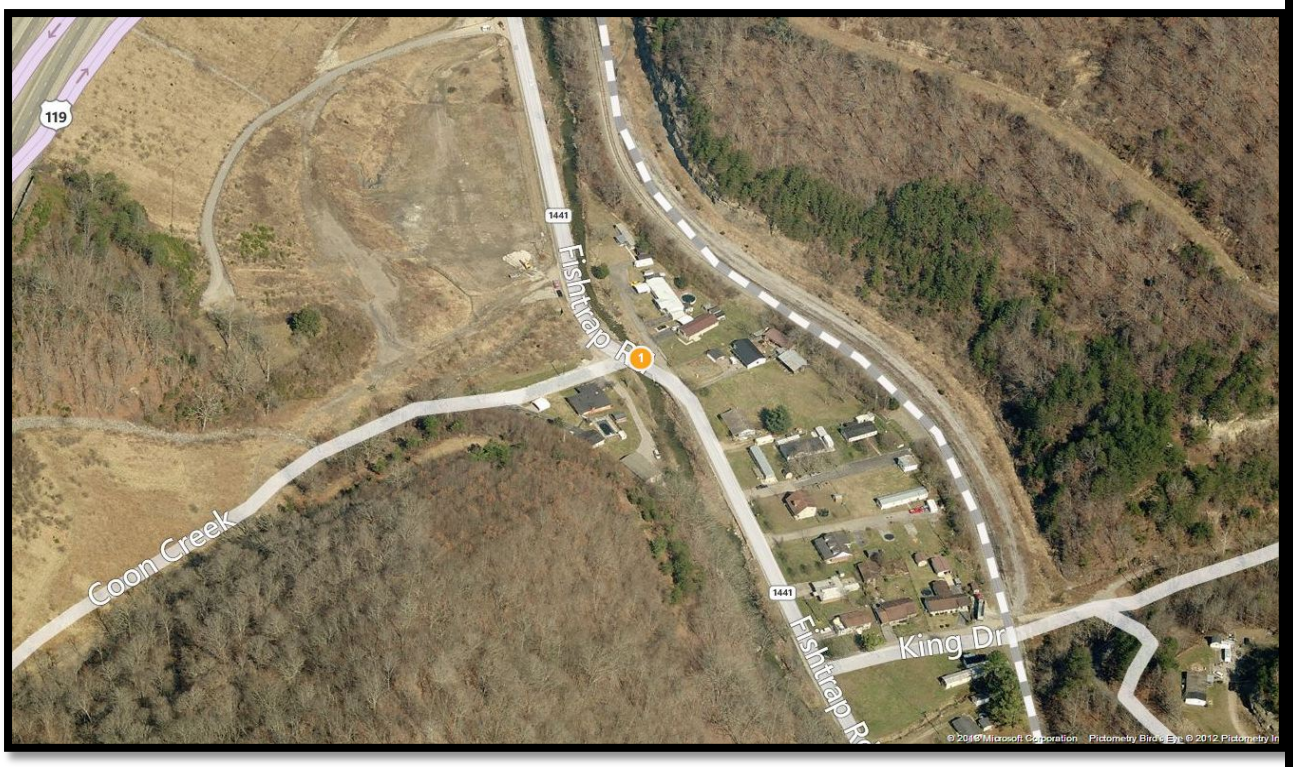
VI. Tables and Exhibits





Exhibits 2 & 3

VI. Tables and Exhibits



Aerial Map

VI. Tables and Exhibits