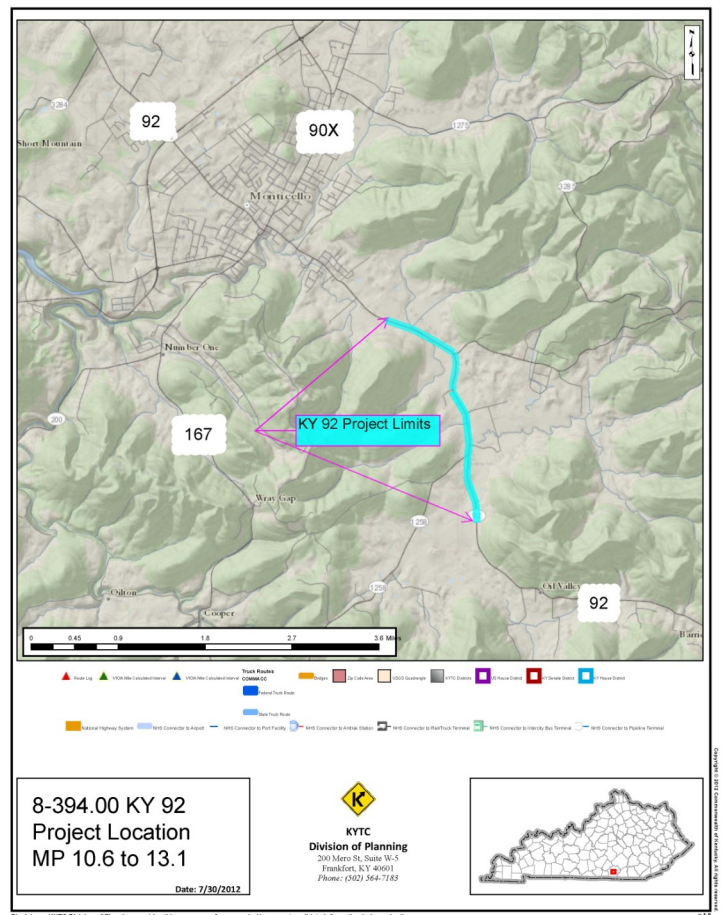


Data Needs Analysis



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



Scoping Study

**KY 92—Wayne County
2012 Hwy Plan MP 9.624
to 11.685
(revised to MP 10.6 to
13.1)
Item No. 8-394.00
Flooding Issue**

Prepared by KYTC
District 8
Planning Section

January 2013

I. PRELIMINARY PROJECT INFORMATION

County: WAYNE Item No.: 8-394.00
Route Number(s): KY 92 Road Name:
Program No.: 87553 UPN: FD04 116 0092 009-012
Federal Project No.: N/A Type of Work: RECONSTRUCTION

2012 Highway Plan Project Description:

RAISE GRADE TO PREVENT FLOODING FROM 0.5 MI W OF VALLEY VIEW DR. TO 0.7 MI W OF KY 1258

Beginning MP: 9.624 Ending MP: 11.685 Project Length: 2.061

Functional Class.: ☒ Urban ☒ Rural State Class.: ☐ Primary ☒ Secondary

Arterial ☐ Collector ☐ Route is on: ☐ NHS ☒ NN ☐ Ext Wt

MPO Area: Not Applicable Truck Class.: AAA

In TIP: ☐ Yes ☐ No % Trucks: 7

ADT (2010): 2,790 TO 5,970 Terrain: Rolling

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

Median Type: ☒ Undivided ☐ Divided (Type):

Existing Bike Accommodations: Designated US Bike Route 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	Existing Rdwy. Plans available? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Lane Width	9' RURAL, 10' & 12' C&G 2'&10' CURBED SECTIONS; 3'	12'	
Shoulder Width	COMBINATION	8' AND <3'	<input type="checkbox"/> Year of Plans:
Max. Superelevation**	8%	4% AND 8%	
Minimum Radius**	290' (35mph)&585'(55mph)	371' (35MPH)&965' (55MPH)	Traffic Forecast Requested
Maximum Grade	8.0%	8% AND 7%	Date Requested:
Minimum Sight Dist.	<250' AND <495'	250' AND 495'	<input type="checkbox"/> Mapping/Survey Requested
Sidewalk Width(urban)	4' (35MPH)	4' MIN.	Date Requested:
Clear-zone***	<10'	24'-30'	Type: <input type="checkbox"/>

Project Notes/Design Exceptions?: possibly lesser shoulder width on 55mph sections

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

Bridge No.*: NONE
Sufficiency Rating
Total Length
Width, curb to curb
Span Lengths
Year Built
Posted Weight Limit
Structurally Deficient?
Functionally Obsolete?

[Existing Geotech data available?](#)
☐ Yes ☒ No
*If more than two bridges are located on the project, include additions sheets.

II. PROJECT PURPOSE AND NEED

A. Legislation

FROM THE 2012 ENACTED HIGHWAY PLAN	<i>Funding</i>	<i>Phase</i>	<i>Year</i>	<i>Amount</i>
	SPP	D	2013	\$500,000
	SP	R	2013	\$1,500,000
	SP	U	2014	\$2,000,000
	SP	C	2014	\$8,000,000

B. Project Status

DESIGN FUNDING HAS BEEN AUTHORIZED. UNSCHEDULED PROJECT "PIF" 08 116 D0092 4.00 EXISTS FOR THIS PROJECT. PIF MILEPOINTS ARE 10.6 TO 13.1. HISTORICALLY, FLOODING HAS OCCURRED BETWEEN MP'S ±10.6 TO 13.1. HIGHWAY PLAN DESCRIPTION SHOULD READ "RAISE GRADE TO PREVENT FLOODING FROM 0.5 MI ~~W~~ EAST OF VALLEY VIEW DR. TO 0.7 MI ~~W~~ EAST OF KY 1258". SEE PART A ABOVE FOR FUNDING SCHEDULE OF OUTLYING YEARS.

C. System Linkage

KY 92 IS A FEDERAL AID ROUTE AND VITAL LINK BETWEEN WAYNE AND MCCREARY COUNTIES AND COMMUNITIES BETWEEN THESE TWO COUNTIES. THIS ROAD PROVIDES ACCESS TO THE BIG SOUTH FORK NATIONAL RIVER & RECREATIONAL AREA. THIS SECTION OF KY 92 IS SUBJECT TO FLOODING DUE TO IT LYING IN A LOW AREA SURROUNDED BY HILLS. RAINFALL RUNOFF FROM HEAVY RAINS OVERTOPS THE ROADWAY FOR DURATIONS UP TO A WEEK FORCING TRAVELERS TO DETOUR ONTO VARIOUS OTHER STATE ROUTES.

D. Modal Interrelationships

THIS PORTION OF KY 92 IS WITHIN THE SOUTHERN LAKES BIKE TOUR ROUTE.

E. Social Demands & Economic Development

THIS ROAD PROVIDES ACCESS TO THE BIG SOUTH FORK NATIONAL RIVER & RECREATIONAL AREA.

F. Transportation Demand

ADT DATA FROM THE CTS DATABASE IN 2010 NEARER TO MONTICELLO WAS 5,970 AND THE TREND FOR THE PAST SEVERAL YEARS IN CONSISTENTLY CLOSE TO THIS NUMBER. AS YOU MOVE AWAY FROM MONTICELLO, ADT REDUCES TO 4,300 NEAR MP 10 AND DOWN TO 2,780 NEAR THE END MP OF THIS PROJECT. ALL ADT COUNTS OVER THE PAST SEVERAL YEARS WITHIN THE MP'S OF THIS PROJECT HAVE REMAINED CONSISTENTLY CLOSE AT EACH OF THE THREE COUNT STATIONS WITHIN THESE MP'S.

II. PROJECT PURPOSE AND NEED (cont.)

G. Capacity

V/SF=0.23 FROM MP 8.922 TO 9.875 AND 0.15 FROM MP 9.875 TO 22.127. THERE ARE NO CONGESTION ISSUES AT THIS TIME AND NOT EXPECTED IN THE NEAR FUTURE.

H. Safety

CRF FOR ALL COLLISIONS =0.624 FROM MP 9.498 TO 10.498 AND 0.68 FROM MP 10.508 TO 11.508. FROM MP 11.661 TO 12.661 CRF=0.196

COLLISION DATA FROM 1/1/2009 TO 12/31/2012:

MP 10 TO 13.5 TOTAL CRASHES= 22

SINGLE VEHICLE CRASHES= 12

REAR END CRASHES= 6

ANGLE=3

WET COND.=16

HEAD-ON= 1

MAJORITY OF SINGLE VEHICLE CRASHES OCCURRED IN CURVES DURING DRY CONDITIONS AND PRIMARILY INVOLVED COLLISIONS WITH FENCES, TREES, UTILITY POLES, & HEADWALLS.

I. Roadway Deficiencies

EXISTING ROADWAY WIDTH, CLEAR ZONE, AND HORIZONTAL & VERTICAL CURVATURE DEFICIENCIES EXIST ALONG THIS ROUTE. BECAUSE OF LACK OF ELEVATION DIFFERENCE BETWEEN THE ROADWAY AND THE LOW LYING SURROUNDING TERRAIN, THIS ROUTE FROM MP 10.6 TO MP 13.1 IS PRONE TO FREQUENT FLOODING (SEE APPENDIX A FOR PICTURES).

Draft Purpose and Need Statement:

Need: KY 92 IS A FEDERAL AID ROUTE AND VITAL LINK BETWEEN WAYNE AND MCCREARY COUNTY AND COMMUNITIES BETWEEN THESE TWO COUNTIES. SAFETY ISSUES EXIST RELATED TO ROADWAY WIDTH, CLEAR ZONE, AND HORIZONTAL & VERTICAL CURVATURE DEFICIENCIES. ADDITIONALLY, FREQUENT FLOODING OCCURS ON THIS ROUTE DUE TO LACK OF ELEVATION DIFFERENCE BETWEEN THE ROADWAY AND THE LOW LYING SURROUNDING TERRAIN.

Purpose: THE PURPOSE OF THIS STUDY IS TO ADDRESS THE FLOODING ISSUE THAT FREQUENTLY OCCURS ON THIS ROADWAY DUE TO LACK OF ELEVATION DIFFERENCE BETWEEN THE ROADWAY AND THE LOW LYING SURROUNDING TERRAIN.

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

It is not known if archaeological or historic resources are present at this time. There are a couple of structures along the existing highway that appear to be at least 50 years old. As the project progresses, a archaeological and historical survey will be conducted that will provide a determination as to resources present and effects.

C. Threatened and Endangered Species

There are twenty-one mussel species on the threatened and endangered list in addition to the American chaffseed, palezone shiner, gray bat and Indiana bat. A habitat assessment will need to be conducted to determine if potential habitat exists for any of these species and if this project will impact habitat, then consultation with USFWS will occur and an agreement to minimize and mitigate for those impacts will be reached.

D. Hazardous Materials

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

There do not appear to be any sources of hazardous materials in the project area, however when the project is advanced into the design and environmental phase, a complete determination will be made.

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

If there are stream impacts on this property then permits will be required. A KPDES permit will be required due to the disturbance of greater than 1 acre of land. In the event that sinkhole impacts are considered, there are

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
We do not anticipate relocations on this project at this time.

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

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

It has not been determined if 4(f) or 6(f) resources exist on this project, however there are some structures in the project area that appear to be at least 50 years old and will be evaluated for historic eligibility. Additionally there appears to be undisturbed land in the project area and will be evaluated further for archaeological significance to determine if any resources are present.

Anticipated Environmental Document:

CE Level 1



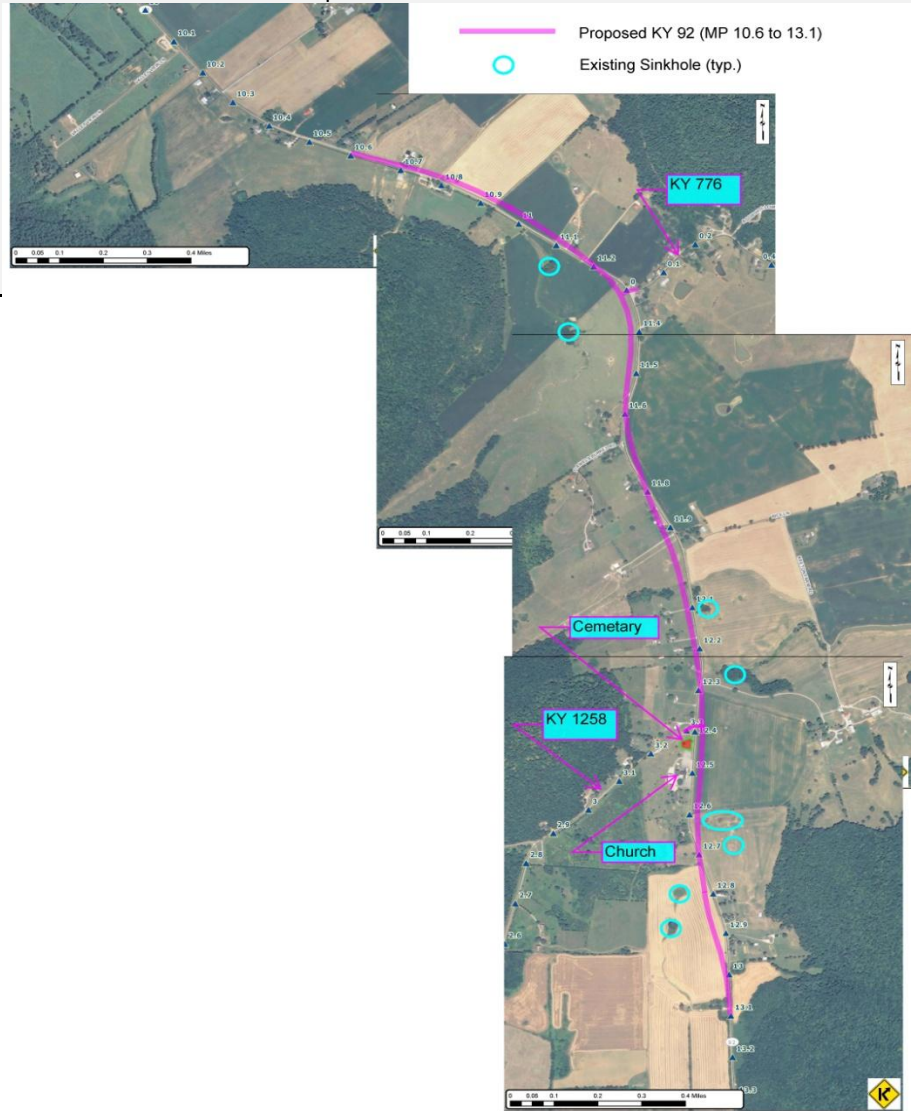
IV. POSSIBLE ALTERNATIVES

A. Alternative 1: No Build

NO BUILD DOES NOT ADDRESS THE PURPOSE AND NEED

B. Alternative 2: Reconstruct KY 92 from MP 10.6 to 13.1

Reconstruct KY 92 from MP 10.6 to 13.1 (NOT per the 2012 enacted highway plan milepoints) to raise grade above flood level. Historically, flooding has occurred from MP ±10.6 to 13.1. By reconstructing the road, other roadway deficiencies can be corrected such as road/shoulder width, clear zone, sight distance, & horizontal and vertical curvature. Existing KY 92 can remain open during construction, but with some lane closures occurring throughout the construction period. Estimated construction period is 10 months.

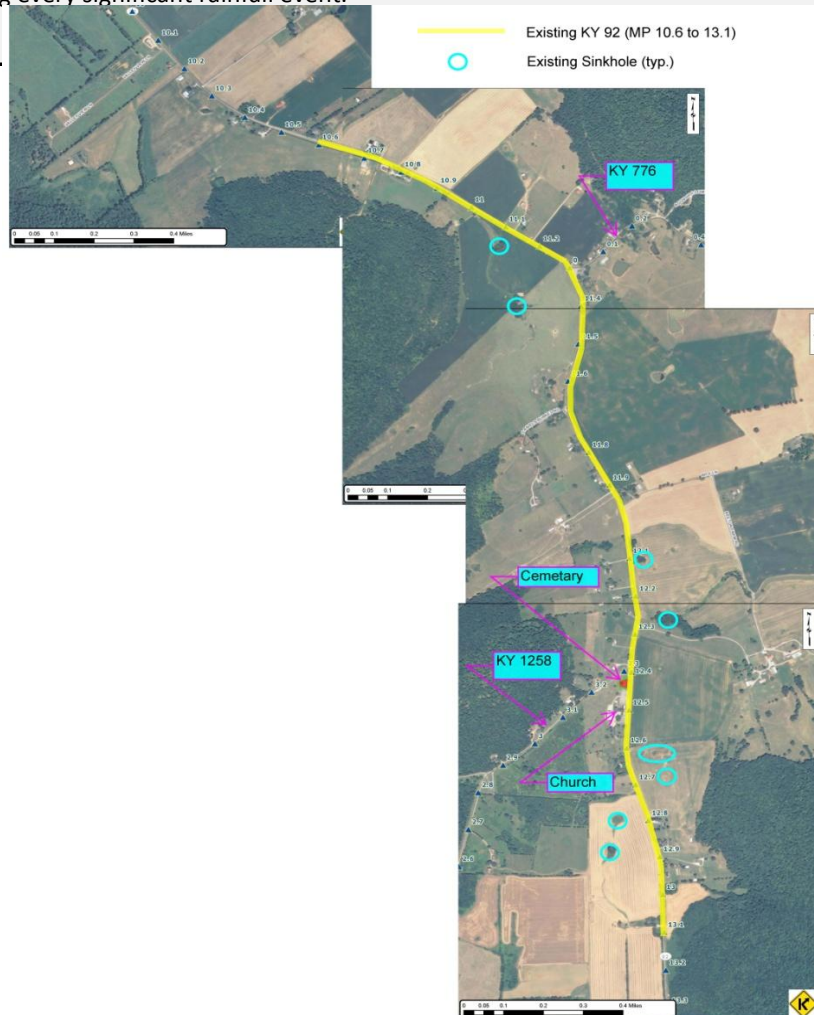


Planning Level Cost Estimate:	<u>Phase</u>	<u>Estimate</u>	
	Design	\$550,000	
	R/W	\$1,450,000	
	Utilities	\$2,000,000	Assumes complete wipeout
	Const	\$8,000,000	
	Total	\$12,000,000	

IV. POSSIBLE ALTERNATIVES (cont.)

C. Alternative #3: Acquire permanent drainage easements to existing sinkholes between milepoints 10.6 to 13.1

Acquire permanent drainage easements to the existing sinkholes near the roadway between MP's 10.6 to 13.1. By acquiring the easements, maintenance can perform routine clearing/cleaning of the sinkholes in order to maintain drainage into them. The surrounding terrain naturally drains into these sinkholes. Without the sinkholes, the area would flood during every significant rainfall event.



First time costs:	
Phase	Estimate
Design	\$250,000
R/W	\$135,000
Utilities	\$60,000
Const	\$125,000
Total	\$570,000

Second year costs:	
Phase	Estimate
Design	\$30,000
R/W	\$0
Utilities	\$0
Const	\$60,000
Total	\$90,000

assume 1 cleaning per year

Including the first time costs and second year costs, then afterwards yearly maintenance costs with a 5% inflation escalator after the second year cleaning of the sinkholes, approx. 34 years of cleaning can be achieved when compared to the construction cost of Alternate 2 (\$8 million).

V. Summary

THE PURPOSE OF THIS DNA STUDY IS TO ADDRESS THE FLOODING ISSUE OF EXISTING KY 92 WITHIN A PORTION OF THE MILEPOINTS PRONE TO FLOODING. THE 2012 ENACTED HIGHWAY PLAN INCLUDES THIS PROJECT AS ITEM NO. 8-394.00, HOWEVER, THE MILEPOINTS IN THE HIGHWAY PLAN SHOULD BE REVISED FROM 9.624 TO 10.6 AND 11.685 TO 13.1, SINCE FLOODING HAS NOT HISTORICALLY OCCURRED IN THE 9.624 TO 10 RANGE. BASED ON VERBAL ACCOUNT FROM LOCALS, THE HISTORICAL FREQUENCY OF FLOODING AVERAGES APPROX. 6 EVENTS OVER A SPAN OF APPROX. 5 YEARS, SOME OF WHICH HAVE OCCURRED MORE THAN ONCE DURING THE SAME YEAR AND SOME YEARS NO FLOODING OVER THE ROADWAY AT ALL. THE ELEVATION OF THE ROADWAY SURFACE RELATIVE TO THE SURROUNDING LOW LYING TERRAIN IS THE CONTRIBUTING FACTOR THE ROADWAY SURFACE IS FLOODED. THE SURROUNDING TERRAIN IS EFFECTIVELY A BOWL IN WHICH THE AVENUE EXCESS RUNOFF DISSIPATES IS THROUGH MULTIPLE SINKHOLES THAT EXIST ON PRIVATE PROPERTY ALONG KY 92. THE 1985 AND 2009 FLOOD INSURANCE RATE MAPS (FIRM) SHOWS THE PROJECT AREA TO BE IN THE ZONE A FLOOD AREA (SEE APPENDIX A).

ALTERNATE 2 IS THE RECOMMENDED APPROACH TO SATISFY THE PROJECT PURPOSE AND NEED DUE TO UNKNOWNNS THAT EXIST WITH ALTERNATE 3 FUNCTIONING AS INTENDED AS WELL AS REGULATORY/PERMITTING HURDLES INVOLVING SURFACE WATER DRAINAGE INTO KARST FEATURES. ALTERNATE 3 WOULD ALSO MOST LIKELY INVOLVE HAVING TO PERFORM DYE/TRACER STUDIES THAT WOULD TAKE OVER A YEAR TO COMPLETE, THE COST OF WHICH HAS NOT BEEN INCLUDED IN ALTERNATE 3 BELOW. MOREOVER, EVEN IF A STUDY OF SUCH IS UNDERTAKEN, THERE'S NO GUARANTEE OF QUANTIFYING THE FLOW THAT THE SINKHOLES CAN HANDLE OR CONTINUE TO HANDLE OVER TIME.

Alt #	Description	D (\$)(2013)	R (\$)(2013)	U (\$)(2014)	C (\$)(2014)	Total (\$)
1	NO BUILD	-	-	-	-	-
2	RECONSTRUCT KY 92 FROM MP 10.6 TO 13.1	\$550,000	\$1,450,000	\$2,000,000	\$8,000,000	\$12,000,000
3	ACQUIRE PERM. DRAINAGE EASEMENTS TO EXISTING TWO SINKHOLES BETWEEN MILEPOINTS 10.6 TO 13.1	\$250,000	\$135,000	\$60,000	\$125,000	\$570,000
-	Current Hwy Plan Estimated Cost	\$500,000	\$1,500,000	\$2,000,000	\$8,000,000	\$12,000,000
-	Current Pre-Con Estimated Cost					

VI. Tables and Exhibits

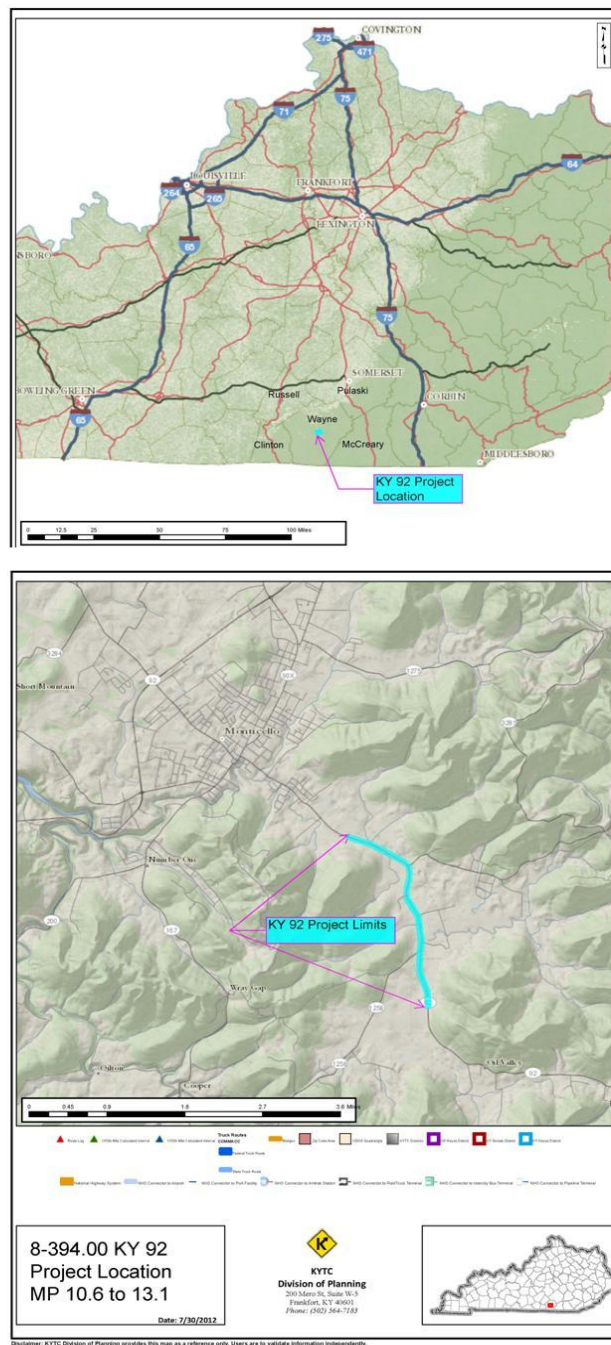


Exhibit 1: Project Location Map

VI. Tables and Exhibits (cont.)



Exhibit 2: KY 92 Flooding Photos

VI. Tables and Exhibits (cont.)

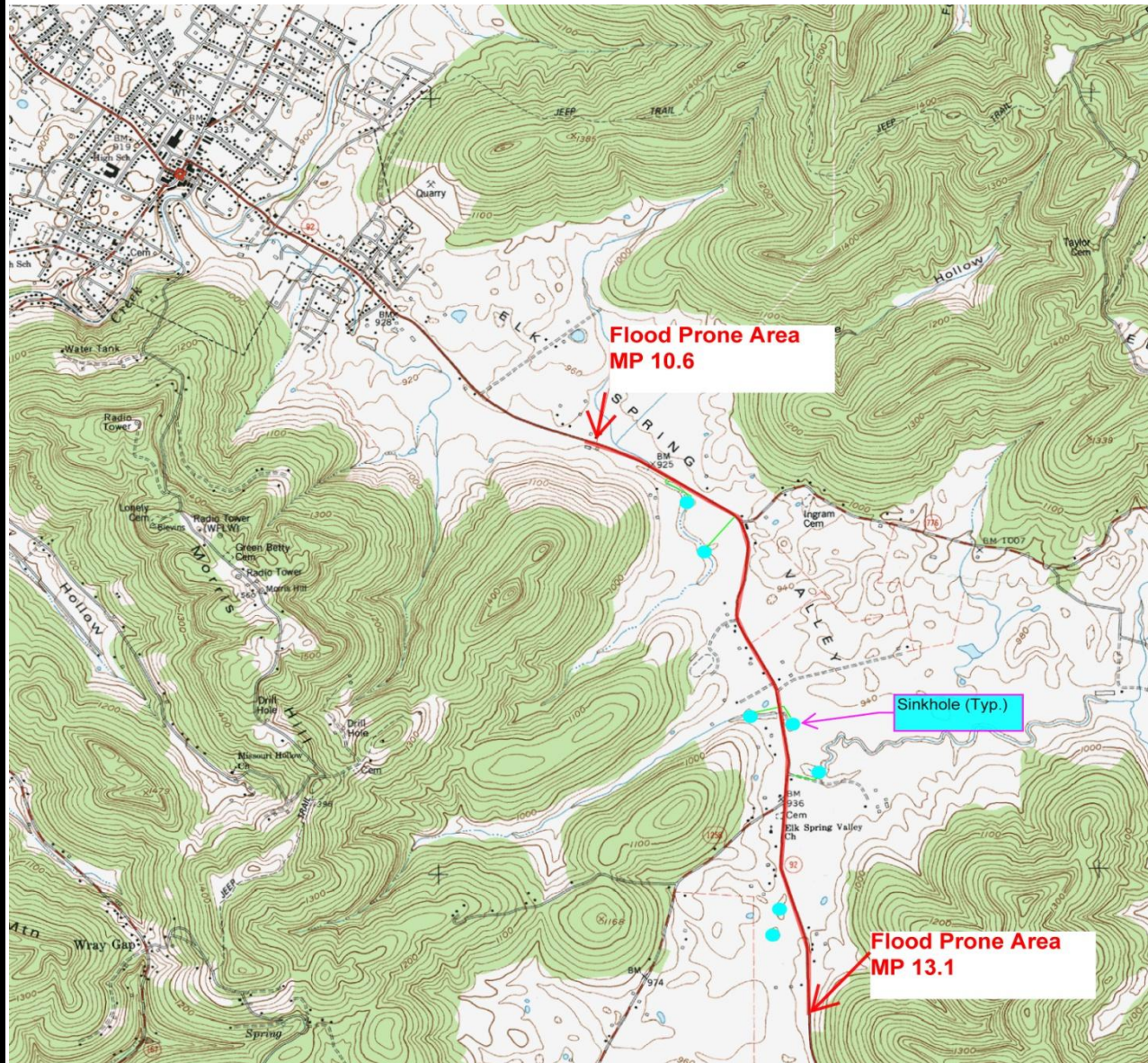


Exhibit 3: USGS Map Showing KY 92 MP 10.6 to 13.1

APPENDICES

<u>APPENDIX A</u>	<u>PAGES</u>
i. Photos of KY 92 Flood Area	1-10
ii. CRASH data from KSP Database	11
iii. 1985 Flood Insurance rate Map (FIRM)	12
iv. 2009 Flood Insurance rate Map (FIRM)	13
v. Construction Cost Estimate	14-15