ENVIRONMENTAL ASSESSMENT

U.S. Route 54
Mississippi River Bridge

Louisiana, Missouri
Pike County, Illinois

MoDOT Job No. J3P2209
IDOT Job No. D-96-165-10
Federal Aid No. 0544049

April 2016

U.S. Department of Transportation
Federal Highway Administration

Missouri Department of Transportation
MoDOT

Illinois Department of Transportation

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Submitted pursuant to 42 U.S.C 4332(2)(c)
and 49 U.S.C 303 by the
U.S. Department of Transportation
Federal Highway Administration
The Missouri Department of Transportation
and
The Illinois Department of Transportation
and
COOPERATING AGENCIES
U.S. Army Corps of Engineers
U.S. Coast Guard

4/21/16		Program Development Team Leader
Date of Approval	FHWA, Missouri	Title
4/20/16	Ed H	CHIEF ENGINEER
Date of Approval	MoDOT	Title
4/15/16		Region Four Engineer
Date of Approval	IDOT	Title

The following persons may be contacted for additional information concerning this document:

Ms. Raegan Ball
Program Development Team Leader
FHWA Missouri Division Office
3220 West Edgewood, Suite H
Jefferson City, Missouri 65109
(573) 638-2620

Ms. Catherine Batey
Division Administrator
FHWA Illinois Division Office
3250 Executive Park Drive
Springfield, Illinois 62703
(217) 492-4600

Mr. Edward Hassinger
Chief Engineer
Missouri Department of Transportation
PO Box 270
Jefferson City, Missouri 65102
(573) 638-2620

Mr. Jeffrey M. South
Deputy Director of Highways
Illinois Department of Transportation
126 East Ash Street
Springfield, Illinois 62704
(217) 782-7301

MoDOT and IDOT signatures indicate verification that the content of this document and scope of the project are accurate. The FHWA signatures give approval to distribute this information for public and agency review and comment. Such approval does not commit FHWA to approve any future grant requests to fund the preferred alternative.

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Identification of Problems that Need a Solution

Introduction

U.S. Route 54 (Route 54) begins at I-72/U.S. Route 36 in western Illinois, then travels southwest through Pittsfield, Illinois; Louisiana, Missouri; and Bowling Green, Missouri, where it intersects U.S. Route 61 and continues into central Missouri (Figure 1-1). The Champ Clark Bridge carries Route 54 across the Mississippi River at Louisiana connecting Pike County, Missouri, with Pike County, Illinois. Named after James Beauchamp Clark, 1911–1919 Speaker of the House from Bowling Green, the historic bridge is an icon to the Louisiana community and is the only Mississippi River crossing between Hannibal, Missouri, and St. Louis/Alton, Illinois. The Champ Clark Bridge underwent rehabilitation projects in 1983, 1999, and 2005. Nearly six million dollars has been spent in the last ten years to maintain the bridge in its current condition. Closure of this Mississippi River Bridge for any reason would necessitate a one-way detour of 77 miles on state highways for motorists crossing the river north at Hannibal or 183 miles south via St. Louis/Alton.

Why This Environmental Assessment Is Being Prepared

The Missouri Department of Transportation (MoDOT) and the Illinois Department of Transportation (IDOT) anticipate receiving federal funds from the Federal Highway Administration (FHWA) and would jointly fund the proposed project if approved. Funding for design and construction of the preferred alternative is programmed in IDOT's 2016-2021 statewide transportation improvement plan (STIP). Scoping and design of the preferred alternative was in MoDOT's 2016-2020 STIP and the final design and construction will be included in MoDOT's 2017-2021 STIP with construction identified for 2018.

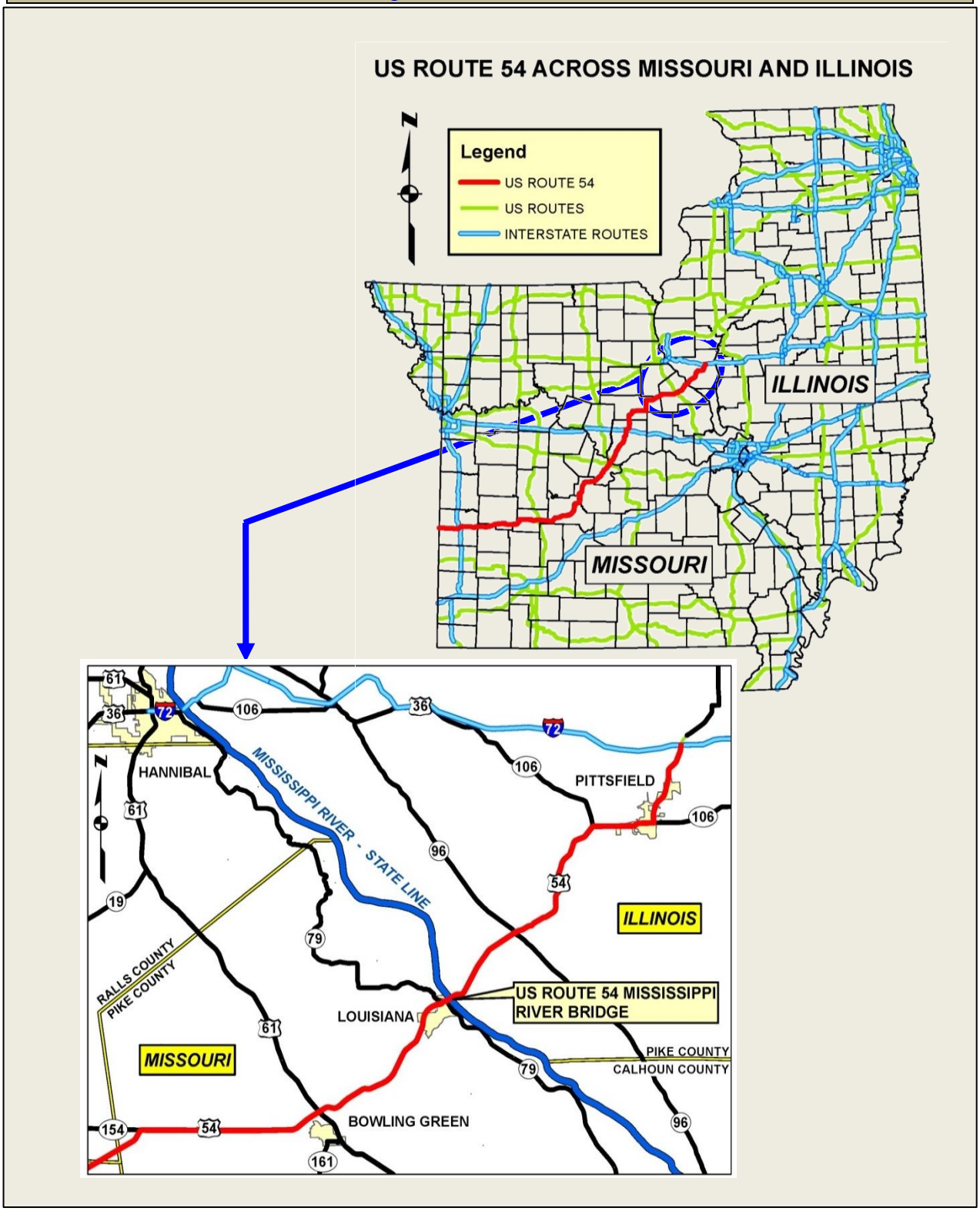
Information for the Public on Transportation Decision Making

How do you ensure your opinions are heard and considered by planners, road designers, elected officials, and other citizens? FHWA and Federal Transit Administration (FTA) https://www.environment.fhwa.dot.gov/projdev/tdmpi_p_d.asp answers these and other transportation-related questions.

A $10 million Transportation Investment Generating Economic Recovery (TIGER) grant received in November 2015 will be applied to this project. In addition, this project has been selected as a design/build project where a contractor bids on the project for both the design and construction.

As the lead federal agency, the FHWA is responsible for ensuring that all highway improvement projects using federal money comply with the National Environmental Policy Act (NEPA). This environmental assessment (EA) was developed in accordance with 23 CFR 771 to document and inform the decision-making process for the proposed project. The NEPA documentation process, regulations, and details of resource laws involved in the project may be found in Appendix A.

Figure 1-1 U.S. Route 54



Location of the Project Study Area

The project study area for this EA extends approximately 1.5 miles from the intersection of Route 54 and Missouri Route 79 North (Route 79) in the city of Louisiana, Missouri, to the intersection of Route 54 and Township Road 400 North in Pike County, Illinois (Figure 1-2). All traffic crossing the Champ Clark Bridge from Missouri uses Route 54, Route 79 North, or Route 79 South. The Route 54/Route 79 North intersection is the initial merge point for these traffic streams and therefore a logical western project terminus. Illinois traffic approaches the Champ Clark Bridge via Route 54. Two side roads, a marina entrance, the Sny Levee, and seven private entrances intersect with Route 54 west of the Illinois terminus.

The Existing Bridge and Roadway

Route 54 is classified as an "other principal arterial" —that is, a non-interstate arterial highway that provides long-distance connections for substantial statewide or interstate travel between larger population centers. In Missouri, Route 54 has two 12-foot lanes with 10-foot shoulders and a 60 mile-per-hour (mph) speed limit as it approaches Louisiana from the west. The roadway maintains the same lane and shoulder configuration in the city of Louisiana, with the addition of curb and gutter. The speed limit drops several times within the city and is 30 mph approaching the bridge. In Illinois the Route 54 speed limit is 45 mph within the project limits, increasing to 55 mph just beyond the eastern terminus. The roadway has two 12-foot lanes with 6-foot shoulders.

The Champ Clark Bridge opened to traffic in 1928 as a toll bridge and was taken into the state highway system in 1953. The through truss structure (Figures 1-3 and 1-4) crosses the Mississippi River at River Mile 283.2 and is eligible for listing on the National Register of Historic Places (NRHP). The historic Champ Clark Bridge consists of five steel Pennsylvania through-truss spans over the river channel and seven steel I-beam spans on the eastern approach. MoDOT bridge data lists the structure as 2,286 feet long, with a main span of 418 feet over the navigation channel. The 20-foot-wide deck carries two 10-foot lanes with no shoulders and has a vertical clearance of 14.7 feet.

From 2007 through 2014, the Annual Average Daily Traffic on the bridge ranged between approximately 3,800 and 4,065 vehicles per day (vpd). This volume is expected to increase to 4,630 vpd by 2033. Commercial trucks averaged almost 17% of the total traffic on the bridge or 650 vpd. The narrow bridge width is a concern for local residents meeting large trucks and farm equipment that often use the bridge.

Figure 1-2 Study Limits for Route 54 Mississippi River Bridge EA

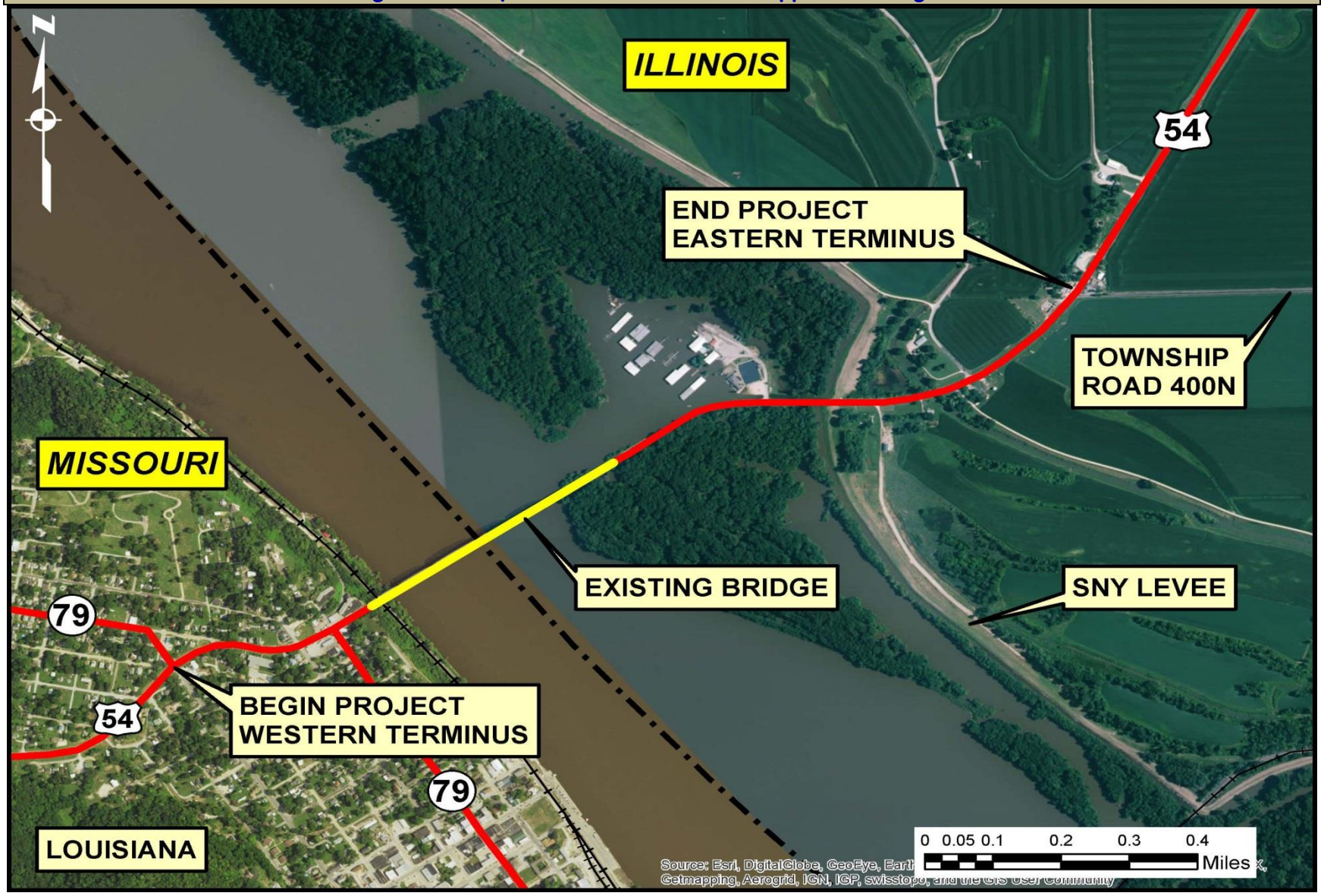
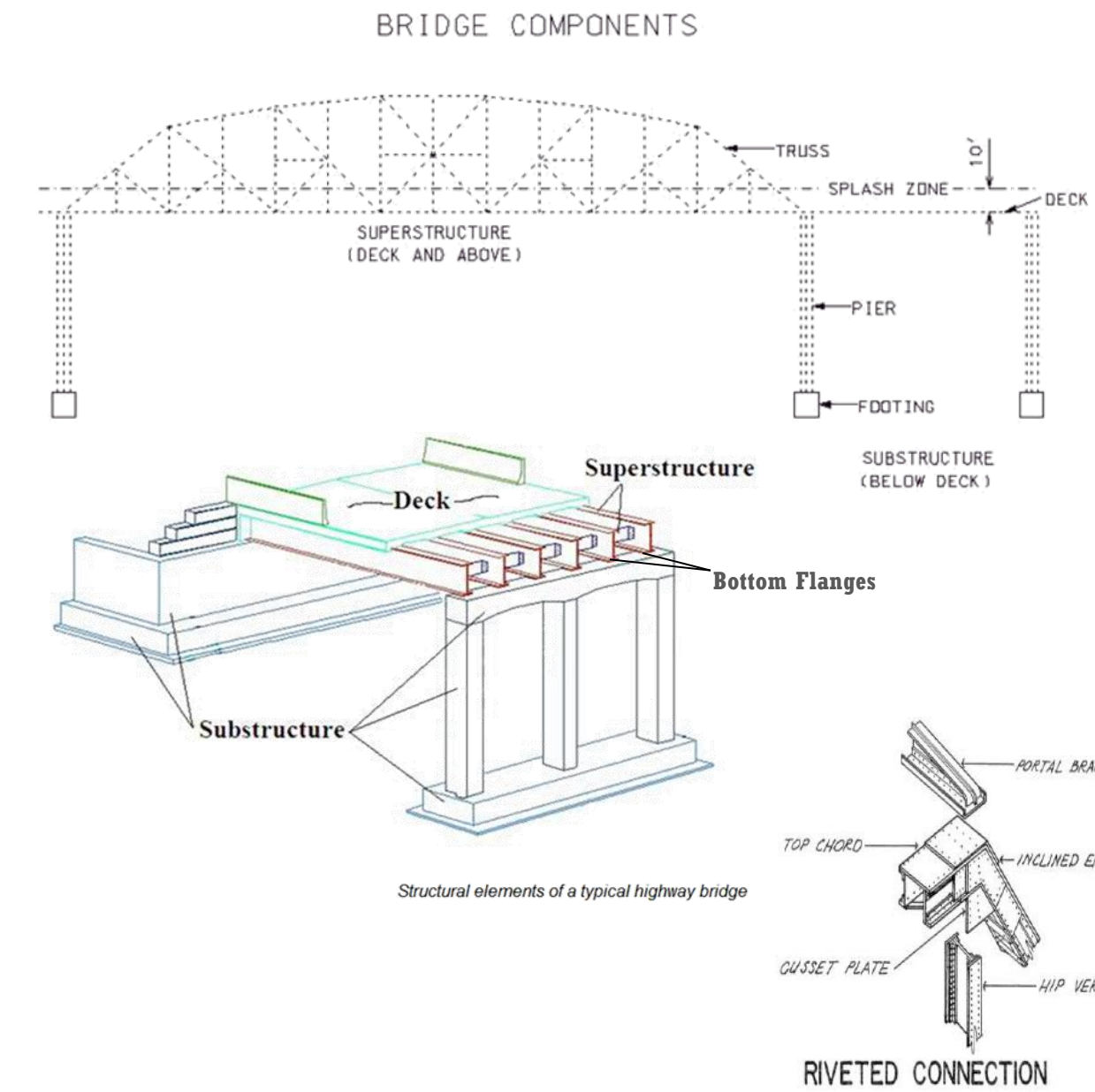


Figure 1-3 Bridge Terminology



Structural elements of a typical highway bridge

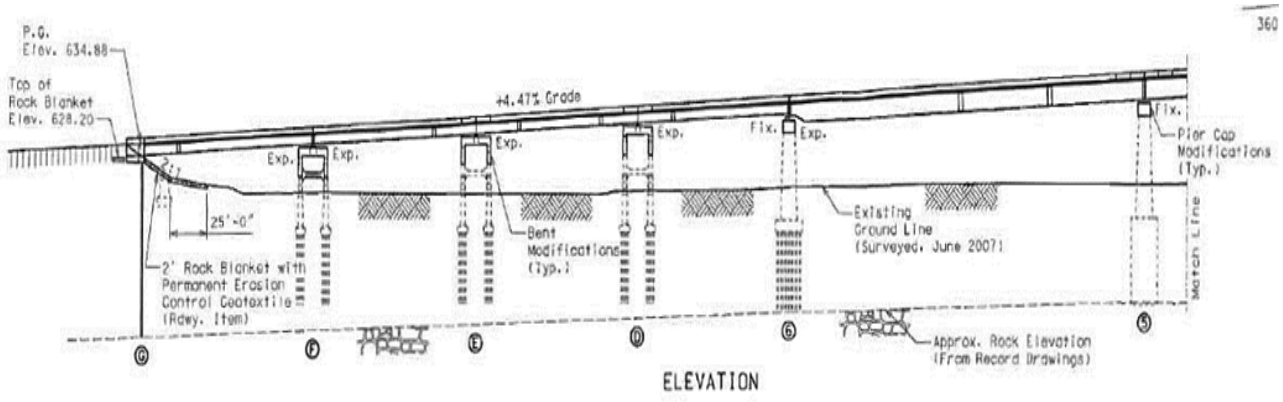


Figure 1-4 The Historic U.S. Route 54 Mississippi River Bridge

Route 54 Mississippi River Bridge, looking northeast

North side of bridge, looking east

On the bridge, looking east

North side of east approach, looking west

The primary purpose of the project is to provide a reliable, safe, and cost-efficient Route 54 crossing over the Mississippi River between the city of Louisiana and the state of Illinois.

Project Needs

- The Champ Clark Bridge (K0932) is 83-years old and structurally deficient. Its age and condition require regular maintenance resulting in periodic closures that create great inconvenience to the traveling public and substantial expense to taxpayers.
- The bridge's design is functionally obsolete. It does not meet MoDOT's or IDOT's standards for lane width, shoulders, or vertical clearance.
- A portion of the existing Route 54 roadway east of the river between the bridge and the Sny Levee is unreliable during flood events. In addition, the existing Illinois bridge approach creates a substandard section in the Sny Levee.
- The Route 54/Route 79 South intersection immediately west of the bridge in Louisiana does not function well.

The remainder of this chapter discusses the project needs in more detail.

The Bridge's Structurally Deficient Condition

The bridge is inspected every year and the substructure (foundation and supporting piers), superstructure (truss and beams), and deck (riding surface) are each assigned numerical condition ratings. These ratings range from 0 - a failed condition that cannot be corrected and typically requires closing the ridge, to 9 - excellent condition. Currently, the substructure and deck condition are rated 5 (fair) and the superstructure is rated 4 (poor).

Exposure to corrosion over time reduces the dimensions of structural steel components, known as section loss. The top and bottom flanges of the floor beams at the gusset plate connections of the Champ Clark Bridge have section losses averaging 30%, and the floor beam bottom flanges under joints have section losses up to 50%. Several areas of the lower chord have holes rusted through (Figure 1-5, problem areas highlighted in orange and pink). The bridge has a sufficiency rating of 23%, where 100% represents an entirely sufficient bridge and zero percent a deficient or entirely insufficient bridge. Sufficiency rating is an overall rating of a bridge's ability to remain in service based on the bridge field inspection and evaluation. Structural defects, low vertical clearance, or narrow lanes may result in a low sufficiency rating though does not imply the bridge is likely to collapse or is unsafe. The Champ Clark Bridge is currently restricted to a weight limit of 40 tons.

What is a "structurally deficient" bridge?

A bridge is considered structurally deficient when the deck, superstructure, or substructure condition is rated 4 or lower. This designation does not mean the bridge is unsafe or likely to collapse; however, it must be monitored, inspected, and repaired or replaced as appropriate to retain structural integrity. In some cases, the gross vehicular weight allowed on the bridge may be reduced to keep it safely open to traffic. If a physical inspection identifies unsafe conditions, the bridge must be closed.

Figure 1-5 Existing Bridge Condition

During the 1983 bridge rehabilitation, the steel grid deck was placed on the bridge and repairs were made to portions of the substructure column shafts and caps. The one-inch asphalt mat and membrane overlay were placed on the deck during the 1999 rehabilitation contract. The 2005 rehabilitation included substructure repairs to portions of the column shafts and caps as well as to several piers, and all the caps were sealed. The bridge was last painted in 2005 and the paint is in fair condition. The roadway was resurfaced in 2012 except for the ¼ mile between the bridge and Sny Levee last resurfaced in 1998. Bridge joint repairs were completed winter of 2014.

The Bridge's Functionally Obsolete Design

Missouri's current standards for new bridges longer than 1000 feet call for 12-foot lanes and 10-foot shoulders. Missouri's bridge standards meet or exceed the American Association of State Highway and Transportation Officials (AASHTO) national standards, which recommend 12-foot lanes for bridges with more than 2,000 vpd and allow the use of shoulders narrower than 10 feet on bridges that are more than 200 feet long. The bridge's through truss design limits vertical clearance to 14.7 feet, considerably less than the current 16.5-foot vertical clearance standard.

What makes a bridge "functionally obsolete"?

A functionally obsolete bridge lacks adequate lane widths, shoulder widths, or vertical clearances to serve current traffic demand or to meet today's geometric standards. Although functionally obsolete bridges were built to standards that are no longer used, they are not necessarily unsafe.

Design deficiencies such as substandard lane width and lack of shoulders can affect the efficient flow of traffic and contribute to delays when crashes, vehicle breakdowns, or scheduled roadwork result in lane closures. Such effects will likely become more problematic as traffic volumes grow, increasing the potential for crashes and breakdowns that can cause lane blockages.

During the five-year period from January 2009 to December 2013 there were fewer crashes that occurred on the bridge than the average for similar bridges.

Sideswipes were the most common crash type. The second most common crash type was a result of impacting the bridge truss or guardrail and several crashes occurred when vehicles lost control. In addition to these crashes, damage to truck mirrors is a common occurrence with many of these crashes going unreported. Most crashes on the bridge resulted in only property damage, several crashes resulted in bodily injury, and one crash was fatal. Because this bridge crash rate is lower than average, safety will not be considered a need in this document. Additional crash data is on file with MoDOT, available upon request.

Because of the narrow, 20-foot deck width, oversize loads and large farm equipment often stop traffic to cross the bridge. Five to seven times a year, traffic on the bridge is restricted to one lane for deck repair and other routine maintenance. Traffic also is reduced to one lane for annual inspection which lasts up to four days.

Consideration must be given to safely accommodating pedestrians and bicyclists during the development of federally funded highway projects (23 CFR 652.5). The historic bridge's narrow lane width and lack of shoulders discourage pedestrians and bicyclists from crossing.

Sny Levee and Roadway Flooding

Reach 3 of the Sny Levee (Figure 1-6) runs adjacent to the Mississippi River in Illinois, protecting approximately 45,000 acres in the Sny Island Levee Drainage District. The Reach 3 main stem levee extends about 18 miles from the north at Kiser Creek south to the Bay Creek/Six Mile diversion channel levee just a few hundred feet south of Lock & Dam 24 in Clarksville. The top-of-levee elevation immediately north of Route 54 is 468 feet above mean sea level (AMSL). The top-of-levee elevation immediately south of Route 54 is 467 feet AMSL. The roadway elevation at the levee is 462.2 feet AMSL, creating just under a five-foot notch in the levee system.

As Route 54 approaches the bridge in Illinois, between the Sny Levee and the bridge approach, the existing roadway has a low area. Floodwaters encroached onto the approach surface for an average of five days each in 1983 and 1986. In addition, floodwaters overtopped the approach in 1973, 1993, 2001, 2008, and 2014 requiring the Route 54 roadway, where it creates a notch, to be sandbagged on both sides to the height of the Sny Levee. Closures lasted from 10 days to a month.

Route 54/Route 79 South Intersection

Route 54 intersects with Route 79 South at a four-way stop 300 feet west of the Bridge in the city of Louisiana. City officials and local residents have expressed concerns with this intersection because motorists run the stop sign on Route 54, especially when approaching from the bridge. As a result, flashing red lights were installed on the stop signs to the Route 54 approaches as well as the Route 79 approach and an overhead flashing red light was installed warning motorists of the stop condition. Additionally, many trucks use Route 54 to access Route 79 South, often for accessing Louisiana's business district and grain terminals. This intersection is difficult for large trucks to negotiate turning from Route 54 onto Route 79 South. For instance, semi-trucks approaching from the west cannot use the right-turn lane and instead must turn from the left through lane because of the small radius at the intersection.

System Continuity

The Champ Clark Bridge is one of three vehicular bridges connecting Missouri and Illinois north of the St. Louis metropolitan area. This bridge also is the only Mississippi River crossing between Alton, Illinois, and Hannibal, Missouri, a distance of more than 120 miles. In December 2012, MoDOT conducted a destination study to identify travel patterns of vehicles crossing the bridge. Of the vehicles crossing the bridge from Illinois, 73% continued west out of Louisiana on Route 54, just less than 20% headed south on Route 79, and 7% went north on Route 79. Of those crossing the bridge from Missouri, 70% entered Louisiana on Route 54, 23% entered on Route 79 south and 7% entered from Route 79 north.

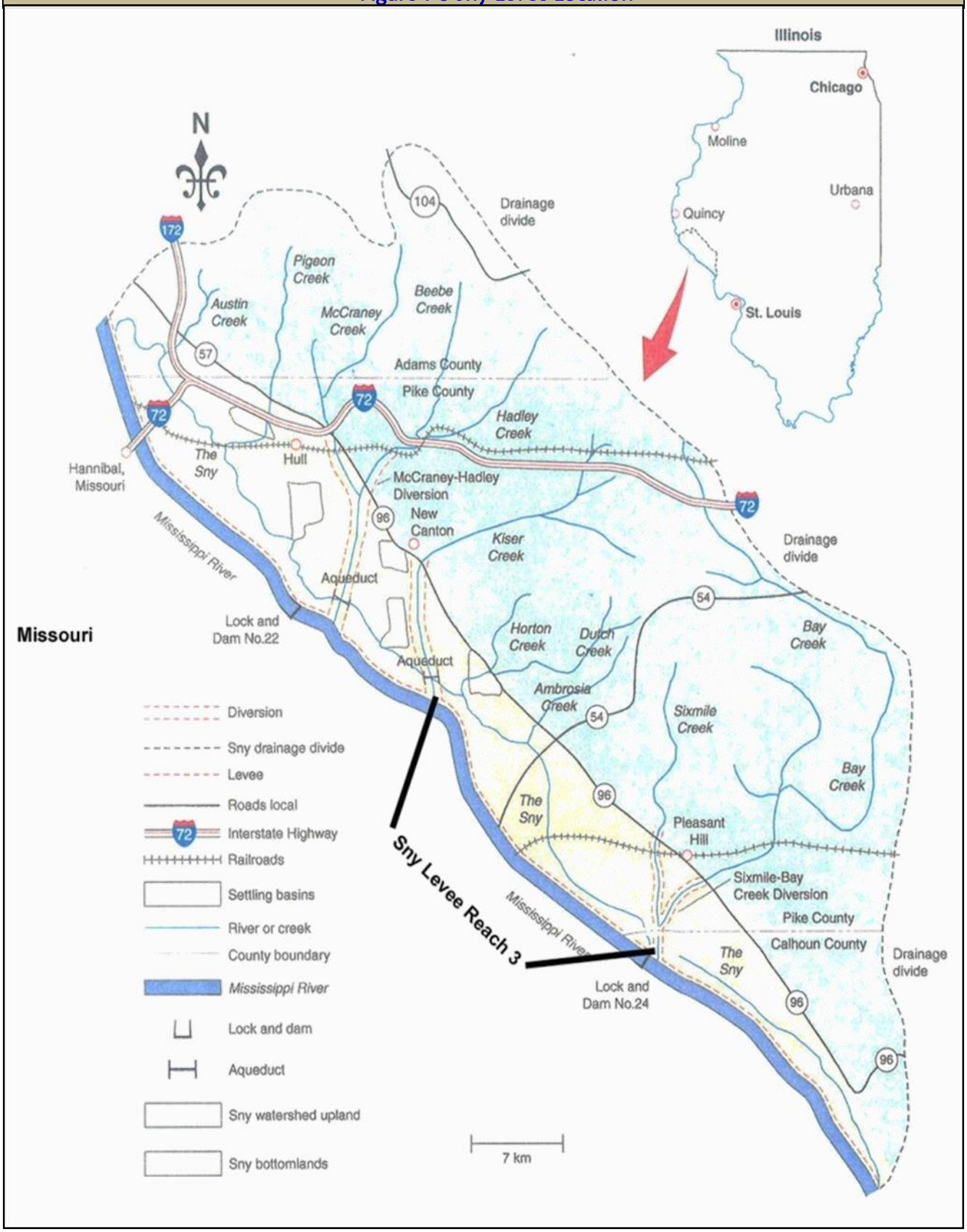
Louisiana has many businesses that serve both Pike County, Missouri, and Pike County, Illinois. Among the largest are Pike County Memorial Hospital, Allparts Inc., Arrow Industries, Hercules Inc., Stark Bro's Nurseries, and Stark Bro's Fulfillment. The Northeast Correctional Center in Bowling Green is a major employer in Pike County, Missouri. In addition, Louisiana is home to more than a dozen restaurants, many convenience stores, and service industries including insurance, medical, and financial.

Throughout the year, the surrounding agricultural community relies on Route 54. Fifty percent of the grain terminal's business comes from the Illinois side of the river while many farms on the Missouri side use fertilizer and spraying services from Illinois. Lime and other aggregate from the Wayne B. Smith's S.S.S. Inc. quarry are transported to Illinois via the bridge.

Louisiana is part of a dynamic art community that along with Hannibal and Clarksville forms the 50 Miles of Art Corridor, where artists and artisans create works of art that cannot be found elsewhere. During the 50 Miles of Art event held in the spring and fall each year, professional artists open their studios, galleries, and retail spaces to the public. Louisiana boasts more than 20 outdoor murals, the 20-acre Henry Lay Sculpture Park, and is noted as having Missouri's most intact Victorian streetscape.

Whether the bridge is used to obtain or provide goods and services or is used by travelers passing through, people depend on a river crossing at this location.

Figure 1-6 Sny Levee Location



Bicycle and Pedestrian Accommodations

Although the city of Louisiana does not have a pedestrian and bicycle master plan, there are pedestrian and bicycle opportunities in the area. Route 79 is a designated part of the Mississippi River Trail that runs from Minnesota to the Gulf of Mexico. The 9-mile segment of Route 79 between Louisiana and Clarksville has six-foot-wide paved shoulders designated for bicycle use. Sidewalks are present throughout much of downtown Louisiana and along Georgia Street, a major east-west connector; however, there are no sidewalks on the bridge. The historic bridge's narrow lane width and lack of shoulders discourage pedestrians and bicyclists from crossing.

Potential destinations in Illinois that bicyclists and pedestrians could access include the marina and businesses along the river.

Other Planned Improvements

Recent improvements to Route 54, which occurred in 2012, included resurfacing ten miles into Illinois and replacing two bridges in Missouri between Bowling Green and Louisiana. Route 54 west of Louisiana remains in good condition and will be resurfaced within the next five years. Route 79 north was overlaid in 1999 and is scheduled to be overlaid in the next four years. Route 79 south was overlaid in 2005 and is scheduled to be resurfaced within the next four years. These planned future improvements are part of MoDOT's Northeast District pavement plan.

Conclusion

The Champ Clark Bridge over the Mississippi River provides an important connection between Illinois and Missouri. The current and projected traffic volumes indicate that it will continue to perform at an acceptable level. However, the 83-year-old bridge is structurally deficient requiring continual maintenance and is functionally obsolete with substandard lane width, vertical clearance, and shoulders. Rehabilitation can extend the expected life of the bridge, but continues to be a temporary solution that does not address the major concern of substandard bridge width. The bridge is reaching the end of its useful life and as its deterioration continues it will eventually cost more to maintain than to replace. The Illinois approach forms a notch in the levee causing maintenance staff to protect 45,000 acres of farmland by sand bagging during flood events at which time Route 54 must be closed. The Route 79/54 intersection improvement or changes are needed for adequate truck turning clearance.

Alternatives – Chapter 2

Proposals for Providing a Reliable, Safe, and Cost-efficient Route 54 Crossing over the Mississippi River

This chapter discusses a range of possible alternatives initially considered, the benefits and disadvantages of each, and identifies the reasonable alternatives that would satisfy the project's defined purpose and need without carrying substantial disadvantages.

Numerous factors—such as the effectiveness of each alternative in meeting the project's defined purpose and need, public input, as well as technical, cultural resource, and environmental concerns—are considered in determining which of the initial alternatives will be carried forward and evaluated in the EA.

Types of Factors That May Be Used to Determine Which Alternatives Are Evaluated in an EA

Purpose and Need

- Achieves identified needs

Public Input

- Comments submitted by the public
- Coordination with federal, state, and local agencies

Engineering

- Length of new roadway
- Change in travel time
- Bicycle/pedestrian accommodation
- Constructability
- Culverts
- Bridges
- Ruggedness of terrain
- Local road access points

Cost

- Right-of-way cost
- Construction cost
- Mitigation cost

Environmental Considerations

- Impact to communities
- Parklands
- Water resources
- Floodplains
- Airports
- Recreational-use facilities, private
- Threatened & endangered species
- Hazardous waste locations
- Other publicly noted environmental constraints

Potential Cultural Resources

- Cemeteries or burial grounds
- National Register of Historic Places (NRHP) listed or eligible resources, including significant archaeological sites

Initial Range of Alternatives

The initial range of alternatives considered (Figure 2-1) include the No-build alternative, two build alternatives that would use part of the existing bridge, and seven alternatives that would construct a new bridge. Five of the new bridge alternatives are located within 400 feet of the existing bridge, one is approximately one-half mile upstream of the existing bridge, and one is approximately one mile downstream of the existing bridge near the Kansas City Southern Railway bridge.

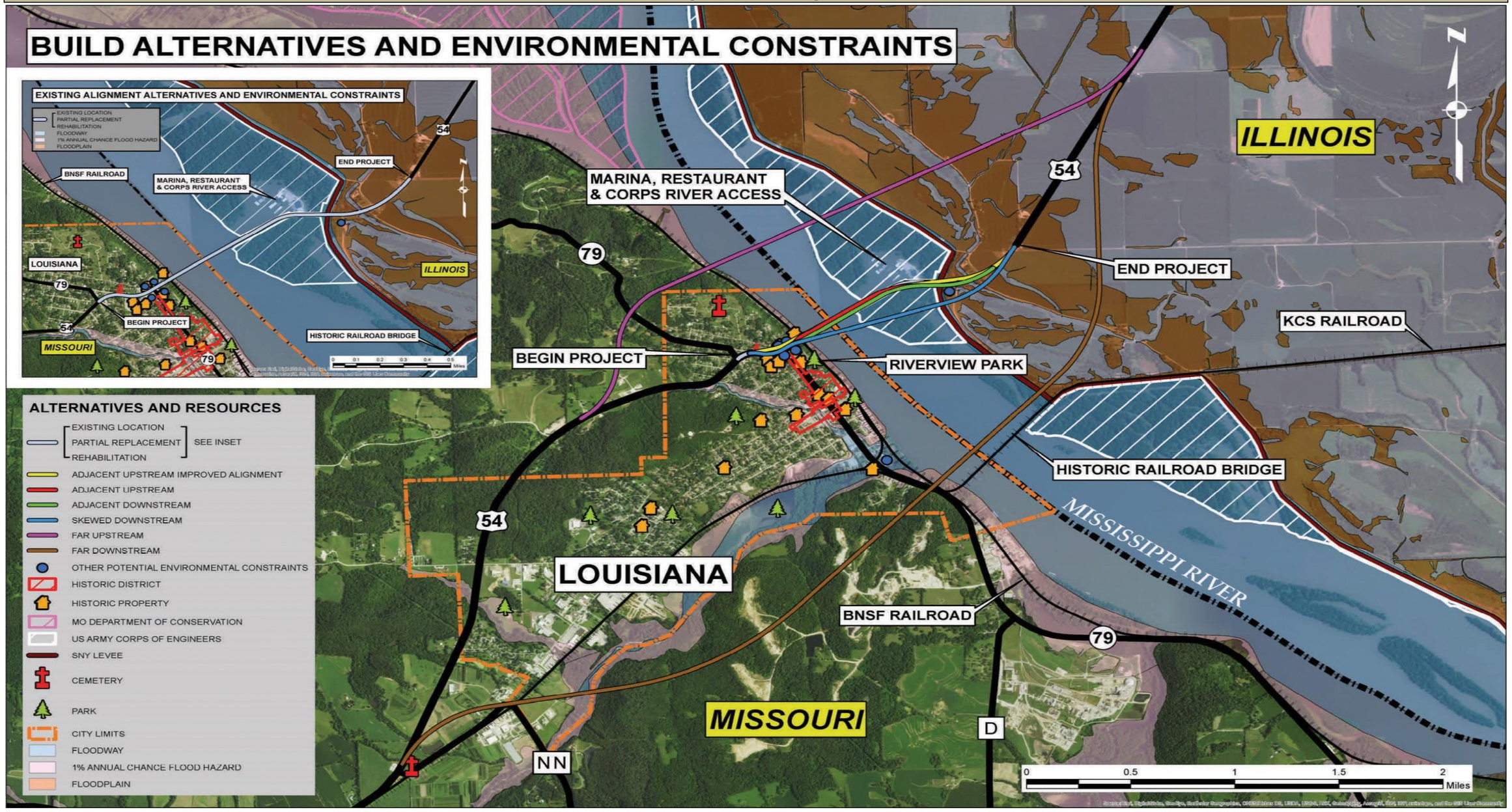
Both the No-build and the Rehabilitation alternatives would retain the existing through-truss design with its substandard 20-foot bridge width (10-foot travel lanes) and 14.7-foot vertical clearance beneath the truss. The Partial Replacement alternative would provide a 26-foot bridge width (11-foot travel lanes and 2-foot shoulders) and meet the current vertical clearance design standard of 16.5 feet. Neither the Rehabilitation nor the Partial Replacement alternative would meet MoDOT's and IDOT's standards for lane width and shoulders and rehabilitation would provide only a short-term solution to the bridge's structural deficiencies.

The seven new bridge alternatives would each provide a 44-foot bridge width with two 12-foot travel lanes and 10-foot shoulders and meet the current lane width and 16.5-foot vertical clearance design standard. This would allow oversized loads and large farm equipment to cross the river without stopping traffic and provide room to maneuver during emergencies or to remove disabled vehicles from the travel lanes. The shoulders would allow bicyclists and pedestrians to cross the bridge without using the vehicular travel lanes. All seven of the new bridge alternatives would result in the removal of the existing historic bridge.

All seven new bridge alternatives would satisfy the project's defined purpose and needs. Each would eliminate the ongoing maintenance needs, expense, and inconvenience to motorists arising from the age and condition of the existing bridge.

All build alternatives would incorporate improvements to the Route 54/Route 79 South intersection immediately west of the bridge in Louisiana. There are four options presented and discussed in this chapter for improving the intersection (Figures 2-2(a)-(d)). Option 1 would improve the existing intersection, Option 2 and Option 3 would relocate and construct a new intersection slightly north or south of its existing location, and Option 4 would construct a roundabout centered on the existing intersection.

Figure 2-1 Initial Range of Alternatives



*Wetlands and Plum Point Slough, in Illinois, shown on Figure 3-5.

**Refer to Appendix A, page 5, Diagram of Typical Floodplain

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Figure 2-2(a) Intersection Options – Option 1

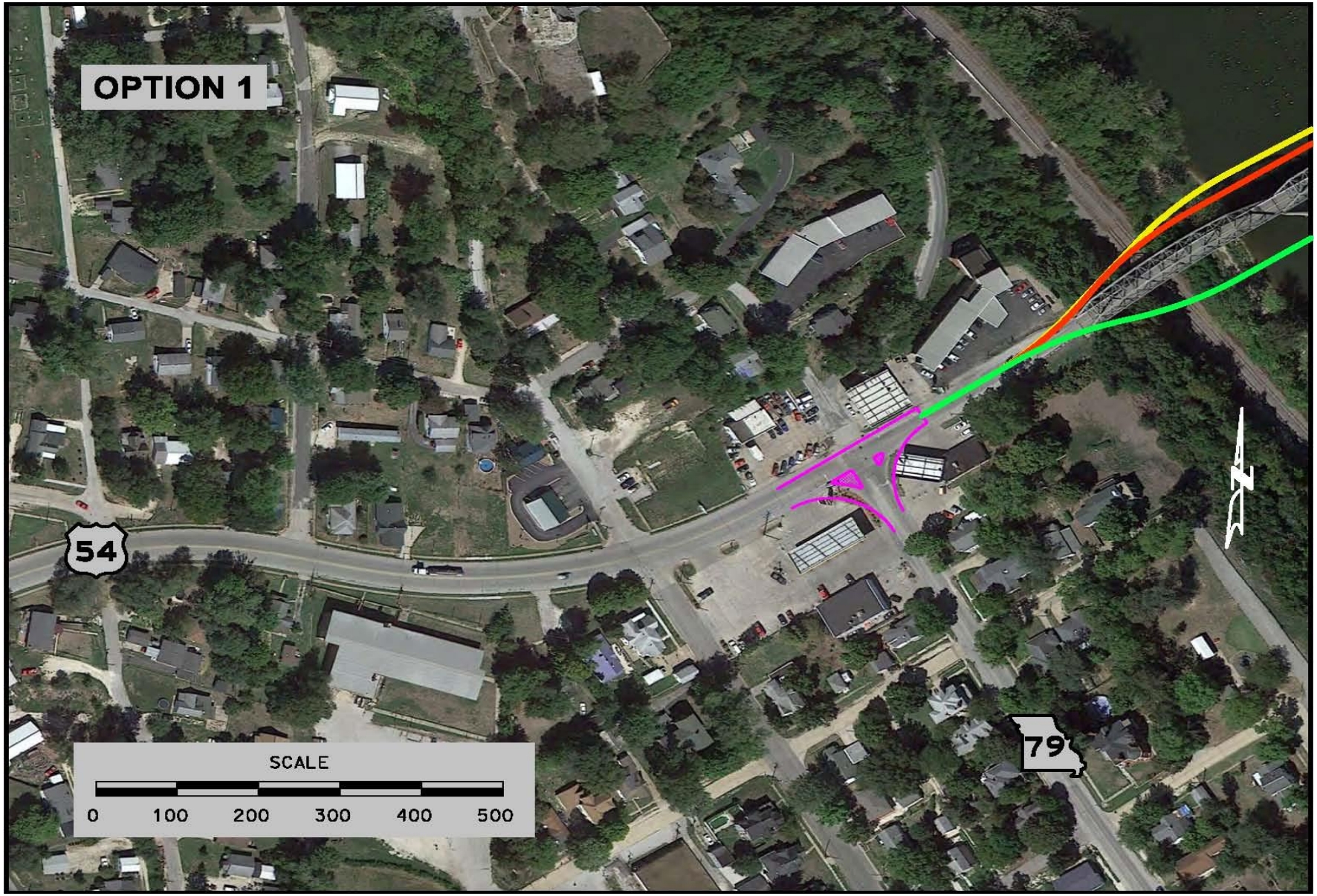


Figure 2-2(b) Intersection Options – Option 2

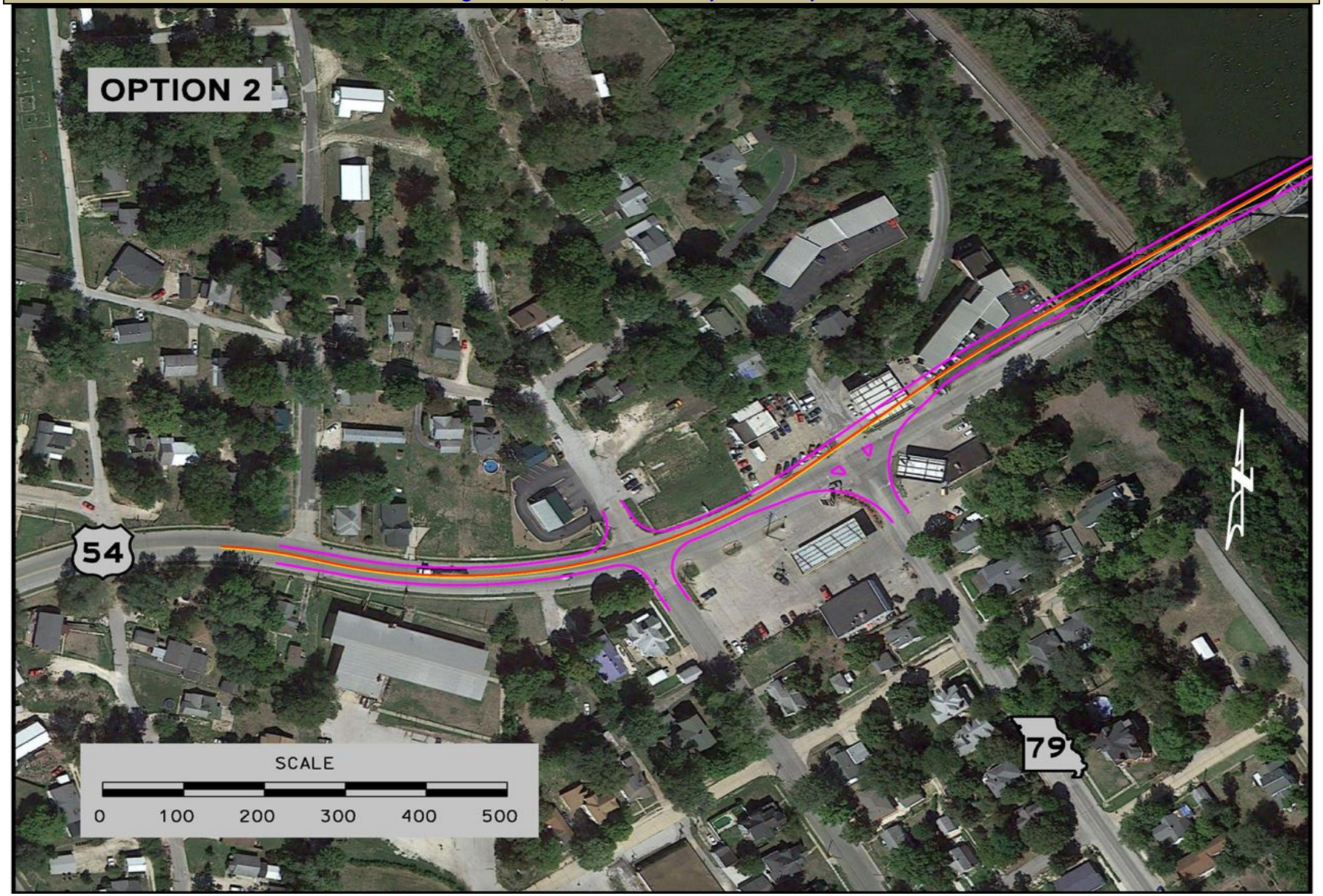


Figure 2-2(c) Intersection Options – Option 3

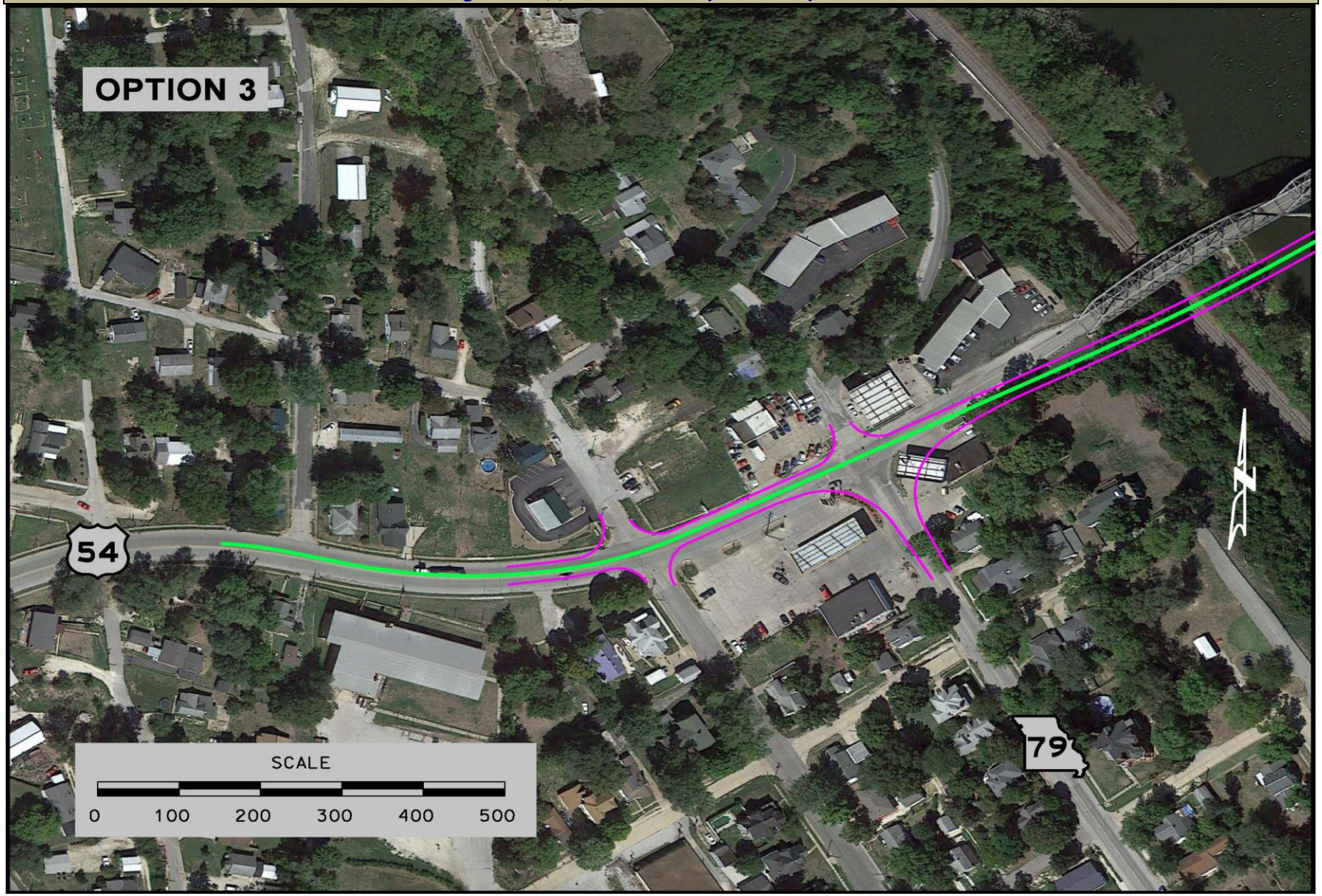
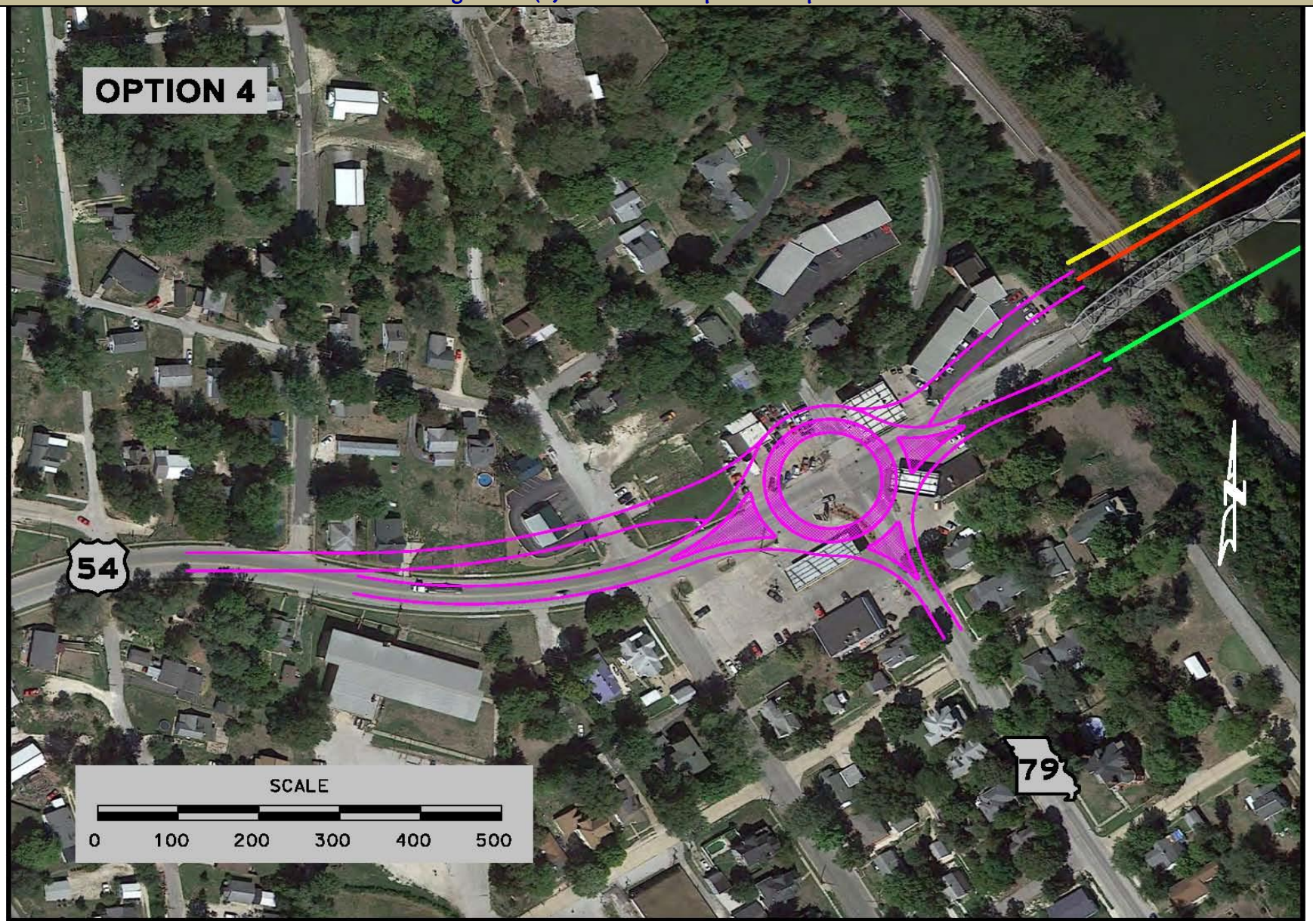


Figure 2-2(d) Intersection Options – Option 4

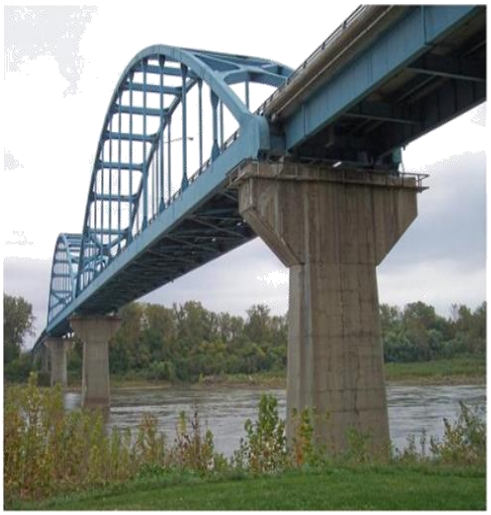


Truss, tied arch, and plate girder structures (Figure 2-3) would be considered for the bridge's anticipated 425-foot main, navigational span. Plate girders would be used to construct the remaining large spans including the Missouri approach span, and concrete girders would be used for the approach span in Illinois. Specific initial alternatives are described next, along with benefits and drawbacks of each.

Figure 2-3 Bridge Types

TRUSS BRIDGE

TIED ARCH BRIDGE



CONCRETE GIRDER BRIDGE

STEEL GIRDER BRIDGE

No-build Alternative

The No-build alternative would retain the existing historic bridge and make no improvements beyond normal bridge maintenance. Normal maintenance includes washing the bridge twice a year to remove deicing chemicals, sealing the bridge deck every three to five years, sealing and replacing expansion joints as needed, and replacing minor portions of deteriorated steel and concrete. This alternative would not include any new major construction.

The bridge is currently restricted to a weight limit of 40 tons. With the No-build alternative, once the bridge deteriorated to a point where normal bridge maintenance was no longer sufficient to ensure safe operation, it would require either another major rehabilitation or closure. However, given the age and condition of the existing bridge, even routine maintenance and rehabilitation are very costly and can only serve as short-term solutions. Continued deterioration of the bridge over time would decrease the bridge's load carrying ability, resulting in decreased posted load limits or possible bridge closure. The No-build alternative would:

⇧ retain existing historic bridge

⇧ minimize environmental impacts

⇧ not require new right of way

⇩ not correct existing deficiencies or meet MoDOT's and IDOT's standards for lane width, shoulders, or vertical clearance—existing bridge's 20-foot driving surface is less than half as wide as MoDOT's and IDOT's typical, contemporary two-lane major river bridge

⇩ not meet today's national standards or MoDOT's requirements for full-width shoulders on bridges more than 1,000 feet long, such as this one, so disabled vehicles do not block the flow of traffic, causing traffic backups and affecting the movement of emergency responders to and through the area

⇩ not eliminate flooding on Illinois approach to the bridge or correct the substandard section of the Sny Levee without significant hydraulic study and impacts of additional bridging to meet requirement of a floodplain no-rise certificate

⇩ not address problems at the Route 54 and Route 79 intersections

⇩ require bicyclists or pedestrians to use vehicular travel lanes to cross the bridge

⇩ result in an estimated bridge service life of 7 years

The No-build alternative fails to meet the project needs or address the deficiencies outlined earlier in Chapter 1 - Purpose and Need. It will be retained in this EA as a baseline for comparison to the other alternatives evaluated.

Rehabilitation (Light Blue)

The Rehabilitation alternative would be similar to the 1983, 1999, and 2005 MoDOT rehabilitation projects. It would extend the existing bridge's life, but would not increase the bridge's width or vertical clearance. This alternative would:

⇧ retain existing historic bridge

⇔ require no new right of way and has few environmental impacts, although limited and temporary impacts would result from clearing vegetation for equipment and staging areas

⇩ not correct existing deficiencies or meet MoDOT's and IDOT's standards for lane width, shoulders, or vertical clearance—existing bridge's 20-foot driving surface is less than half as wide as MoDOT's and IDOT's typical, contemporary two-lane major river bridge

⇩ not meet today's national standards or MoDOT's requirements for full-width shoulders on bridges more than 1,000 feet long, such as this one, so disabled vehicles do not block the flow of traffic, causing traffic backups and affecting the movement of emergency responders to and through the area

⇩ not eliminate flooding on Illinois approach to the bridge or correct the substandard section of the Sny Levee without significant hydraulic study and expense of additional bridging to meet requirements of a floodplain "no-rise" certification

⇩ require bicyclists and pedestrians to use vehicular travel lanes to cross the bridge

⇩ require multiple rehabilitations to maintain the current Route 54 crossing over the long term

⇩ rehabilitation costs and lengthy bridge closures likely increasing as the bridge ages, causing more frequent and burdensome impacts to the traveling public

The Rehabilitation alternative fails to meet the project needs or address the deficiencies outlined in Chapter 1 - Purpose and Need. Although it would extend the service life of the existing structure, the need for future rehabilitations is expected to occur more frequently and the additional life expectancy obtained with successive rehabilitations is expected to decrease.

Given the bridge's age, its narrow width and lack of shoulders, and the anticipated additional service life that would result from another major rehabilitation, this alternative is not considered a cost-efficient investment. Therefore, it is eliminated from further consideration in this EA.

Partial Replacement (Light Blue)

The Partial Replacement alternative (new superstructure) would remove the existing bridge deck and steel truss and replace it with steel plate girder spans and construct a new deck. This alternative would meet the current vertical clearance design standard and allow some widening of the roadway but would not provide full width shoulders because the existing substructure (piers) cannot support a superstructure that meets current bridge width standards.

A 26-foot roadway, likely the widest that could be built on the existing piers, would accommodate two 11-foot lanes and two 2-foot shoulders. The Partial Replacement alternative would:

⇧ increase the overall roadway width by slightly widening the lanes and providing narrow shoulders while removing the overhead and lateral constraints of the existing truss sections

⇔ require no new right of way while reusing existing bridge piers and approaches, thus minimizing environmental impacts to the river and surrounding areas; however, limited and temporary impacts would result from clearing vegetation for equipment and staging areas

⇧ provide a life expectancy of 50 years with regular maintenance

⇩ retain only the piers of the existing historic bridge substantially impairing its eligibility for listing on the National Register of Historic Places

⇩ not meet MoDOT's and IDOT's standards for lane width or shoulders

⇩ not meet today's national standards or MoDOT's requirements for full-width shoulders on bridges more than 1,000 feet long, such as this one, so disabled vehicles do not block the flow of traffic, causing traffic backups and affecting the movement of emergency responders to and through the area

⇩ not eliminate flooding on Illinois approach to the bridge or correct the substandard section of the Sny Levee without significant hydraulic study and impacts of additional bridging to meet requirement of a floodplain no-rise certificate

⇩ require bicyclists or pedestrians to cross the bridge in or immediately adjacent to vehicular travel lanes

⇩ require closing the bridge for an anticipated 12 months, with substantial inconvenience and adverse economic impacts to the traveling public resulting from the lengthy detour

The existing piers are currently rated fair and would require repairs to extend their useful life for this alternative. The 12-month timeframe for construction and closure of the river crossing would adversely affect the city of Louisiana, commuters, businesses, and the local agricultural community. For the roughly 4000 vpd using the bridge, a detour of 77 miles on state highways would be needed to go from one side of the bridge to the other using the nearest alternative Mississippi River crossing at Hannibal. Using the Alton, Illinois, crossing to the south would require a detour of 183 miles.

Because the Partial Replacement alternative fails to fully meet the project needs or address the deficiencies outlined in Chapter 1 - Purpose and Need, it is eliminated from further consideration in this EA.

Existing Location (Light Blue)

The Existing Location alternative would remove the existing deficient bridge and construct a new two-lane bridge in the same location. This alternative would:

⇧ meet the project needs and address deficiencies outlined in Chapter 1 - Purpose and Need

⇧ minimize new right of way and environmental impacts to the river and adjacent land when compared to other new bridge alternatives

⇧ provide full width shoulders that bicyclists or pedestrians could use to avoid sharing vehicular travel lanes when crossing the bridge

- ⇩ remove the existing historic bridge
- ⇩ require closing the Route 54 Mississippi River crossing for an anticipated three to four years with substantial inconvenience and adverse economic impacts to the traveling public

The Existing Location alternative would provide a reliable Mississippi River crossing that would meet the project needs. However, the anticipated three-to-four-year construction period/closure of the river crossing would adversely affect the city of Louisiana, commuters, businesses, and the local agricultural community for an extended time. The number of vpd using the bridge and the length of the detour remains the same as for the Partial Replacement (Light Blue) alternative explained on the previous page. The traveling public and local businesses do not support a long-term closure of this Mississippi River crossing. Therefore, the existing location alternative will be eliminated from further consideration in this EA.

Far Upstream (Pink) and Far Downstream (Brown)

The Far Upstream alternative would construct a new bridge approximately one-half mile upstream of the existing bridge. It would require 3.5 miles of additional roadway be built, beginning approximately 1.2 miles west of the existing bridge and would end approximately 1.25 miles east of Township Road 400N.

The Far Downstream alternative would construct a new bridge approximately one mile downstream of the existing bridge, just upstream of the Kansas City Southern Railway bridge. This alternative would require 5.7 miles of additional roadway be built generally south of Louisiana, beginning 3.5 miles west of the existing bridge near the Route 54/Route NN intersection and ending approximately 1.25 miles east of Township Road 400N. Early in the project development process, the concept of a new structure that would carry both rail and vehicular traffic was discussed with the Kansas City Southern Railway Company. However, the rail company had no interest in this and the idea was not considered further. Both the Far Upstream and the Far Downstream alternatives would:

- ⇧ meet the project needs and address deficiencies outlined in Chapter 1 - Purpose and Need
- ⇧ provide full width shoulders that bicyclists or pedestrians could use to avoid sharing vehicular travel lanes when crossing the bridge
- ⇧ maintain traffic during construction
- ⇔ bypass multiple speed limit changes on U.S. 54 in Louisiana, enabling a more efficient crossing of the Mississippi River compared to other alternatives; however, it is more distant from residents in Louisiana's core
- ⇩ remove the existing historic bridge, if no group is able to adopt and maintain the existing bridge
- ⇩ require a substantial amount of new right of way, 44.5 acres for the Far Upstream alternative and 74.6 acres for the Far Downstream alternative, resulting in greater environmental impacts

⇩ require 27.9 acres of land in the floodplain in Illinois, including land protected by the Sny Levee, for the Far Upstream alternative resulting in greater impacts on flood levels

⇩ require 28.7 acres of land in the floodplain in Illinois, including land protected by the Sny Levee, and 1.9 acres of floodplain in Missouri; the Far Downstream alternative would also result in greater impacts on flood levels and change traffic patterns around Louisiana, with possible adverse impacts to businesses

⇩ cost considerably more than all other alternatives

Both the Far Upstream and Far Downstream alternatives would provide a reliable Mississippi River crossing that would meet the project needs. However, they would bypass the city of Louisiana and are not viewed favorably by the public. In addition to the bridge, each would construct several miles of roadway on new alignment and would have the greatest right of way and associated environmental impacts, particularly to forested floodplain, of the alternatives considered. Based upon the greater environmental impacts and higher construction costs, these alternatives are eliminated from further consideration in this EA.

Adjacent Upstream (Red)

The Adjacent Upstream alternative would construct a new two-lane bridge approximately 50-feet north of the existing bridge, with the alignment crossing to the downstream side of the roadway to avoid impacts to the marina and U.S. Army Corps of Engineers' (USACEs') river access in Illinois. The new bridge would likely terminate west of the levee. Route 54 would provide direct access to the marina and county roads. To maintain traffic during construction, this alternative would require a temporary bypass where the new alignment crosses the existing alignment. This alternative would use staged construction to maintain traffic in Louisiana. The Adjacent Upstream alternative would:

⇧ meet the project needs and address deficiencies outlined in Chapter 1 - Purpose and Need

⇧ require 10.95 acres of new right of way, much less than the Far Upstream and Far Downstream alternatives; environmental impacts to the river and forested floodplain would be less as well

⇧ provide full width shoulders that bicyclists or pedestrians could use to avoid sharing vehicular travel lanes when crossing the bridge

⇩ require some disruption to traffic during construction

⇩ remove the existing historic bridge

The Adjacent Upstream alternative would provide a reliable Mississippi River crossing that would meet the project needs. It is retained for detailed analysis in this EA.

Adjacent Upstream Improved Alignment (Yellow)

The Adjacent Upstream Improved Alignment alternative would construct a new two-lane bridge generally north of the existing bridge and with flatter curves on the roadway in Illinois than other adjacent alternatives. The new bridge would begin 70-feet north of the existing bridge on the west and would cross existing Route 54 near the marina. It would likely terminate before the

levee, with the marina and county roads accessed directly from Route 54. This alternative would require a temporary bypass where the new alignment crosses the existing alignment to maintain traffic during construction. The Adjacent Upstream Improved Alignment alternative would provide better sight distance on the Illinois side of the project. This alternative would:

- ⇧ meet the project needs and address deficiencies outlined in Chapter 1 - Purpose and Need
- ⇧ require 13.24 acres of new right of way, much less than the Far Upstream and Far Downstream alternatives; environmental impacts to the river and forested floodplain would be less as well
- ⇧ provide full width shoulders that bicyclists or pedestrians could use to avoid sharing vehicular travel lanes when crossing the bridge
- ⇧ improve the roadway alignment in Illinois
- ⇩ remove the existing historic bridge
- ⇩ require some disruption to traffic during construction

The Adjacent Upstream alternative would provide a reliable Mississippi River crossing that would meet the project needs. It will be retained for detailed analysis in this EA.

Adjacent Downstream (Green)

The Adjacent Downstream alternative would construct a new two-lane bridge approximately 50-feet south of the existing bridge. The new bridge would likely terminate west of the levee and Route 54 would provide direct access to the marina and county roads. This alternative would use staged construction to maintain traffic in Louisiana. The Adjacent Downstream alternative would:

- ⇧ meet the project needs and address deficiencies outlined in Chapter 1 - Purpose and Need
- ⇧ require 10.40 acres of new right of way, but much less than the Far Upstream and Far Downstream alternatives; environmental impacts to the river and adjacent land would be less as well
- ⇧ provide full width shoulders that bicyclists or pedestrians could use to avoid sharing vehicular travel lanes when crossing the bridge
- ⇧ maintain traffic during construction
- ⇩ remove the existing historic bridge

The Adjacent Downstream alternative would provide a reliable Mississippi River crossing that would meet the project needs. It will be retained for detailed analysis in this EA.

Skewed Downstream (Blue)

The Skewed Downstream alternative would construct a new two-lane bridge approximately 50-feet south of the existing bridge approach in Louisiana. It would cross the Sny Levee approximately 620-feet south of the existing Route 54/Sny Levee crossing and terminate near

Township Road 400N in Illinois. This alternative angles further downstream as it approaches the Illinois side of the river, resulting in a crossing that is not perpendicular to the river channel. The Skewed Downstream alternative would provide a straight alignment on the Illinois side which would be easier to build, but because the bridge would not be perpendicular to the river, the main navigation span would need to be much longer than for other alternatives. Staged construction would be used to maintain traffic in Louisiana during construction. A portion of the existing Route 54 roadway in Illinois would be used as an outer road to provide access to the marina and USACE's river access. This alternative would:

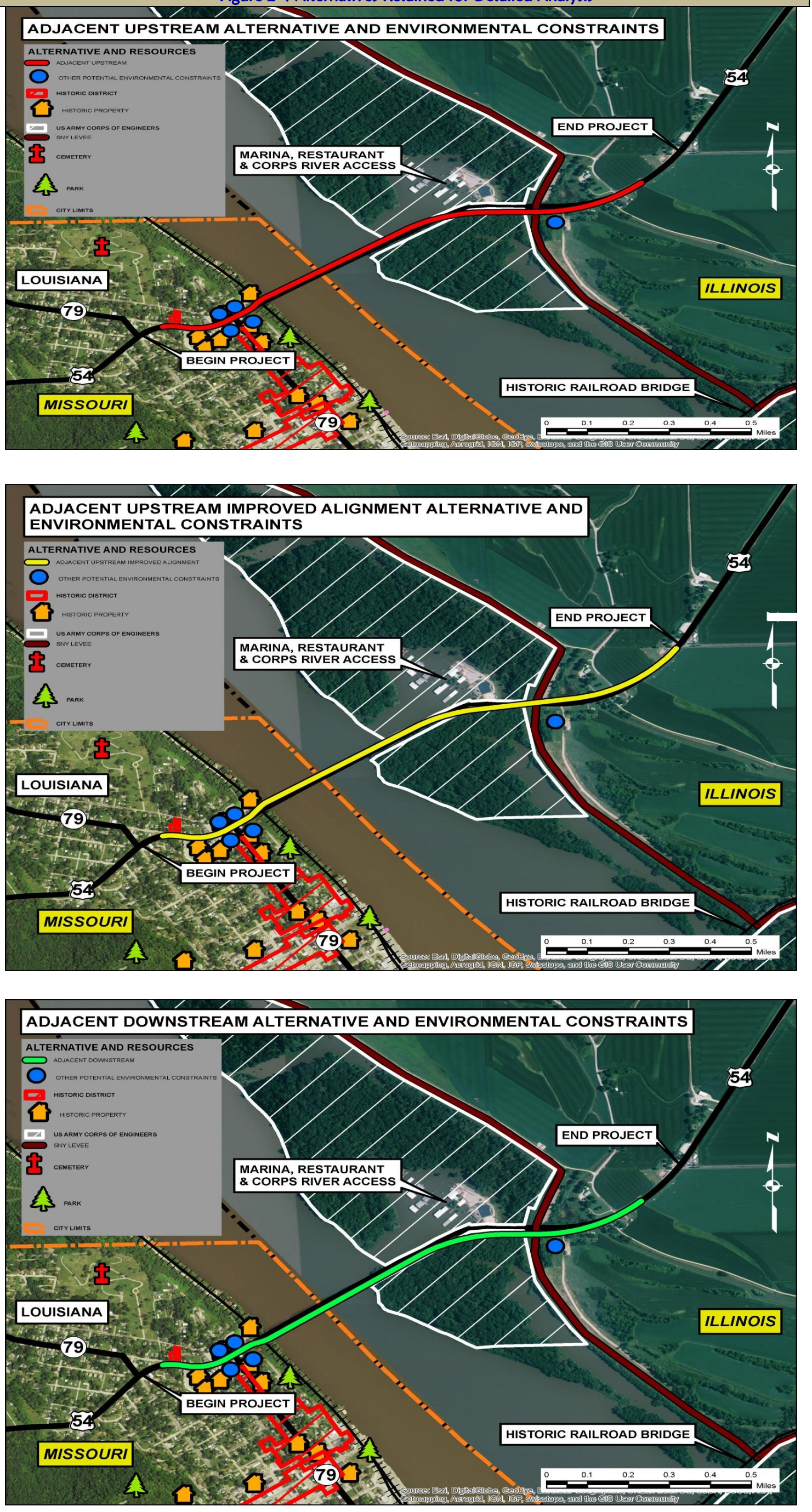
- ⇧ meet the project needs and address deficiencies outlined in Chapter 1 - Purpose and Need
- ⇧ require 14.1 acres of new right of way, less than the Far Upstream and Far Downstream alternatives, but more than the Adjacent Upstream and Adjacent Downstream alternatives
- ⇧ provide full width shoulders that bicyclists or pedestrians could use to avoid sharing vehicular travel lanes when crossing the bridge
- ⇧ maintain uninterrupted traffic during construction
- ⇩ remove the existing historic bridge, if no group is able to adopt and maintain the existing bridge
- ⇩ have more environmental impacts than the other alternatives considered, as it crosses the forested floodplain in Illinois

The Skewed Downstream alternative would provide a reliable Mississippi River crossing that would meet the project needs. However, it would be more expensive than the alternatives adjacent to existing bridge because of the need for a longer bridge main span, and would have greater environmental impacts by crossing new areas of forested floodplain in Illinois. Therefore, this alternative is eliminated from further consideration in this EA.

Reasonable Alternatives Retained in this EA

The Adjacent Upstream (Red), Adjacent Upstream Improved Alignment (Yellow), and Adjacent Downstream (Green) alternatives (Figure 2-4) were retained and evaluated in detail in this EA along with the No-build alternative. Preliminary cost estimates for the three retained build alternatives show a discernible difference, particularly the Green alternative in relation to the Red alternative and Yellow alternative. Estimates exhibit an approximate $16-18 million cost difference. During the earlier public involvement opportunities, these adjacent alternatives received the greatest support from the public, favoring an alignment that minimizes impacts to existing businesses and residents and provides convenient access to the marina and county roads in Illinois. See Table 2-1 for the comparison of reasonable alternatives.

Figure 2-4 Alternatives Retained for Detailed Analysis



*Wetlands and Plum Point Slough, in Illinois, shown on Figure 3-5.

**Floodplain shown on Figure 2-1.

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Table 2-1 Comparison of Reasonable Alternatives

Screening Factor	No Build	Red Adjacent Upstream	Yellow Adjacent Upstream Improved Alignment	Preferred Green Adjacent Downstream
Estimated Project Cost				
Construction cost	$0*	$66,071,166	$64,562,684	$50,411,490
Right-of-way cost	$0*	$5,913,000	$5,838,800	$3,770,100
Total project cost	$0*	$71,984,166	$70,401,484	$54,181,590
Public Input				
Public input (*supports, somewhat supports, doesn't support*)	Doesn't support	Somewhat supports	Somewhat supports	Supports
Right of Way Impacts				
Number of parcels impacts	0	16	18	15
Residential Relocations	0	0	0	0
Commercial Relocations	0	3	3	1
Right of Way (ROW) Considerations				
New ROW anticipated (*acres*)	0	10.95	13.24	10.40
Existing ROW use (*acres*)	0	8.08	10.23	8.08
Number/type potential displacements	none	3 businesses	3 businesses	1 business
Land acquisition from federal agency *(acres)*	0	5.96	5.42	7.13
Potential Environmental Considerations				
Floodplain (*1% base; lineal feet crossed*) Regulatory floodway (*feet crossed*)	no impact	4,780 4,630	5,780 5,350	4,055 3,920
Threatened/endangered species[a]	none	8.3 acres tree clearing[b]	7.5 acres tree clearing[b]	8.5 acres tree clearing[b]
Wetlands				
Forested wetland (*acres*)	0	4.31	3.36	6.93
Emergent wetland (*acres*)	0	0.96	2.05	0.39
Hazardous waste location (underground tanks)	not applicable	3 gas stations	3 gas stations	2 gas stations
Section 4(f) public parks/lands *(acres)*	0	2.66	3.56	0
Farmland (*acres*)	0	<1.0	<1.0	<1.0
Potential Socioeconomic/Community Considerations				
Travel time (*increased, no change, improved*)	no change/may worsen over time	improved	improved	improved
Emergency services (*no change, improved*)	no change/may worsen over time	improved	improved	improved
Public school services (*no change, improved*)	no change/may worsen over time	improved	improved	improved
Business impacts (*# of affected businesses & employees*)	none	3 businesses 18 employees	3 businesses 18 employees	1 business 10 employees
Bicycle/pedestrian access (*no change, improved access*)	no change/may worsen over time	improved	improved	improved
Community access (*no change, improved access*)	no change/may worsen over time	improved	improved	improved
Noise impacts/mitigation considered	none	no mitigation required**	no mitigation required**	no mitigation required**
Navigable Channel	none	slight temporary reduction	slight temporary reduction	slight temporary reduction
Potential Cultural Resource Considerations				
Archaeological sites (total)	0	7	7	2
National Register of Historic Places(NRHP) eligible / Section 4(f) bridge	no adverse effect/not a use	adverse effect/use	adverse effect/use	adverse effect/use
Impacts to NRHP listed or eligible / Section 4(f) buildings or historic districts (a direct impact will likely result in a Section 4(f) use of the resource and an adverse effect under Section 106 of the National Historic Preservation Act).	none	1 direct [c]	1 direct [c]	2 indirect[d]
Cemeteries	none known	none known	none known	none known

*No Build would eventually deteriorate to the point where the existing bridge would require major rehabilitation to remain in service, with costs approximately $420,000.

[a] Surveys for federally listed threatened or endangered mussel species indicate that they are not present.

[b] Acres of tree clearing represent potential impacts to Indiana bat and northern long-eared bat.

[c] Red and Yellow alternatives— Direct impact to the hotel, which is potentially eligible for the NRHP.

[d] Green alternative – Visual impacts for the hotel and one other building, both potentially eligible for the NRHP; however, based on preliminary consultation there would not be an adverse effect.

**Noise – project type requires no noise study or mitigation (see page 58)

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Route 54/Route 79 South Intersection Improvement Options

Four options are being considered to improve conditions at the intersection of Route 54/Route 79 South. One option would make minor improvements to the existing intersection, two options would completely rebuild the intersection just north or just south of the existing intersection, and the fourth option would construct a roundabout centered on the existing intersection. The first option would improve conditions for large vehicles to move through the intersection. Each of the remaining three options would provide ample space for legal-dimensioned vehicles such as large trucks and farm equipment to complete turning movements without encroaching into adjoining traffic lanes.

All four options would maintain the use of flashing red lights on stop signs for Route 54 traffic, but if warranted, could be converted to a traffic signal in the future. Although none of these four options in themselves would prevent motorists from running the stop signs at the Route 54/Route 79 South intersection, construction of any of the retained bridge alternatives with a higher vertical clearance would allow placement of advanced warning signs to alert drivers of the approaching stop condition. Advanced warning signs cannot be used on the existing structure without further reducing the substandard horizontal width and vertical clearance.

The fourth option, creating a roundabout intersection, would remove the stop condition for all approaches, allowing traffic to enter the intersection after yielding.

Option 1: Option 1 would increase the turning radiuses on the south side of the intersection. This option would:

⇔ provide some additional space, though not entirely adequate room, for large vehicles to maneuver through the intersection

⇧ have lowest right of way costs—$30,000

⇩ impact 2 businesses on the south side of Route 54

Option 2: Option 2 would realign a portion of Route 54 approximately 65-feet north of the existing alignment, terminating before Cemetery Road. This option would:

⇧ provide ample space for large vehicles to complete turning movements through the intersection

⇩ impact 3 businesses on the north side of Route 54

⇩ have large right of way costs—$4,810,000

Option 3: Option 3 would realign a portion of Route 54 approximately 65-feet south of the existing alignment and terminate before Wehrman Street. This option would:

⇧ provide ample space for large vehicles to complete turning movements through the intersection

⇩ impact 2 businesses on the south side of Route 54

⇩ have large right of way costs—$2,001,000

Option 4: Option 4 would construct a roundabout at the existing Route 54/Route 79 South intersection. This option would:

⇧ provide ample space for large vehicles to complete turning movements through the intersection

⇧ improve safety and reduce collisions

⇩ impact 4-6 businesses and 2 residences on both sides of Route 54, depending on the bridge option with which it is paired

⇩ have the greatest right of way costs—$9,134,000

While Option 1 would provide some benefit for relatively low cost and impact, Options 2-4 offer a much greater benefit, allowing ample room for large trucks and farm equipment to maneuver through the intersection without encroaching into other lanes of traffic. However, Options 2-4 have considerably higher costs and greater impacts to businesses and the community.

Preferred Alternative

The Adjacent Downstream Green alternative is the Preferred Alternative to solve the transportation problems associated with the Route 54 Bridge. This alternative would construct a new two-lane bridge approximately 50-feet south of the existing bridge. The new bridge would likely terminate west of the levee. Route 54 east of the bridge would provide direct access to the marina and the county roads.

The preferred alternative was identified through public and agency involvement along with socioeconomic and environmental consequences analyzed in Chapter 3 of this EA. Although the preferred alternative would impact more parcels, affect slightly more acres of forested wetlands, and would result in more tree clearing, it would require less right of way, result in fewer commercial relocations, require less floodplain encroachment, have greater avoidance of Section 4(f) protected resources, and would have lower project costs than the other reasonable alternatives retained for analysis in this EA.

Additionally, four options were considered to improve conditions at the intersection of Route 54 and Route 79 South. Intersection Option 1 was eliminated since it does not meet the purpose and need for providing adequate room required for large vehicles to complete turning movements through the intersection. Intersection Option 4 was eliminated because of substantial right of way impacts, lack of public support, business and residential impacts, and increased costs. Although each of the remaining intersection improvement Options 2 and 3 could be combined with any of the three retained build alternatives, combining the intersections with the bridge alternatives on the opposing side of the highway would create a jog in the roadway. An example would be combining a more northerly interchange Option 2 with the Adjacent Downstream (Green) alternative. A jog in the road between the end of the bridge and the intersection would affect the motorists' line of sight and increase the probability of motorists running the stop sign. Thus, for further study the Adjacent Upstream (Red) and Adjacent Upstream Improved (Yellow) alternatives are paired with intersection Option 2 that moves the intersection to the north as seen in Figure 2-2(b). Similarly, the Adjacent Downstream (Green) alternative would be paired with

intersection Option 3 that moves the intersection south as seen in Figures 2-2(c). Option 3 would realign a portion of Route 54 approximately 65-feet south of the existing alignment and terminate before Wehrman Street. This option would impact businesses on the south side of Route 54; however, this option would not impact Section 4(f) protected resources or Section 106 resources, and would allow ample room for large trucks and farm equipment to maneuver through the intersection without encroaching onto other lanes of traffic.

Selection of a preferred bridge and intersection alternative will not be finalized until substantive comments from resource agencies and the public hearing are fully evaluated and addressed.

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Environmental Resources & Impacts – Chapter 3

Identification of Resources in the Project Corridor and Anticipated Impacts from the Proposed Route 54 Mississippi River Bridge Alternatives

Introduction

This chapter describes the social, economic, and environmental characteristics of the project corridor—that is, the affected environment. The No-build alternative and each of the three proposed new bridge locations – preferred Green alternative Adjacent Downstream alignment, Red alternative Adjacent Upstream alignment, and Yellow alternative Adjacent Upstream Improved alignment— and associated intersection improvements are discussed in terms of the probable positive and negative impacts that would result. The extent of impacts for each of the alternatives will be described. The No-build alternative provides a baseline for comparison to the build alternatives.

If the reader is interested in the laws, regulations, and processes discussed in this chapter, please refer to Appendix A for the information associated with environmental, social, and economic impacts.

Impacts to Resources by the Proposed Project

Land Use

Current land use within the project corridor is primarily a mix of commercial and residential in Missouri and agricultural; public lands, some of which are recreational; and forested lands in Illinois.

The No-build alternative would have no impact on existing land uses or on land-use policies and decisions within the project corridor. The various build alternatives located on either side of the existing bridge would have similar but limited impacts to public land at the eastern end of the bridge and to existing commercial/residential use at the western end.

Changes to current land use on lands owned by the U.S. Army Corps of Engineers (USACE) would be limited to the conversion of property to a transportation use with the proposed project. The Yellow alternative would have 5.42 acres of impact, the Red alternative would have 5.96 acres of impact, and the preferred Green alternative would have an impact on 7.13 acres of USACE land as shown on Figure 3-1 Right of Way Comparison of Retained Alternatives map. The Green alternative acreage represents 10 percent of the land designated for vegetation management at this location and take of this land would not change the use of the remaining land at the USACE property. Replacement of USACE land is discussed under the Right of Way Acquisitions and Easements section, page 42.

Because the build alternatives take no more than 13.24 acres of right of way, none, including the No-build alternative, are expected to result in zoning changes.

Although there are limited changes in land use, MoDOT and IDOT will explore ways to minimize impacts to the USACE lands throughout the design process, which may include the use of rock fill to steepen the fill slopes, retaining walls, or other methods to reduce the roadway footprint. Future land-use decisions for the USACE would most likely be the same for any of the build alternatives.

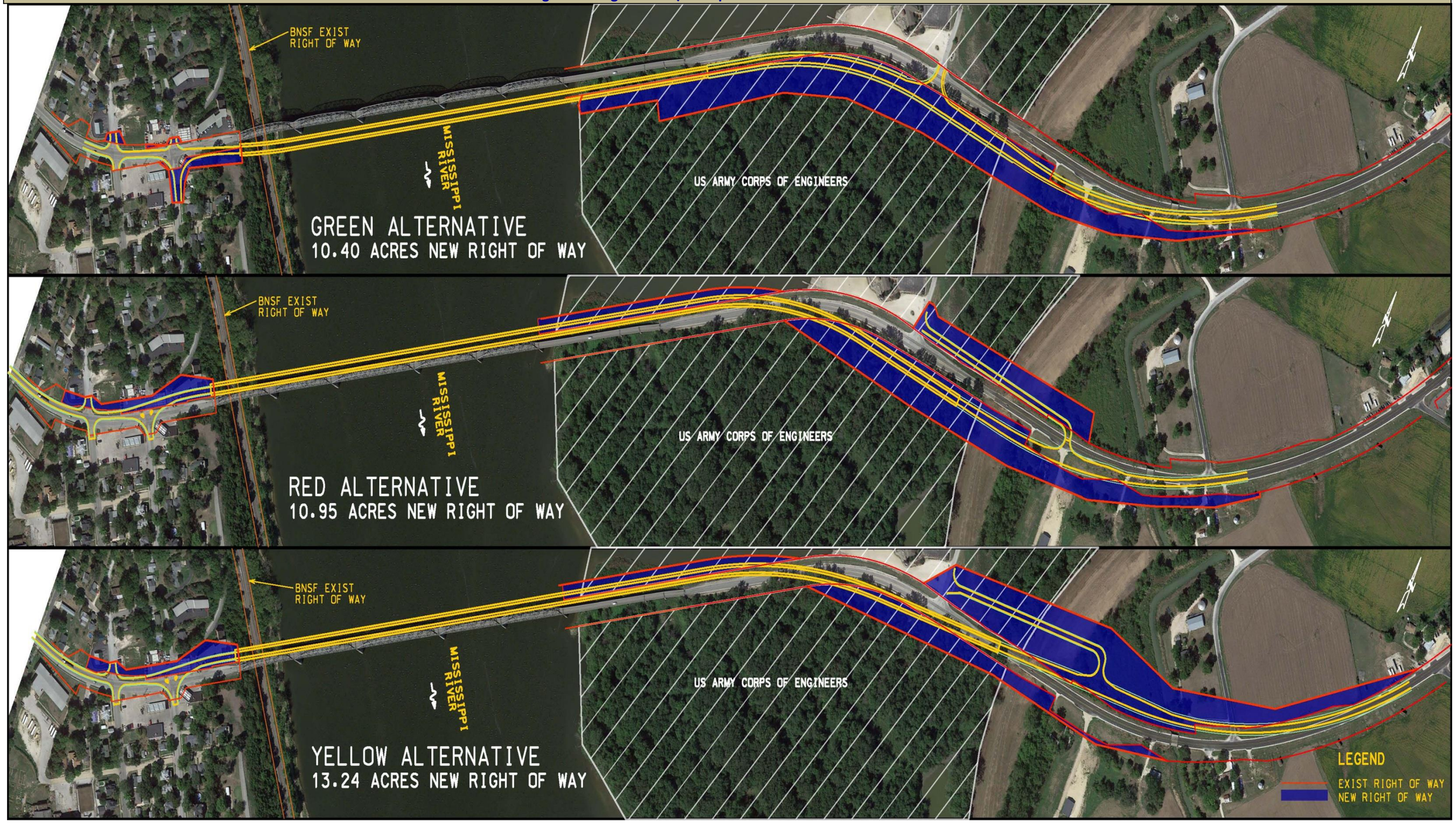
Prime and Unique Farmland

According to the U.S. Department of Agriculture (USDA) data, there is a long history of farming in the project area. Pike County, Missouri, produces approximately $5 million in agricultural revenue and Pike County, Illinois, $26 million. The average farm size in Pike County, Missouri, is 339 acres and Pike County, Illinois, 403 acres. Row crops within the project limits are a primary source of agricultural income to local farmers.

All right of way within the project boundaries in Missouri is within the city limits of Louisiana. The right of way outside the levee system (riverside) in Illinois is owned by the USACE and is committed to non-farm uses and will not be evaluated for farmland impacts. The remaining project corridor contains both prime and unique farmland, as well as farmland of statewide and local importance.

All three build alternatives for the bridge replacement project were submitted to the Natural Resources Conservation Service (NRCS) using the Farmland Conversion Impact Rating Form AD-1006. NRCS evaluated only the Green alternative recognizing that all three alternatives would impact less than 1 acre of similar types of farmland and are within reasonable proximity to one another. Based on these factors, the Red and Yellow alternatives would result in total conversion impact ratings similar to the Green alternative. The total conversion impact rating for the Green alternative is 88 points. The threshold NRCS established for consideration of farmland protection is 160 points.

Figure 3-1 Right of Way Comparison of Retained Alternatives



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The No-build alternative would not construct transportation improvements and therefore have no impact on prime or unique farmland, or farmland of statewide and local importance.

There are no on-farm terraces within the project limits because fields are flat and do not require terraces to prevent erosion. Thus, none of the alternatives will have impact on farm terraces.

All farm support services are available to the area and would not be negatively impacted by any of the alternatives. The alternatives would be fully compatible with existing agriculture. Additionally, replacement of the narrow bridge would support farming by enabling many agricultural vehicles to cross the river without stopping traffic from the opposite direction.

Correspondence from NRCS indicates that they do not regard temporary easements as conversions of farmland. Therefore, any temporary easements that may be required for the contractor's staging area with any of the build alternatives would not require further evaluation for farmland impact.

Socioeconomic / Community Impacts

The socioeconomic impact assessment is based on data primarily obtained from the most recent U.S. Census of Population and Housing. The U.S. Census is conducted every 10 years and the most recent census data available for this EA are from 2010. Supplemental data were obtained from the city of Louisiana.

Population of Louisiana, MO

1990—3,967

2000—3,863 (-2.6%)

2010—3,364 (-12.9%)

(U.S. Census Bureau)

Louisiana is the second largest community in Pike County, MO. It is a regional center for shopping and medical services. Louisiana also comprises numerous churches, a growing industry, and a public school system. The existing Champ Clark Bridge brings people directly into the heart of Louisiana with easy access to the historic and tourist-attractive area of the city. The city has two historic districts as well as buildings listed on the National Register of Historic Places (NRHP). Many of the buildings retain the feeling of a nineteenth-century Mississippi River town with many having been adapted to modern uses such as restaurants, antique stores, businesses, galleries, offices, and residences.

As all proposed new bridge alternatives are adjacent to the existing bridge, negative changes are not anticipated to neighborhoods or community cohesion, travel patterns and accessibility, community facilities, or to any special groups such as the elderly, disabled, minorities, and transit-dependent persons.

Economic Growth and Development

No aspects of the three build alternatives are anticipated to cause permanent, adverse impacts on economic development growth, trends and viability, employment opportunities, existing and planned business development, or tax revenues, nor would they negatively impact the region's competitive position. Louisiana has exhibited a declining population in recent years. Replacing the deteriorating bridge with an adjacent modern bridge, including the publicity generated by its completion, could benefit local businesses and industry. A new bridge would increase travel efficiency and reliability, thus improving the community's position for economic growth and development. The No-build alternative may have negative economic consequences. Avoidance of the narrow and obsolete bridge at Louisiana in favor of accessing newer and perceptually safer bridges may cause potential visitors to bypass Louisiana altogether, therefore reducing the number of outside dollars spent within the community.

The greater negative impacts would result from the alternative intersections under consideration for improving turning for large vehicles in Louisiana. The preferred Green alternative would require 10.40 acres of new right of way. This alternative would impact through acquisition of one active business currently employing ten individuals. The Red and Yellow alternatives would result in the relocation of three active businesses currently employing 18 individuals. Currently, there are 16 commercial properties available in Louisiana where businesses affected by the project could be relocated. While no business relocations would occur within the Illinois portion of the project, it would be necessary to remove several unoccupied mobile homes and a barn. None of the alternatives would result in impacts to occupied residences.

Pedestrian and Bicycle Traffic

Although the city of Louisiana does not have a pedestrian and bicycle master plan, there are pedestrian and bicycle opportunities in the area. For detailed information, refer to Chapter 1 of this document - Purpose and Need, Bicycle and Pedestrian Accommodations, page 12.

Existing sidewalks within MoDOT right of way would be replaced under all build alternatives. MoDOT and IDOT will upgrade to current ADA standards in accordance with the Americans with Disabilities Act of 1990 (ADA) any sidewalks that are within right of way and the project construction limits. Currently, there is minimal pedestrian traffic and bicycle use on the bridge because of its narrow lanes and lack of shoulders. Given the lack of development on the Illinois side of the river, separate pedestrian and bicycle facilities are not warranted at this time. The 10-foot shoulders proposed for all three build alternatives would meet current ADA standards for slope and cross slope and allow for safer pedestrian and bicycle use. The No-build alternative would not provide improvements for pedestrians and bicyclists.

Right of Way Acquisitions and Easements

The bridge would require permanent easements from the Burlington Northern Santa Fe Railroad (BNSF) west of the river in Pike County, Missouri. New, permanent right of way would be needed to tie the new roadway alignment back into the existing roadway between the Mississippi River and 3rd Street. East of the river in Illinois, new, permanent right of way would be required to tie the new roadway alignment back into the existing roadway between the Mississippi River and County Road 400 N.

The Green alternative would require 10.40 acres of new right of way, the Yellow alternative 13.24 acres, and the Red alternative 10.95 acres. The No-build alternative would not require new right of way.

Existing right of way within slope limits necessary for maintenance purposes or for access to the new roadway and bridge would be retained by IDOT or MoDOT in their respective state.

In Missouri, the preferred Green alternative would require 0.70 acre of new right of way impacting 8 parcels, less right of way than the Red and Yellow alternatives each requiring 1.03 acres and impacting 8 parcels. None of the build alternatives would impact residences.

The preferred Green alternative would require 9.70 acres of new right of way, in Illinois, impacting 7 parcels, less than the Red alternative requiring 9.92 acres of new right of way and impacting 8 parcels, and the Yellow alternative requiring 12.21 acres of new right of way and impacting 10 parcels. Refer to Chapter 2 Table 2-1 Comparison of Reasonable Alternatives, page 31, and also Right of Way Comparison of Retained Alternatives Figure 3-1, page 39.

The majority of the needed right of way area east of the river is USACE land within the St. Louis District or agricultural land. Within Missouri, MoDOT would acquire all properties needed for this project while IDOT would acquire all properties needed in Illinois including areas needed for

maintenance and inspection access. Any right of way deemed excess would be offered for sale to adjacent land owners or be transferred to the city or to county government.

MoDOT and IDOT will ensure that the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended be carried out without discrimination based on race, color, national origin, religion, and age and in compliance with Title VI (the Civil Rights Act of 1964), the President's Executive Order on Environmental Justice, and the Americans with Disabilities Act. In accordance with the Uniform Act and the states' relocation programs, fair market compensation will be provided to property owners who are affected by this project.

USACE Outgrant

On the north side of the existing highway right of way in Illinois the USACE land holding involves recreational land for public use, which is protected under Section 4(f) of the Transportation Act. The need to avoid Section 4(f) land is discussed in the Public Lands and Potential Section 4(f) and 6(f) Properties section on page 76.

On the south side of the existing highway in Illinois the USACE holds land that is managed for vegetation and generally open to the public. This land is not designated for specific recreational purposes, and is not protected under Section 4(f) as recreational land.

Army regulation 405-80, Management of the Title and Granting Use of Real Property, and a 2009 outgrant policy establishes a consistent way to evaluate non-recreation real estate transactions. The policy applies to all requests to use USACE fee-owned land for federal and state projects. The only allowable use of USACE lands is in the case where no other viable alternative is available or when the proposed project has a direct benefit to the federal government.

In the case of this project there is not a viable alternative to placing the roadway on USACE land. The preferred Green alternative does have an impact on 7.13 acres of USACE land. The No-build alternative, which avoids USACE land, does not meet the project purpose and need. The Red and Yellow alternatives also have impacts on USACE land, but also have greater impacts on Section 106 and Section 4(f) properties. The proposed project is generally beneficial to the public by providing access to the USACE property.

After several meetings with the USACE, IDOT outlined in a December 1, 2014, letter the course of action that it intends to follow to be in compliance with Army regulations and the outgrant policy. IDOT will be seeking an outgrant from the USACE in the form of a permanent easement for the property necessary to complete the bridge and Illinois roadway. IDOT will make the USACE "whole" by acquiring in fee at least 7.13 acres of property considered at least equal to or greater in wetland value and function and transferring title to the USACE.

The USACE replied in a letter on April 22, 2015, that the proposed plan was acceptable and provided conceptual approval. The USACE also provided IDOT with a list of not-for-profit organizations that could help IDOT in locating replacement property for the outgrant acreage. USACE correspondence is found in Appendix E.

MoDOT and IDOT are presently working with the Great Rivers Land Trust (GRLT) to evaluate potential replacement land for the out-grant acreage and wetland development as part of the mitigation for wetland impacts at the proposed bridge replacement site. GRLT acquires land for habitat development and preservation and is often involved in the development of habitat and wetland mitigation projects for developers and agencies involved in public works projects.

Known as the Widman Property, the GRLT site is adjacent to USACE owned property near Godfrey, Illinois, 50-miles southeast of the bridge location (Figure 3-2 Outgrant Replacement

Site Location). The site is located in the floodplain of Piasa Creek, the likely hydrological supply to the site for wetland development.

There are plans for IDOT, USACE, MoDOT, and the GRLT to meet on the Widman Property to review the site for wetland development and adequacy of the site for the outgrant property replacement. If this site is not suitable for these goals, further investigation into appropriate sites will be conducted. Project construction will not begin until a specific site plan for the out-grant replacement and wetland mitigation is agreed upon by the USACE and IDOT. MoDOT and IDOT will ensure all environmental and cultural resources reviews are complete and approved by the appropriate regulatory agencies for the Great Rivers Land Trust (GRLT) property prior to FHWA's issuance of the authorization to construct.

Environmental Justice

To address environmental justice for minority and low income populations U.S. census data are used. The census provides detailed information on the nation's social, household, racial, demographic, and economic composition. For this project, the statistical subdivisions for population data are both census tracts and census blocks defined in the call out oval on this page. Census block data generally provides more specific information. However, for rural areas, like the project corridor in Illinois where there are no residents in the census blocks, the larger census tract is used to capture population characteristics. See Figure 3-3 Census Map for Louisiana, Missouri, and Figure 3-4 Census Map for Illinois.

Census Tracts, Block Groups, and Blocks

Census data is broken down to geographic areas that include the nation, state, counties, cities, and divisions within cities.

- The Census Tract is a geographic unit for which detailed data are tabulated. The Census Tract is divided into Block Groups and, Census Blocks.
- A Block Group is made up of a number of city blocks that are combined for reporting purposes.

Included in the project corridor are three portions of Census Tracts 4601, 4602, and 9526 where the percentage of minorities is 6.8% (Table 3-1, Affected Environment Demographic Data for Project Corridor). For the more specific Census Blocks in Missouri the percentage of minorities is 4.4%. These percentages are similar to those found in Pike County, Illinois, 4.4% and well below the percentage found in Pike County, Missouri, 11.6%, and states of Illinois, 37.7%, and Missouri, 19.9%, and nationally, 37.9%.

The percentage of families within the combined census tracts whose income falls below the poverty level is 13.2%. This percentage is similar to that found in Pike County, Illinois, 13.7%, and Pike County, Missouri, 14.5%; states of Illinois, 14.5%, Missouri, 15.0%; nationally, 14.9%. In addition to the 2010 Census, the "2010-2014 American Community Survey 5-Year Estimates" show similar data.

None of the alternatives would displace residences. No established low-income units or other housing complexes associated with government assistance would be displaced. No minority neighborhoods, business districts, or business clusters catering to any particular group of minority population would be displaced.

Localized temporary impacts during demolition and construction of the project will include temporary travel disruptions, construction noise, and fugitive dust. These temporary impacts would not be disproportionately high or adverse on low income and minority populations. Temporary construction impacts and travel disruptions will be addressed through mitigation measures such as a traffic management plan and restricting when construction activities

Figure 3-2 Outgrant Replacement Site Location

can occur. Further discussion of mitigation and commitments for construction impacts can be found on page 82 of this document.

No minority or low-income populations have been identified that would be adversely impacted by the proposed project as determined above. Therefore, in accordance with provisions of Executive Order 12898 and FHWA Order 6640.23, no further environmental justice analysis is required.

Figure 3-3 Census Map for Louisiana, Missouri

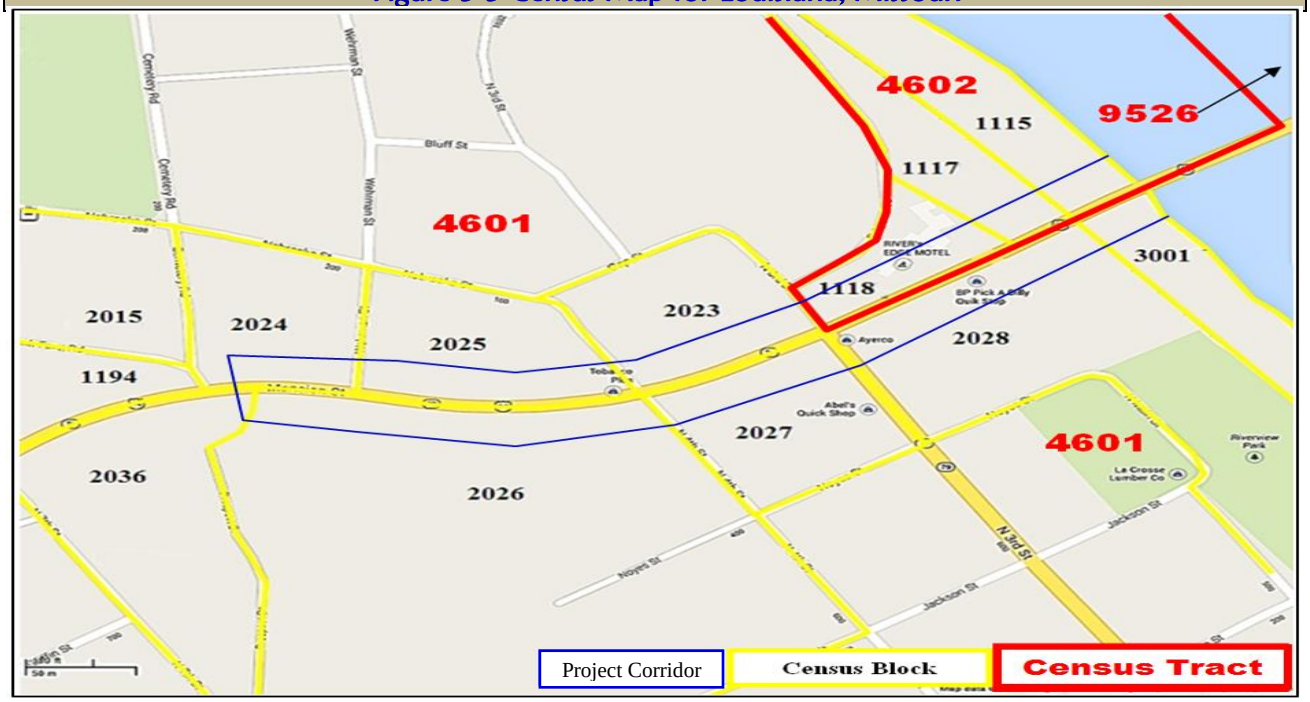

Figure 3-4 Census Map for Illinois

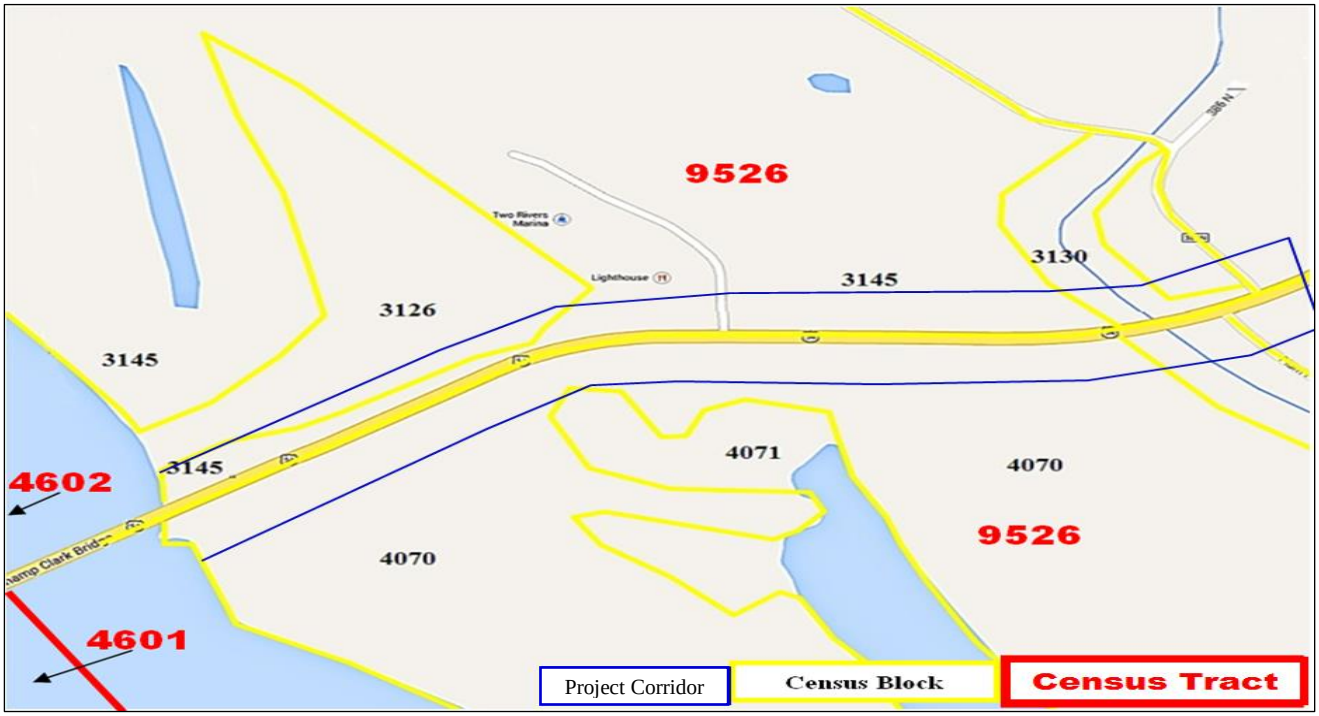

Table 3-1 Affected Environmental Demographic Data for Project Corridor												
Measure	Census Tracks Combined		Tract 4601 Missouri		Tract 4602 Missouri		Tract 9526 Illinois		Blocks Missouri in project corridor		Blocks Illinois
Population Total	**9754**		**3237**		**3261**		**3256**		**136**		**0**
White alone	9286	95.2%	2929	*90.5%	3153	*96.7%	3204	*98.4%	130	95.6%	0
Minority	664	6.8%	441	13.6%	143	4.4%	80	2.5%	6	4.4%	0
Below poverty (only available at Census Tract level)	1289	13.2%	570	17.6%	337	10.4%	382	11.8%			

Source: U.S. Census, 2010

Note: There are no permanent residents within the project corridor in Pike County, Illinois.

** Hispanic residents can be counted as both a minority and a member of the white race, thus percentages of minorities and white alone categories may exceed 100 percent of the total population.*

Public Services

A new Route 54 bridge would be located a few blocks from the largest hospital in the area, Pike County Memorial Hospital, an acute-care facility offering extensive inpatient and outpatient services. Although located in Missouri, it serves residents from both states.

Fire protection in the project corridor in Missouri comes from the Louisiana Fire Department and the Buffalo Township Fire Protection District. Fire protection for the project corridor in Illinois is provided by Pleasant Hill Fire and Spring Creek Fire Protection Districts. Between the two fire departments there are 43 volunteers providing fire protection. A new bridge with shoulders to accommodate disabled vehicles would improve emergency response time for both routine and acute medical care and firefighting by improving travel efficiency and reliability at the Mississippi River crossing.

The Louisiana School District provides educational opportunities on the west side of the Mississippi River while the Pleasant Hill School District serves the Illinois side.

There are eight churches located in Louisiana and no churches located in the immediate vicinity of the project corridor in Illinois. Various civic and community organizations meet in Louisiana at local facilities such as the public library, city hall, local restaurants, and churches. None of the alternatives are expected to directly affect the use of or access to these facilities because they are not adjacent to the project corridor.

Temporary disruptions in travel patterns and travel time may occur during construction. Normal travel patterns would resume once the project is completed. All three alternatives would experience one-lane closures to connect the new alignment to existing Route 54. There also would be temporary 10-15 minute closures to set girders over existing Route 54 for the Red and Yellow alternatives. Construction is expected to last for 24 months.

Overall, the three build alternatives would improve access to public services by eliminating delays from traffic stoppages that accommodate oversized vehicles and agricultural equipment and would decrease closures because of maintenance. The No-build alternative would continue to cause delays and closures for maintenance and the frequency would increase over time.

Community Cohesion

As all three proposed new bridge alternatives would occur adjacent to the existing bridge, no negative impacts are anticipated to neighborhoods or community cohesion, travel patterns and accessibility, or to any special groups such as elderly, disabled, minority, and/or transit-dependent persons. Upgrading sidewalks to ADA standards would make the project corridor more accessible than the existing conditions.

Conclusion

All three build alternatives are not anticipated to cause in any long-term negative effects within the city of Louisiana. Local traffic patterns may be disrupted during construction and there may be short-term, localized impacts of noise and to air quality; but, inconvenience to residents and the traveling public would be minimized. See Construction Impacts, page 82. Louisiana and the surrounding region would benefit with improved travel efficiency and reliability at the Mississippi River crossing.

Water Quality

Water resources within the project area include the Mississippi River, Mud/Plum Point Slough, wetlands, and groundwater. With respect to constructing, operating, and maintaining a new Route 54 bridge and approaches over the Mississippi River, all of the build alternatives would cause similar impacts to water quality. This also includes impacts by the demolition and removal of the existing bridge.

Surface Water

Existing surface water conditions would continue under the No-build alternative. For all of the build alternatives sediment generation is the impact of concern for surface water quality. Sediment loads in rivers, streams, and wetlands can have an impact on drinking water quality and on aquatic animals, by limiting oxygen absorption and covering eggs. Thus, erosion and the resulting sediment are highly regulated and involve best management practices (BMPs) to control adverse impacts.

In accordance with the National Pollutant Discharge Elimination System (NPDES) requirements of the Clean Water Act (CWA), MoDOT operates under the provisions of Missouri State Operating Permit No. MO-R 100007, effective May 31, 2012, a general permit issued by the Missouri Department of Natural Resources (MDNR) for MoDOT construction and maintenance projects statewide. IDOT operates under similar provisions in compliance with the Illinois Department of Natural Resources (IDNR) general NPDES Permit ILR10, effective August 1, 2013. These permits require the development of a storm-water pollution prevention plan (SWPPP), which describes and incorporates the use of effective erosion and sediment control BMPs to minimize the loss of sediment and other pollutants from a job site.

During construction, MoDOT and its contractors would implement the two SWPPPs to minimize adverse impacts to the Mississippi River, streams, wetlands, and/or other waters of the state within and adjacent to the project corridor. The contractor would implement the current SWPPP held by MoDOT for work in Missouri, and would apply for a NPDES permit and develop a SWPPP for work to be completed in Illinois. The project SWPPPs will incorporate temporary erosion and sediment control BMPs that would be included within construction contract specifications.

Erosion and sediment control BMPs may include structural and non-structural controls that could incorporate a combination of ditch checks, silt fences, berms, sediment traps, sediment basins,

temporary and permanent seeding and mulch, and stabilized construction entrances. Selection and incorporation of these BMPs relates to the type of work activity undertaken and site conditions, such as soils, topography and seasonal rainfall.

All of the build alternatives are likely to involve dewatering during pier construction and may require dredging within the Mississippi River to facilitate contractor access to all bridge spans. As described in the "Wetlands and Waters of the U.S." section below, any project that involves discharge of dredge or fill into waters of the U.S. requires a Section 404 permit from the USACE. In addition, Section 401 Water Quality Certification from MDNR/IEPA would be required to ensure that the proposed activity does not exceed state water quality standards. MoDOT will obtain authorization by an Individual Clean Water Act Section 404 Permit from the USACE including Section 401 Water Quality Certification from MDNR/IEPA. MoDOT will develop and implement two SWPPPSs to comply with the Missouri State Operating Permit No. MO-R 100007 and the Illinois Environmental Protection Agency general NPDES Permit ILR10.

Ground Water and Drinking Water

The geology and topography of the project location in Missouri consist of limestone and shale outcroppings over dissected valleys with a very narrow floodplain between the bluffs and the Mississippi River. On the Illinois side deposits of poorly sorted sands, silts, and clays over well-sorted sands and gravel over lay limestone, dolostone, and shales.

Although the region within which the project lies has known karst, a term for areas with caves and sinkholes, and has a potential for groundwater recharge, there are no observed caves or sinkholes in the project corridor. There also are no sole-source aquifers or public or private water wells within 200 feet of the project corridor. Nor are there any Illinois Class III Ground Water designations within the project corridor. The latter designation has been established in Illinois to protect dedicated nature preserves from ground water contamination.

According to the MDNR, the city of Louisiana draws drinking water from the Mississippi River approximately 0.4 mile downstream of the Champ Clark Bridge. MoDOT will coordinate with the Louisiana Water Department should water quality concerns arise that may negatively affect public drinking water such as an accidental petroleum or chemical spill from contractor operations. If dredge discharge were to be authorized in the Mississippi River, MoDOT would discharge this material downstream from Louisiana's public drinking water intake. The next closest downstream public drinking water intakes are located more than 60-river miles downstream from the project, all within the greater St. Louis area. There are no anticipated impacts to these additional downstream intakes. The No-build alternative would not have impacts on existing ground or drinking water.

There are also five potential hazardous waste sites identified in the project corridor. The hydrogeologic regime of the project corridor and surrounding area is dynamic. Please refer to the Hazardous Waste Sites section, page 78 for a discussion of the potential impacts from the sites and the methods to deal with those sites to protect ground water.

Wetlands and Waters of the U.S.

With the exception of the Mississippi River, there are no other jurisdictional waters of the U.S. present within the project corridor in Missouri. In Illinois, jurisdictional waters of the U.S. within the project corridor include the Mississippi River, adjacent forested and emergent wetlands much of which is on USACE-owned property as discussed on page 43 (Figure 3-1 Right of Way Comparison of Retained Alternatives), and Mud/Plum Point Slough (Figure 3-5 Wetland Impacts

in Illinois). The wetland delineation report for this project was prepared by Wetland Science Program of the Illinois Natural History Survey (INHS).

The No-build alternative would not impact any waters of the U.S. Permanent impacts to waters of the U.S. resulting from the three build alternatives are expected to include placement of bridge piers in the Mississippi River as well as bridge bents and roadway approach fills within the wetlands in Illinois. Temporary impacts could result from cofferdams, haul roads, construction of land-based staging areas and any dredging needed to facilitate installation of the new bridge and demolition of the existing structure. Dredge spoil, sediment that is mechanically removed from the bottom of the river for pier placement and to facilitate bridge work, may be placed back into the Mississippi River or removed by barge for disposal in a non-jurisdictional area. The determination for placing dredge soil spoil back into the river would be made at a later date as it is dependent upon coordination and feedback from partnering resource agencies when design details are available.

MoDOT will obtain a Section 10 Rivers and Harbor Act of 1899 Letter of Permission from the USACE for fill and excavation within the Mississippi River.

The Green alternative would result in approximately 6.93 acres of forested wetland impact and approximately 0.39 acres of emergent wetland impact for a total permanent jurisdictional wetland impact of 7.32 acres (see Figure 3-5 Wetland Impacts in Illinois).

The Red alternative would result in approximately 4.31 acres of forested wetland impact and approximately 0.96 acres of emergent wetland impact for a total permanent jurisdictional wetland impact of 5.27 acres.

The Yellow alternative would result in approximately 3.36 acres of forested wetland impact and approximately 2.05 acres of emergent wetland impacts for an estimated total permanent jurisdictional wetland impact of 5.41 acres.

The difference between the Green alternative and the other two build alternatives is approximately 2 acres representing less than 3% of the total of wetland area in the USACE-owned parcel south of the existing highway. The Green alternative's wetland impacts are exclusively south of existing 54, whereas the other two alternatives impact wetland resources on both sides. Additionally, the Red and Yellow alternatives impact emergent wetlands and open water of the Mississippi in the small bay west of the boat ramp and north of the existing road. This impact is not associated with the Green alternative.

Impacts for all three alternatives are similar with a new bridge constructed adjacent to the existing bridge spanning Mud/Plum Point Slough. The Yellow alternative would require slightly more than double the impact to the slough 315 linear feet along the stream versus 160 linear feet for the Red and Green alternatives. The No-build alternative would have no impact to the slough other than those necessary for routine maintenance and repairs to its existing bridge.

Section 404(b)1 of the Clean Water Act requires an alternatives analysis to determine which alternative is the least environmentally damaging practicable alternative (LEDPA). Although the No-build alternative does not result in permanent wetland impacts, it is not practicable because it does not meet the purpose and need of the project. All build alternatives impact forested and emergent wetlands within 200 feet of the existing road, and, although the Red and Yellow alternatives have impacts on less wetlands, Section 106 and Section 4(f) impacts, discussed on pages 74 through 76, have competing requirements for avoiding buildings eligible for the National Register of Historic Places and public recreational areas respectively. The USACE- owned boat ramp and marina area in Illinois is a Section 4(f) resource. According to Section 4(f), these resources can only be impacted or "used" if there are no other feasible and prudent

alternatives. The Green alternative is both feasible and prudent. Considering all these factors, the Green alternative is overall the LEDPA alternative.

All build alternatives would require authorization by an Individual CWA Section 404 Permit from the USACE since the project involves more than one-half acre of permanent impacts of waters of the U.S. MoDOT and IDOT are actively working to minimize impacts to waters of the U.S., but mitigation would be required for those impacts that are unavoidable in Illinois.

IDOT will compensate for permanent impacts to wetlands resulting from this project through standard mitigation practices. Both the LaGrange Wetland Mitigation Bank site in Brown County and at the Great Rivers Land Trust near Godfrey in Madison County, Illinois, are currently being considered. MoDOT and IDOT are consulting with the USACE regarding these sites.

Illinois operates under the Interagency Wetland Policy Act of 1989 where wetland mitigation ratios have been established. Ratios for this project could range from 1.5 to 1 and up to 5.5 to 1. For the 7.32 acres of wetland impacts with the preferred Green alternative, wetland mitigation could range between 11 and 38 acres. Where this project lands in the range of mitigation ratios will depend on the location of mitigation in relation to the project impact and presence of threatened and endangered species. An accepted mitigation plan and replacement ratio will be established during permitting and in place prior to project construction.

As discussed on page 43 Right of Way Acquisitions - USACE Outgrant, USACE land and the wetlands that occur at that location are required to be replaced as part of the outgrant process. Wetland mitigation under Section 404 compliance can over-lap outgrant wetland replacement. However, the wetland acreage that is not replaced at the Great Rivers Land Trust will likely be debited from the LaGrange Wetland Mitigation Bank.

In Table 3-2 Wetland Mitigation and Outgrant Comparisons, the two types of wetland replacement and acreages and ratios involved are detailed.

Table 3-2 Wetland Mitigation and Outgrant Comparisons

Total Wetland Impacts – Preferred Alternative	USACE-owned Land – ROW Outgrant (includes wetland and non-wetland)	Wetland Impacts on only USACE property	Wetland Replacement Required on Replacement Property for USACE	Wetland Mitigation for Section 404 Permit – 1.5 to 5.5 ratio for 7.32 acres*
7.32 acres	7.13 acres	6.93 acres	6.93 acres of in-kind wetland	6.93 acres on replacement property for USACE
	7.13 acres of replacement property proposed at Great Rivers Land Trust		Proposed at Great Rivers Land Trust	Remaining mitigation debited from LaGrange Wetland Mitigation Bank
*To be determined during permitting process				

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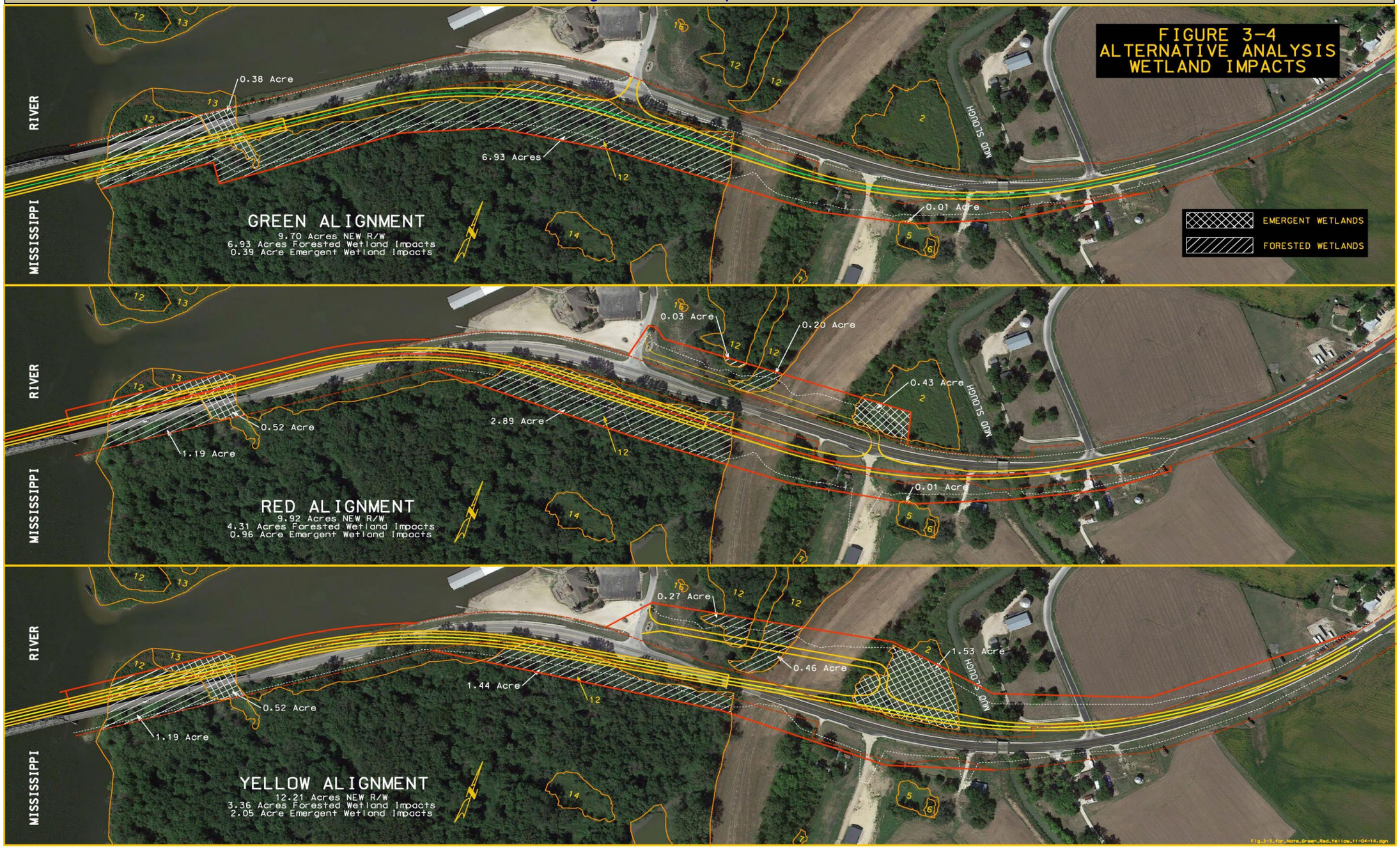
Figure 3-5 Wetland Impacts in Illinois



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Navigable Waterways

In 2014 an estimated 20.7 million tons of commodities were barged through Lock and Dam 24 located at Clarksville, Missouri, seven miles south of Louisiana (USACE Lock Performance Monitoring System). This is a 3 million ton increase over 2013, which was the lowest since 2000 at 39 million tons. Commodities barged through this area include coal, crude materials, machinery and equipment, food, waste, other commodities, and farm products.

There were 18,718 commercial barges and 34 government vessels along with 308 recreational boats that moved through Lock and Dam 24 in 2014. Commercial vessels have fluxuated over the decade from a high of 60 to a low of 28. Recreational boats have decreased from a high of 1,318 in 2000. The USACE does not make projections on future use of commercial barges, government vessels, or recreational boats. However, plans for a new bridge meet the existing needs for the navigable river. This information on use of the river was requested in an August 21, 2012, letter from the U.S. Coast Guard (USCG) to satisfy their requirements.

The navigation season for this area of the Mississippi River is generally February to December with occasional year-round service in ice free winters. The lock operates only for a limited number of barges going to and from Quincy in the winter, since the next lock and dam north of Quincy is shut down for the winter season.

Louisiana has three port facilities located in an area 1.2 to 2 miles south of the Champ Clark Bridge. Bunge North America handles grain shipments with an elevator and 2.6-million bushel capacity silos. Wayne B. Smith handles dry bulk commodities, including: sand, stone, ores, coal, fertilizer, salt and aggregates and occasionally salvaged grain. The Smith facility has 7,300-ton capacity in storage bins and 40,000-ton open storage for sand or coal. Dyno receives methanol and has a total capacity of 498,000 gallons.

There is also a proposal to build a barge loading facility, grain elevator, and six, 200,000-bushel capacity grain silos on the Illinois side of the river between the Champ Clark Bridge and the Burlington Northern Railroad bridge located one mile south. Construction of this grain terminal is planned to begin Spring 2016 with completion in Spring 2017, well before the start of construction of a bridge.

Construction of any of the build alternatives would be conducted to reasonably minimize interference with free navigation of the waterway or impair the present navigable depths. The navigation channel at the existing bridge is within the center river span, third bridge span from the west bank, with 405 feet of horizontal clearance between the bridge piers of this span and 65.9 feet of vertical clearance above pool elevation of 449.0 Mean Sea Level (MSL).

The contractor's erection scheme and falsework would provide adequate horizontal clearance within the navigation channel span to allow safe passage of river traffic during construction of the superstructure. If temporary reduction in navigation channel width is allowed, this reduced navigation clearance during construction would be required only for the minimal amount of time needed to erect the girders. The contractor's falsework would be removed promptly to restore the full width of the navigation channel span. None of the build alternatives would affect the location of the navigation channel.

"Falsework"

Temporary structures used in construction to support spanning or arched structures to hold the component in place until its construction is sufficiently advanced to be self-supporting.

This project will require a Section 9 Bridge Permit from the USCG as they are responsible for maintaining a navigation channel in the Mississippi River. A Section 9 Bridge Permit is a document approving the location and plans of bridges over a commercially navigable waterway in accordance with all applicable federal laws. MoDOT will obtain a Section 9 Bridge Permit from the USCG prior to construction, approving the location and plans of bridges over a commercially navigable waterway in accordance with all applicable federal laws. The contractor shall submit a work plan to the USCG who would in turn issue a permit that includes specific requirements such as displaying lights to alert river traffic of barges and new piers.

Important to navigational safety, visibility at the bridge is approximately 1-mile upstream (northwest) and 3 miles downstream (southeast). This distance provides adequate visibility between barges and the bridge area to allow the barges to slow before approaching construction. To alert river traffic of the presence of barges and new piers, specifications for the placement of navigational lighting and retro-reflective panels on the bridge are included in the USCG Section 9 Bridge Permit. floodplain

The USACE St. Louis District is responsible for operations and maintenance activities on this section of the Mississippi River. The new bridge piers for any of the build alternatives would closely match the current pier locations and the existing navigational clearance would be maintained.

All three of the build alternatives would involve demolition of the existing bridge with potential impacts to river-way users and Mississippi River commerce associated with blocking navigation through the span for a short period of time. The spans would be dropped into the river and then salvaged. Since demolition of the existing bridge would occur after the new bridge opens, it is possible that demolition could be timed to occur outside the busiest portion of navigation season.

If the existing bridge is demolished during the supported navigation season, commercial use of the river in the vicinity of the bridge would be slowed during demolition. However, use of the navigation channel can only be restricted for a 24-hour period while the span is salvaged. Since the USCG monitors the demolition on site to provide a safe environment during span blasting and salvage, this operation is anticipated to have minimal impact on commercial river traffic.

Recreational use of the river near the bridge may be reduced both during construction and demolition activities. To ensure safety of commercial and recreational river users, MoDOT will coordinate with USCG to halt river traffic during demolition activities.

The contractor shall submit a work plan to the USCG who would in turn issue a permit that includes specific requirements such as displaying lights to alert river traffic of barges and new piers. Temporary lighting and signing will be installed to direct and warn boaters and barges of construction on the bridge.

Floodplains

National Flood Insurance Program (NFIP) Flood Hazard Boundary Maps are available for the city of Louisiana, Pike County, Missouri, and Pike County, Illinois. The Mississippi River 1% floodplain extends from the railroad tracks in Missouri to the east side of the Sny Levee in Illinois (see Figure 2-1). An illustration of a typical floodplain/floodway is found in Appendix A, page 5. Additionally, the project transversely crosses the floodplain of Mud/Plum Point Slough in Illinois. The Green alternative crosses roughly 4,055 feet of floodplain, 3,920 feet of which is regulatory floodway; the Red alternative crosses 4,780 feet of floodplain, 4,630 feet of which is regulatory floodway; and the Yellow alternative crosses 5,780 of floodplain, 5,350 feet of which is

regulatory floodway. The flood elevation at the existing bridge is 463 feet above sea level, as identified on Federal Emergency Management Agency (FEMA) map panel 17149C0525D, effective 6/2/2011. The Green alternative encroaches upon 8 acres; the Red alternative encroaches upon 6.97 acres: and the Yellow alternative encroaches upon 6.79 acres of 1% floodplain.

Bridges are designed to span as much of the base floodplain and regulatory floodway as possible, thus serving a dual role by minimizing construction impacts in the floodplain and reducing disturbance to wetlands. All three build alternatives would construct a new bridge next to the existing bridge, minimizing any additional floodplain impact. Because the new bridge and roadway approaches would replace the existing bridge and roadway approaches, it is not anticipated that the project would support any additional incompatible floodplain development. There would be only minimal if any, additional impact to the base floodplain and regulatory floodway following completion of construction and removal of the existing Champ Clark Bridge and roadway approaches.

In Illinois, a portion of the existing Route 54 roadway east of the river between the bridge and the Sny Levee is subject to periodic flooding. The approach roadway would be elevated above and extending beyond the Sny Levee, ensuring that Route 54 would not close from flooding unless the Sny Levee overtopped. The Sny Levee is currently certified to a 100-year flood event and the Sny Island Levee Drainage District is pursuing a 500-year certification. MoDOT will design the roadway to a 500-year flood level to accommodate the potential Sny Levee 500-year certification.

The No-build alternative would not involve any improvements in the floodplain or regulatory floodway. Therefore, there would be no adverse impacts to the natural and beneficial floodplain values by this alternative. However, Route 54 would still have to be sandbagged in flood events where water levels exceed the roadway elevation where it notches the Sny Levee.

The Missouri State Emergency Management Agency (SEMA) issues floodplain development permits for projects undertaken by the State of Missouri. The Illinois Department of Natural Resources/Office of Water Resources (IDNR/OWR) issues permits for projects in the state of Illinois. For projects proposed within regulatory floodways, a "no-rise" certificate would be required before a permit is issued. Engineering analyses of floodplain impacts would be conducted during the project's design to avoid and reduce impacts wherever possible. All three build alternatives require a floodplain development permit and "no-rise" certification.

MoDOT will conduct an engineering analysis for the build alternative prior to submission of the floodplain development permit application to SEMA and IDNR/OWR. The contractor shall obtain a floodplain development permit and "no-rise" certification.

FEMA Buyout Properties

There are no FEMA buyout properties within the project limits.

Wild and Scenic Rivers

There are no streams or rivers within the project corridor that are either part of the National Wild and Scenic Rivers System or under study for designation to the system. Therefore, the proposed project would not impact any part of a system or potential candidates to the system.

Air Quality

The project is located in a non-classified area as defined by the Environmental Protection Agency through the Clean Air Act (CAA). This means that the project area is in compliance with the National Ambient Air Quality Standards (NAAQS) and no air quality analysis is required.

Noise

For the purpose of noise analysis, the FHWA noise policy divides projects into three types: Type I, Type II, and Type III, described in Appendix A, page 6.

Although this project involves the physical alteration of an existing highway, one of the criteria to be classified as a Type I project, it would not cause substantial changes to the horizontal or vertical alignment of the bridge or roadway. A substantial horizontal alteration is one that halves the distance between the existing highway and the closest noise sensitive receptor, a residence in this project, when compared to the future highway location. The 65-foot realignment of the intersection in Louisiana does not meet that definition since the nearest receptor is a residence 150 feet from the current alignment. Likewise, the alignment in Illinois does not halve the distance between the existing highway and the closest receptor along the project.

The only receptor on the side of the alignment alteration is the residence at Plum Point Road. At this location the preferred alternative has nearly transitioned back to the existing alignment. For the preferred Green alternative, the new location of the highway would likely have a slight noise reduction to the outdoor seating area at the Marina because the new alignment will be farther away than the existing roadway.

There also would not be a substantial vertical alignment change from the existing alignment. This is done by either altering the vertical alignment of the highway or by altering the topography between the highway traffic noise source and the receptor, removing shielding and exposing the receptor's line-of-sight to the highway. Neither of these conditions will take place. Finally, the new project will not add through lanes on Route 54. Thus, the project does not meet any criteria for a Type I project.

This project would not be a retrofit project otherwise known as a Type II project. A Type II project is a noise abatement project on an existing highway resulting from situations that predate the FHWA noise regulation or adjacent developments that occur after highway construction.

This project is an example of a Type III project, which includes bridge rehabilitations or replacements, roadway pavement reconstruction, roadway resurfacing, intersection improvements, shoulder additions, and turning lanes. Additionally, the project corridor is dominated by the Mississippi River and land uses not sensitive to noise. Therefore, this project is classified as a Type III project and does not require noise analysis or consideration of noise abatement. MoDOT will conduct a noise analysis should changes to the proposed project result in reclassification to a Type I project.

Natural Habitat and Threatened and Endangered Species

From the west end of the project in Missouri to the east end of the project in Illinois, habitat types within the Route 54 affected environment include areas of:

- urban development (city of Louisiana)
- steep bluff with mature trees

- railroad corridor under existing bridge between the western bluff and Mississippi River
- Mississippi River
- boat ramp, marina, and commercial building on the Illinois side, north of the existing bridge
- mature floodplain forest, south of the existing bridge
- levee protected residences and agricultural fields

The agricultural land, railroad corridor, and urban development all provide habitat for common species of plants, birds, insects, amphibians, reptiles, and some small mammals. Impacts from any of the proposed build alternatives would be similar and are not anticipated to have any lasting impacts on populations of these species.

The Mississippi River, along with its adjacent floodplain, wetlands, and bluffs, are areas that can contain potential habitat for sensitive plant and animal species. There is one cave and several abandoned quarries within 1.5 miles of the project corridor along the bluffs, in Missouri. Additionally, the floodplain and the forested areas on the east bank of the Mississippi River contain mature trees and wetlands. With the exception of the amount of floodplain forest and wetlands, there are negligible differences in potential impacts to the natural environment between the preferred Green alternative and the Red and Yellow alternatives. Since all three build alternatives are adjacent to the existing bridge and have similar footprints in the river, impacts to the Mississippi River are nearly identical.

The preferred Green alternative has greater forest impacts than the other build alternatives, but all of the impacts for this alternative are within 200 feet of the existing road where habitat quality is already impaired. The Yellow alignment has impacts to one forested area nearly 300 feet from the existing road surface, and more emergent wetland impacts than the Green and Red alternatives. The No-build alternative would have no impacts to forested areas since it would require only ongoing repairs and maintenance to the bridge itself. Any impacts to the river from maintenance and repair operations would be temporary.

The project has been screened for federally listed plants and animals using the U.S. Fish and Wildlife Service Information, Planning, and Conservation (USFWS) (IPaC) system. Two official species lists were obtained using this method – one for Missouri and one for Illinois. The following federally listed species were identified from the screening as those that should be considered in an effects analysis for this project:

Birds

Least Tern (*Sterna antillarum*) – Endangered

Piping Plover (*Charadrius melodus*) – Threatened

Red Knot (*Calidris canutus rufa*) – Threatened

Clams

Higgins Eye (*Lampsilis higginsii*) – Endangered

Spectaclecase (*Cumberlandia monodonta*) – Endangered

Sheepnose (*Plethobasus cyphyus*) – Endangered

Plants

Decurrent False Aster (*Boltonia decurrens*) – Threatened

Eastern Prairie Fringed Orchid (*Platanthera leucophaea*) – Threatened

Fishes

Pallid Sturgeon (*Scaphirhynchus albus*) – Endangered

Mammals

Gray Bat (Myotis *grisescens*) - Endangered

Indiana Bat (*Myotis sodalis*) - Endangered

Northern Long-eared Bat (*Myotis septentrionalis*) – Endangered

Birds

In accordance with Section 7 of the Endangered Species Act, FHWA has determined that this project will have no effect on the federally listed bird species. The least tern and piping plover require sparsely vegetated sandbars and beaches in which to nest and forage. These habitats do not exist within the project corridor. The red knot is a shorebird that undertakes long migrations between its wintering grounds in the tip of South America, the Caribbean, the southern US coast, and its breeding grounds in the central Canadian Arctic. Along the way, it must stop to forage in areas with abundant, easily digestible, foods and it is mostly found on the East Coast during migration. It is highly unlikely that red knots visit the project corridor. There are no recent records for any of these bird species in or near the project corridor based on checks of the Missouri Department of Conservation (MDC) Natural Heritage Database and the Illinois Natural Heritage Database.

During February and April 2013, the INHS conducted surveys of bird species in the project area. No federally or state-listed threatened or endangered species were noted. Eight species of Illinois Conservation Concern and no Missouri Species of Conservation Concern were noted. All observed species of concern likely breed in the area, and there is ample habitat in the vicinity to provide nesting and foraging opportunities for these species after construction of the new structure and approaches. The loss of forest and wetlands adjacent to the existing highway are not likely to pose a significant threat to any bird species.

The INHS surveyors observed one bald eagle flying over the river channel during the February survey. This species is no longer federally listed as threatened but it is protected by the federal Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act (MBTA). The INHS also assessed potential bald eagle habitat in the project area using USGS topographic maps, and aerial photographs. The Bluffs north of Louisiana contain ravines that could potentially be used as winter roosts by bald eagles. The bottomland wood on the Illinois side within the project area could support both smaller roosts and nest sites. Bald eagle nests were not observed in or near the study corridor during the surveys. According to the MDC Natural Heritage Database, there are two records of known eagle nests more than 3-miles north of the project corridor near Ted Shanks Conservation Area. The project limits are well outside any potential protection zones for these nests. Therefore, this project will have no impacts on these nests. Additional site visits will be conducted to check for recently constructed eagle nests during the design phase. There are no anticipated impacts on bald eagles.

Several bird species commonly nest on bridges, especially those over water, including cliff swallows, barn swallows, and eastern phoebes. These birds, while common, are protected by the MBTA. Field checks have been conducted and no nests have been observed under the bridge deck, but there are cliff swallow nests under the pier caps. There could also be nests on areas of the bridge that are not easily inspected such as on girders or on top of piers far out over the river.

MoDOT will inspect the Champ Clark Bridge for nests prior to demolition. If active nests (those with eggs or young) are observed, measures will be taken, including seasonal demolition restrictions, to prevent killing birds and destruction of their eggs and to avoid conflict with the MBTA. Seasonal restrictions on removal of nests are placed during nesting season, generally between April 1 and August 15. If restriction dates are not feasible, the bridge will be maintained to prevent birds from nesting using methods such as exclusionary devices or nest removal prior to egg laying. In some instances, MoDOT has obtained depredation permits from the USFWS with the help of U.S. Department of Agriculture/Animal and Plant Health Inspection Service (USDA/APHIS) for removal of nests that contain eggs from bridges under construction. This permit will be used as a "last resort" where methods to prevent nesting have been unsuccessful.

Mussels

The MDC Natural Heritage Database contains records from 1987 for the mussel spectaclecase, approximately 2-miles upstream of the project corridor. It is state-listed in both Missouri and Illinois. Records from 1986 list the federally and Missouri state-listed pocketbook mussel (*Potamilus capax*) approximately 4.3-miles upstream adjacent to the Ted Shanks Conservation Area. However, repeated and intensive sampling efforts within the project corridor in recent years failed to detect the presence of these or other federally listed mussel species.

The project area has been sampled multiple times in 1990, 1999, 2003, and 2010 prior to efforts undertaken specifically for this project. Historically, there was a large mussel bed present near the Missouri shoreline that extended both north and south of the existing Champ Clark Bridge. According to MDC biologists, this bed was unique in that it was dominated by washboards (*Megalonaias nervosa*), a species not listed federally, nor listed in either Missouri or Illinois. However, only one was found in recent INHS surveys. There is also a 2010 record on the MDC Heritage Database of the collection of a black sandshell (*Ligumia recta*) within this bed, and also from 2011 in several places within 5-miles downstream of the current bridge. Black sandshell is a threatened species in Illinois and a Species of Conservation Concern in Missouri. These earlier sampling efforts also yielded records of the Illinois-listed butterfly mussel (*Ellipsaria lineolata*) along the Louisiana riverfront.

Efforts to sample mussels specifically for this project began in 2012. Biologists with the INHS sampled the project corridor in July 2012 using brailing and hand searching. Thirteen species of freshwater mussels were found, but only four were represented by live individuals. None of those found alive are listed as threatened or endangered at the state or federal level; and all are common inhabitants of the Mississippi River. In October 2013, MoDOT and MDC biologists spent one day brailing the bed both north and south of the existing structure. No mussels were captured in the vicinity of the bridge. A follow-up diving survey was conducted by INHS in October 2014. This effort yielded thirteen species, seven of which were collected alive, and one additional species represented by fresh dead shells. Overall, results from the diving survey were very similar to those reported by INHS in 2012.

Combining the results of the three recent surveys for this project, sixteen species of freshwater mussels were found in the project corridor, nine of which were collected alive and another two species represented by fresh dead shells. These data compared to the 1999 bridge survey conducted by MDC are very similar; eleven species were found alive or fresh dead in both surveys and the species detected in both were nearly identical. None of the species found alive or fresh dead are listed at the state or federal level.

MoDOT and IDOT coordinated with MDC and IDNR fisheries biologists and based on the survey results, neither agency has concerns for mussel species at the project site (see email and telephone notes in Appendix E). MoDOT also provided the USFWS Marion, Illinois, office with a copy of

the October 2014 survey report and notified them that based upon the report and previous surveys the project will not impact federally listed mussel species. FHWA has made "no effect" determinations for federally listed mussel species.

Plants

The decurrent false aster is a perennial plant found in sandy floodplains and prairie wetlands along the Illinois and Mississippi Rivers in the St. Louis, Missouri vicinity. It was last seen in Pike County, Illinois, in 2009 and there was a relocated population at Ted Shanks Conservation Area in Missouri. It requires periodic flooding to scour out other vegetation from the alluvial floodplain soils.

The eastern prairie fringed orchid occurs in a wide variety of habitats, from moist prairie to wetlands. It requires full sun for optimum growth and flowering and a grassy habitat with little or no trees. This species has a symbiotic relationship between the seed and soil fungi, which is necessary for seedlings to become established. These fungi help the seeds take up nutrients in the soil. The necessary habitat requirements are not present for the orchid on either the Missouri or Illinois sides of the river within the project corridor. The Missouri riverfront contains too much brush and trees and the Illinois side contains development, forest, and altered drainage patterns due to the levee. These conditions impede the establishment of these and other rare plant species that require functioning rather than impaired ecosystems and specific conditions to reproduce and flourish. The INHS did not observe any federally or state-listed plant species or any plant communities of special interest, in their wetland delineation of the project corridor conducted in November 2012. FHWA has made "no effect determinations" for the decurrent false aster and the eastern prairie fringed orchid.

Fish

The nearest record for pallid sturgeon in the MDC Heritage Database is in St. Charles County, Missouri, below the Mel Price Lock and Dam. Pallid sturgeon are not expected to occur as far north as the project corridor within the Mississippi River. Therefore, FHWA made a "no-effect" determination for the pallid sturgeon.

The lake sturgeon (*Acipenser fulvescens*) is state-listed as endangered in both Missouri and Illinois. This species migrates through the entire Mississippi River system using varying habitats for spawning, feeding, nursery, and over-wintering. Individuals of this species have been recorded from approximately two-miles upstream of the proposed project corridor according to the MDC Heritage Database. These records are from 1989.

Lake sturgeons are large and can easily swim away from the types of disturbances expected from this project. The MDC provided comments in September 2012 that construction of the new structure is not likely to impact the areas where the species is known to occur, but that demolition of the existing structure may affect the species as it moves through the area (see Appendix E).

MoDOT conducted additional discussions with MDC and described potential construction activities that could impact lake sturgeon, including construction of temporary bulkheads, causeways, dredging, construction barge activities, and demolition. MoDOT will employ the use of repelling charges and millisecond delays during demolition of the bridge to scare fish from the area before bridge spans are dropped into the water.

Based on these discussions, the MDC has no additional concerns regarding impacts to lake sturgeon. IDOT has also had discussions with IDNR about this species. Based on the survey reports and the comments provided, IDNR has stated that adverse impact is unlikely for the lake sturgeon. They have also stated that at this time they have no additional comments or concerns

regarding threatened and endangered fish and mussel species for this project site (see email and telephone notes in Appendix E).

A total of 20 fish species were collected during an August 8, 2012, INHS sampling effort. No species listed at either the state or federal level were collected or observed. All species collected are common inhabitants of the Mississippi River and there is no suitable spawning habitat for fish within the project corridor. Repelling charges and millisecond delays employed during demolition will cause fish to leave the area protecting them from falling debris and percussive blasts. This project is not anticipated to adversely impact fish species.

Mammals

Indiana and northern-long eared bats use caves to hibernate during the winter and forested areas to roost and raise their young in the summer. Generally, they use trees with loose peeling bark, along with snags, splits, and cavities, where they can hide and regulate their temperatures along with those of their young. Female Indiana bats with young roost in colonies in large trees (maternity colonies) whereas males often roost singly or in small groups and can be found in smaller trees. Trees suitable for maternity roosts must also have sufficient solar exposure so that females can regulate the temperature of their young. Northern long-eared bats are more general in their preferences and can be found roosting in small young trees as long as there are cavities or peeling bark where they can hide. Gray bats, on the other hand, use caves all year long although they migrate between caves where they hibernate in winter to those where they raise their young during the summer. During spring and fall migrations, they use other caves as transient shelters.

There are no caves near the project corridor that are known to be used by gray or Indiana bats. According to the MDC Natural Heritage Database, the nearest caves used by these species in Missouri are located nearly 15 miles away near Frankford. There are nine records in the Illinois Natural Heritage Database (INHD) for the Indiana bat in Pike County, Illinois. Only two of these are within the last 25 years.

Biologists from MoDOT, MDC, and the Missouri Bat Census conducted a field visit on December 27, 2013, to several abandoned quarries 1.5 miles north and Clinton Cave 1.2 miles south of the project corridor. These visits revealed that the quarries are unsuitable as habitat for federally and state-listed species. Only a few individuals of the commonly occurring big brown bat (*Eptesicus fuscus*) were noted. However, multiple northern long-eared bats were observed in Clinton Cave, and another visit earlier in 2013 by the Missouri Bat Census yielded several more observations, indicating that this cave is regularly used by hibernating individuals of this species.

Vibrations from blasting can disturb bats roosting in caves and could potentially damage cave formations. However, Clinton Cave is far enough from the project that any blasting associated with construction of the Missouri approach, or demolition of the existing structure, will have no effect on bats or cave structures. In 2015, MoDOT conducted vibration monitoring on another project that was within 500 feet of a cave occupied by bats and found that vibration levels were below thresholds known to disturb bats and damage cave formations.

In July 2013, the INHS conducted a field habitat assessment of trees within the project corridor to determine if suitable roosts were present for Indiana bats. Although the forest on the Illinois floodplain is mature, it has been altered by the presence of the existing Champ Clark Bridge, marina, boat ramp, and commercial building. The trees within the impact area of the proposed bridge approach in Missouri are along the railroad tracks and on the bluff above. The INHS surveyors rated the suitability of the trees within the project impact area as low for Indiana bat potential maternity roost habitat.

The INHS conducted a follow-up mist netting survey on July 28 and 29, 2014, along the slough east of the forested floodplain in Illinois. They also employed the use of an acoustic bat detector in the project corridor. No bats were captured during the surveys and minimal bat calls were detected. Based on these efforts, the surveyors again concluded that the forested floodplain habitat within the project corridor is of low suitability as maternity roosts for Indiana and northern long-eared bats because of a paucity of peeling bark and exposure to solar radiation.

The portions of the existing Champ Clark Bridge over land were checked for signs of bat roosting during a field check by a MoDOT biologist on March 4, 2016. The areas between the deck and concrete end walls on both sides of the bridge were thoroughly examined using a flashlight, and binoculars were used to examine the underside of the deck and upper portions of the pier caps while standing below the bridge. No evidence of roosting was noted (guano, oily staining, dead bats, etc.) in any checked areas.

Forest habitats undergo constant changes that increase or decrease their suitability as habitat for bats. New roosts are created as storms produce snags and injuries that lead to hollows and splits, old trees die and bark begins to peel, and other animals form cavities that bats may eventually colonize. However, older roosts decay and fall, bark slabs drop from dead trees, and surrounding vegetation can grow and shade once suitable habitat to reduce its potential to be used by bats.

The preferred alternative involves clearing 8.5 acres of trees. Although currently rated as low maternity roost habitat, based on a field check on March 4, 2016, by a MoDOT biologist, the mature floodplain forest within the project corridor in Illinois contains some trees that possess suitable characteristics for general roosting. Suitable maternity and general roosting habitat may develop and/or diminish as construction nears.

The trees within the project corridor in Missouri are generally smaller than those in Illinois and they do not currently contain suitable bat habitat. Therefore, MoDOT will conduct another habitat assessment within the project corridor during the design phase to identify new potential roost trees. MoDOT will mark and record GPS coordinates of potential roost trees to be removed. MoDOT will incorporate seasonal tree clearing restrictions of suitable roost trees as a conservation measure to avoid adversely affecting northern long-eared and Indiana bats. The restriction currently used states that suitable roost trees will be cut between November 1 and March 31. Based on this conservation measure, FHWA is making "may affect, not likely to adversely affect" determinations for Indiana and northern long-eared bats and is requesting concurrence from the USFWS for these determinations. Because of a lack of nearby records and no impacts to caves, FHWA is making a "no effect" determination for gray bats.

Summary

In summary, none of the alternatives including the No-build alternative would have an effect on federally listed bird, plant, mussel, and fish species identified in the Official Species Lists obtained from IPaC. The No-build and build alternatives would also have no effect on gray bats. Removal of suitable roost trees may affect, but is not likely to adversely affect, Indiana and Northern long-eared bats based on winter clearing. FHWA is requesting concurrence from the USFWS for that determination.

MoDOT or IDOT will conduct an additional survey for bald eagle nests during the design phase and will inspect the existing Champ Clark Bridge for nests of species protected by the MBTA. If nests are discovered, seasonal restrictions for demolition or exclusionary devices will be employed.

No state-listed species are expected to be negatively impacted by this project. MoDOT and IDOT will continue to coordinate with their respective state resource agencies as the project proceeds.

Historic and Archaeological Resources

The FHWA invited the State Historic Preservation Offices (SHPO) in Missouri and Illinois, local governments in Pike County, Missouri and Illinois, the city of Louisiana, local historical societies, historic preservation interests, and bridge preservation interests to participate in consultation. These groups, known as consulting parties, have discussed the eligibility of buildings and the Champ Clark Bridge to be listed as National Historic Places along with project impacts. Appropriate mitigation measures for project impacts are being developed and are memorialized in a Memorandum of Agreement (MOA) between FHWA, the SHPOs, IDOT, and MoDOT. (Appendix B)

Archaeology

The project has the potential to adversely affect archaeological sites in both Missouri and Illinois. For the purpose of this study, the archaeological area of potential effect (APE) is considered to be the footprints of the individual alternates (Figure 3-6). In 2012, IDOT and the Illinois State Archaeological Survey (ISAS) completed a preliminary field survey that identified six archaeological sites east of the Mississippi River. MoDOT historic preservation staff has been unable to conduct similar investigations on the west side of the river because the project encompasses a commercially and residentially developed area of the city of Louisiana. MoDOT has instead relied upon a combination of historical research and visual inspection to evaluate the potential for intact archaeological deposits in Missouri.

Area of Potential Effect (APE) - geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties.

Illinois Archaeological Survey Results

The ISAS survey identified four previously unreported prehistoric era ancient Native American habitation sites and two historic sites. One historic site, a re-deposited floating platform or barge dating to the nineteenth century, is near the project corridor, but would not be directly impacted. Another historical Euro American site, the remnant of a habitation area, is not considered significant and warrants no further investigation. On July 7, 2015, the Illinois SHPO concurred with this recommendation (Letter in Appendix B). Because the latter site is not considered historically significant, impacts to that site are not used when evaluating the various alternatives. The four prehistoric sites fall outside the archaeological APE and have therefore not been fully evaluated for significance. In addition to the site-specific recommendations, geo-coring conducted within the project corridor indicates that the floodplain east of the levee is comprised of recent flood deposits. In situations such as this, buried archaeological deposits cannot be detected by surface survey alone; therefore, additional subsurface testing would be conducted for the preferred alternative prior to construction. In conclusion, no historic properties will be affected by any of the alternatives in Illinois.

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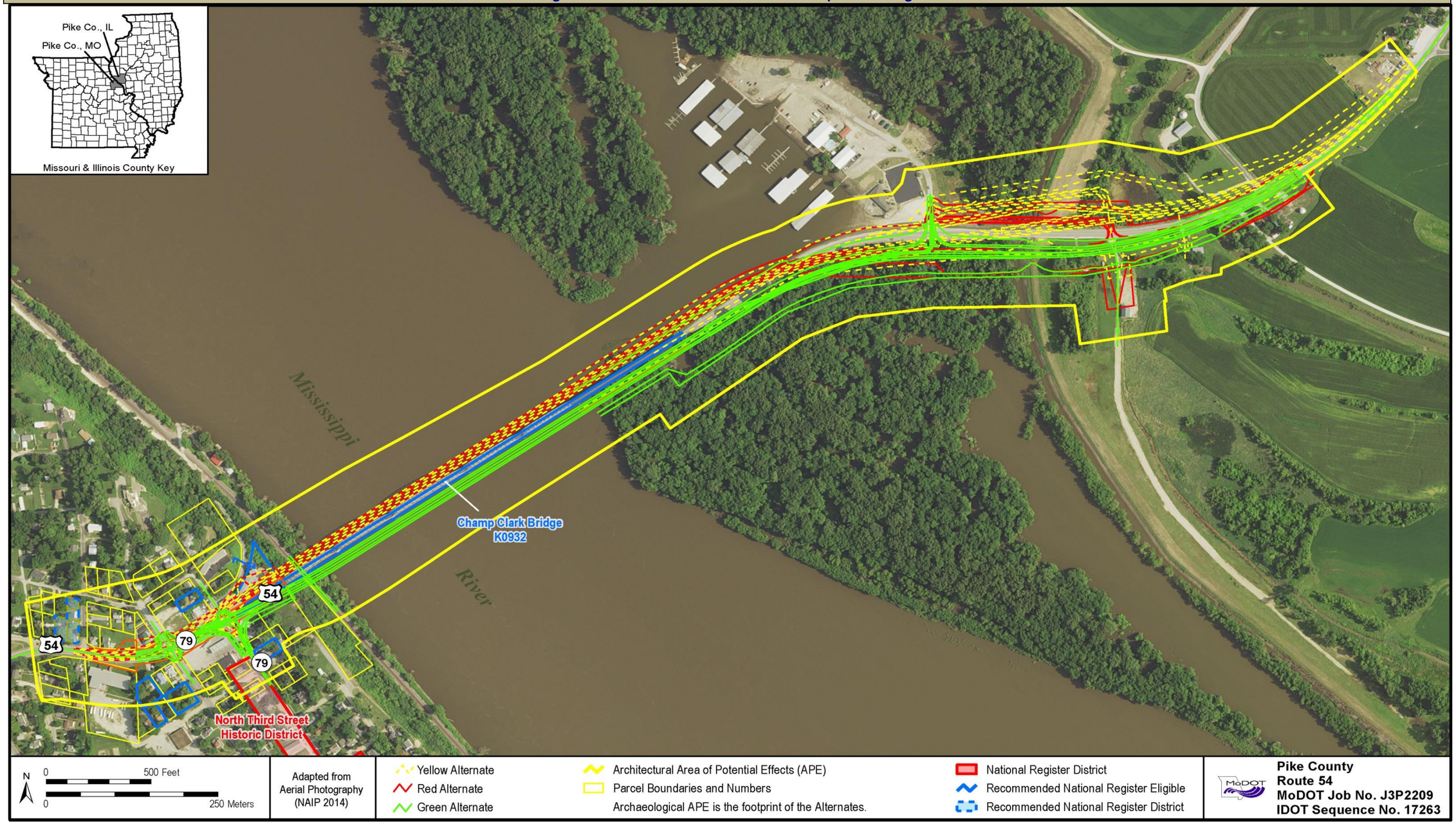
Figure 3-6 Area of Potential Effect for Champ Clark Bridge



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Potential Archaeological Sites in Missouri

A background check was conducted at the SHPO's cultural resources library to determine the extent of previous cultural resources surveys in the general vicinity of the project corridor. A file search was also conducted at the SHPO to document locations of known sites. There are no previously reported archaeological sites in the vicinity of the proposed improvements.

An examination of various historical sources—including The Bird's Eye View of the City of Louisiana published in 1876, federal census records, and property deeds revealed twenty-three properties have been tentatively identified as falling within the project corridor and worthy of additional review. Each property has been evaluated and ranked according to estimated integrity, or the potential for archaeological deposits to be present and undisturbed. Properties with "high" integrity would likely have greater significance and provide valuable information concerning the history of Louisiana, while properties with "low" integrity would have reduced significance and provide only limited opportunities for research. Of these properties, eight would be potentially impacted by the various alternatives, with the preferred Green alternative having the least impact with only two properties, and the Red and Yellow alternatives having the greatest impacts with seven archaeology properties. See Table 3-3 Potential Archaeological Sites in Louisiana, Missouri, and Figure 3-7 Location of Historic Architectural and Archaeological Resources. The No-build alternative would not require excavation, which in turn would have no impact on archaeological sites.

Table 3-3 Potential Historic Archaeological Sites in Louisiana, Missouri

Parcel	Integrity	Alternatives		
		Red	Yellow	Green
4	Mid	x	x	
5	Low	x	x	
21	Low			x
20	Mid to High	x	x	
19	Mid to High	x	x	x
35	Mid	x	x	
30/35	Mid to High	x	x	
36	Mid to High	x	x	

On July 29, 2013, MoDOT historic preservation staff conducted a visual inspection of the archaeological APE to evaluate the existing degree of disturbance or integrity along the proposed bridge alternatives and intersection options. Development of the area beginning in the 1850s and continuing to present day has greatly modified the topography largely because of construction occurring along the side of a hill rather than on a naturally flat area. Based upon the field inspection, construction of Mansion Street, now Route 54, and house lots on the north side of the road appear to have resulted in substantial grading and excavation. This excavation would have disturbed or removed any evidence of prehistoric occupation by Native American Indian tribes. However, archaeological deposits relating to homes built during the 1860s and 1870s, after the establishment of Mansion Street, might remain intact within the project corridor.

MoDOT and IDOT will conduct additional archaeological investigations when final alignment is selected and right of access is received. Any additional archaeological sites that might be affected by the project will be addressed in accordance with the regulations (36 C.F.R. 800) implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470). Identified cultural resources will be evaluated according to the Department of the Interior's "Standards and Guidelines for Archaeology and Historic Preservation," in consultation with the Missouri and Illinois SHPOs.

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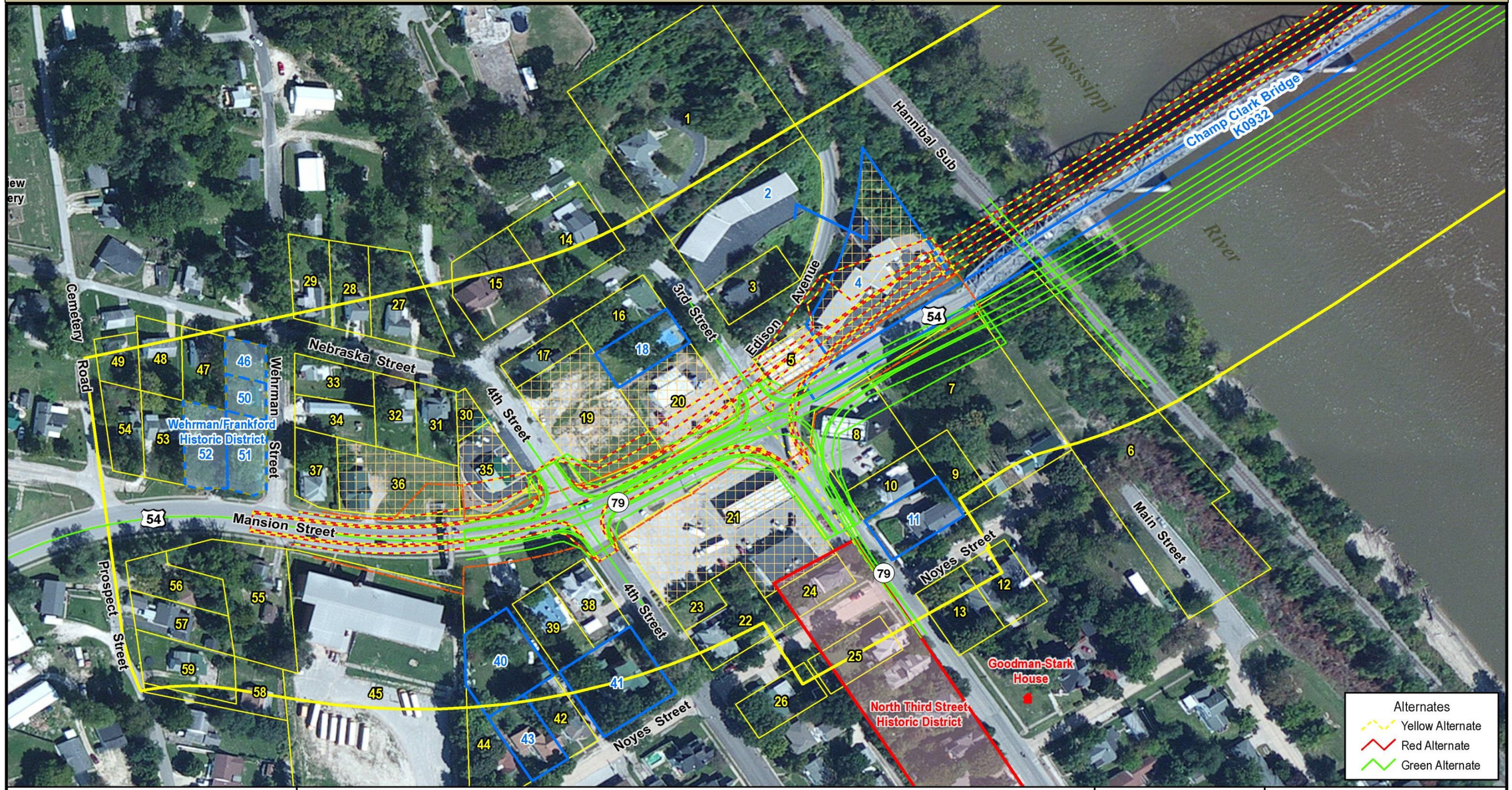
Figure 3-7 Location of Historic Architectural and Archeological Resources, Missouri



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Architecture and Bridges

Previously Recorded Bridge and Architectural Resources & Methodology

Missouri

The architectural survey utilized an APE of 250 feet on each side of each of the alternates being studied; the boundaries were merged into a single outline and are represented as the architectural APE on Figure 3-6 Area of Potential Effect for Champ Clark Bridge and Figure 3-7 Location of Historic Architectural and Archaeological Resources, Missouri. The APE allows for the consideration of direct and indirect effects to historic properties.

There is one NRHP listed historic district located within the Champ Clark Bridge APE (Figure 3-6). The North Third Street Historic District is roughly bounded by Georgia, Noyes, North 3rd Street and North Water Street.

The Missouri Historic Bridge Inventory included the Champ Clark Bridge (K0932). It identifies the bridge as a five-span, rigid-connected Pennsylvania through truss, with six, steel-plate deck girder approach spans. With a total length of 2,248 feet, the bridge was recommended as eligible for listing on the NRHP as an outstanding large-scale example of highway truss construction.

One previous architectural survey had been conducted within the APE for this project. Each of these resources was included in the MoDOT survey and the evaluation of the resources was discussed with the SHPO during a project site visit.

MoDOT conducted an architectural survey on August 22 and August 29, 2013. MoDOT and the Missouri SHPO consulted about the eligibility of resources within the APE in Louisiana and project effects on those resources during a site visit on September 25, 2013. The boundaries of potential historic districts were also discussed and determined. The effects recommendations made in this document reflect the consensus determinations made during that meeting, and during consultation following the submittal of the survey report.

Illinois

The ISAS surveyed architectural and bridge resources following IDOT guidelines, entitled "Photographing Historic Structures: Guidelines and Photo Logs." Architectural resources within the architectural APE were photographed, identified on a table, and keyed to an aerial map. On July 7, 2015, the Illinois SHPO concurred there were no eligible buildings in the APE (Letter in Appendix B).

Architectural Survey Results

Missouri

The architectural survey identified 59 parcels within the APE. These parcels are identified on Figure 3-7 by parcel number, and the resources on them are identified as Architectural Resources (AR), and the parcel number. Of these resources, two are listed on the NRHP–property AR #24 at 702 N. 3rd Street and property AR #25 at 620 N. 3rd Street–as part of the North Third Street Historic District. Six are recommended as individually eligible for listing on the NRHP, and four are recommended as eligible as part of the Wehrman/Frankford Historic District. The Rivers Edge Motel AR #4 is eligible for significance in architecture and commerce, AR #11, #18, #40, #41, #43 and the Wehrman/Frankford Historic District are eligible for significance in architecture. The Champ Clark Bridge is eligible for significance in engineering, transportation and commerce. The results of the survey are found in the Survey of Architectural & Bridge Resources within the Area

of Potential Effects for the Replacement of the Champ Clark Bridge technical report. These properties are identified by blue boundaries or labels on Figure 3-7.

Illinois

The ISAS identified six buildings and the Champ Clark Bridge in their survey of Illinois. None of the buildings are recommended as eligible for listing on the NRHP. The Champ Clark Bridge was also recommended as eligible for listing on the NRHP.

Project Impacts

The project can impact historic properties directly through the removal of the resource or indirectly through visual changes or introduction of new elements near them. Under Section 106 of the National Historic Preservation Act these impacts evaluated as "effects" and can be adverse if they change the features of the historic property that make it eligible for listing on the NRHP. If a DOT project has an "adverse effect" on a historic architectural or bridge resource, it triggers a "use" of the resource under Section 4(f) of the U.S. Department of Transportation Act, as discussed below.

All three build alternates would have a direct impact and adverse effect on the historic Champ Clark Bridge (K0932) because of the replacement and removal of the bridge. Because of this, a Section 4(f) evaluation for the use of the Champ Clark Bridge is necessary, and is discussed below. The No-build alternative would have "no adverse effect" on the historic bridge.

The preferred Green alternative would have an indirect effect on the North Third Street Historic District and the AR #11 property at 701 Third Street. It would cause the removal of buildings between Highway 54 and the resources, thereby causing visual impacts on the resources. Neither resource would be adversely affected. Significant views to and from the property are not part of the significance of either property.

The Red and Yellow alternatives, but not the preferred Green alternative, would have a direct and adverse effect on the River's Edge Motel (AR #4) because the building would be removed. This would result in a Section 4(f) use of that property. The Green alternative would cause changes in the view shed from the hotel which would be an indirect effect. The significant views from the hotel are toward the river; however, most of the large picture windows in the hotel face north, away from the existing bridge. Because the view of the bridge is not a significant feature of the hotel, moving the bridge farther away or changing its structure would not be an adverse effect.

The Red and Yellow alternatives would result in the removal of buildings between Highway 54 and the resource causing indirect effects on AR #11 because of visual impacts. The resource would not be adversely affected since significant views to and from the property are not relevant to the significance of the property.

The No-build alternative would have no impact on architectural resources since the current setting and viewshed of the resources would be maintained. The Champ Clark Bridge would not be affected by the No-build alternative since it would remain in place.

On November 4, 2014, the Missouri SHPO concurred with the recommendations of eligibility for the resources and the assessment of project effects.

Summarized in Table 3-4 are the type of impacts and project effects of the alternates being considered on the various historic properties.

Table 3-4 Effects of Bridge Alternates on Historic Architectural & Bridge Resources			
	Red Adjacent Upstream	**Yellow Adjacent Upstream Improved**	**Preferred Green Adjacent Downstream**
Champ Clark Bridge (K0932)	Direct (removal) /Adverse	Direct (removal) /Adverse	Direct (removal) /Adverse
North Third Street Historic District	None	None	Indirect visual / No Adverse
AR 4	Direct (removal) /Adverse	Direct (removal) /Adverse	Indirect visual /No Adverse
AR 11	None	None	Indirect visual / No Adverse
AR 18	Indirect visual / No Adverse	Indirect visual / No Adverse	None
AR 40	None	None	None
AR 41	None	None	None
AR 43	None	None	None
Wehrman/Frankford Historic District	None	None	None

Resolution of Adverse Effects

FHWA, MoDOT, and IDOT in consultation with the SHPO and other consulting parties have developed a Memorandum of Agreement (MOA) to provide for the mitigation of adverse effects on the Champ Clark Bridge, and for developing procedures for archaeological surveys in Illinois and Missouri prior to the construction of the project. As stipulated in the Section 106 MOA, MoDOT and IDOT will operate under a phased approach, which will ensure that additional work is completed for identifying and assessing the archaeological resources for this project. MoDOT and IDOT will ensure that all stipulations outlined in the Section 106 Memorandum of Agreement (MOA) be fulfilled within ten years of the date of execution of the MOA by FHWA. The MOA was executed January 4, 2016, and can be found in Appendix B.

Mitigation measures for the Champ Clark Bridge include advertising the availability of the bridge for reuse in place or at a new location. The advertisement period runs until December 31, 2016. If a viable reuse plan is presented for the bridge, FHWA, MoDOT, IDOT and the SHPO will evaluate the plan to determine whether the Champ Clark bridge can be preserved. If the bridge cannot be preserved, MoDOT will:

- remove name plates and donate them to the City of Louisiana
- take archival photographs and prepare a history of the bridge
- prepare an interpretive panel on the history and engineering of the Champ Clark Bridge for installation in Riverside Park in Louisiana
- prepare a brochure on Mississippi River Bridges for distribution through area attractions and Visitor's Bureaus
- prepare a short documentary video of the Champ Clark Bridge

Public Lands and Potential Section 6(f) and 4(f) Properties

Section 6(f)

There are no lands impacted by the project that are protected by Section 6(f) of the Land and Water Conservation Fund (LWCF) Act of 1965, which funds public and recreational facilities.

Section 4(f)

Champ Clark Bridge

As a property eligible for inclusion in the National Register of Historic Places, demolition of the Champ Clark Bridge would be a "use" of the historic site under Section 4(f) of the Department of Transportation Act. The project meets the applicability criteria for the Programmatic Section 4(f) Evaluation and Approval for FHWA Projects that Necessitate the Use of Historic Bridges (see Appendix C). Avoidance alternatives were considered, including the No-build alternative, alternative locations, and design modifications. These alternatives would cause other severe problems of a magnitude that substantially outweigh the importance of protecting the Section 4(f) property, and would not meet the purpose and need for the project.

Missouri

Located on the Missouri side of the Mississippi River are the Ted Shanks Conservation Area and the Upper Mississippi Conservation Area, both publicly owned recreational facilities managed by MDC. Both are slightly over 1-mile north of the existing bridge and outside of the project corridor. Neither area would be affected by the project.

There are seven public parks within the city of Louisiana. Marolf Hill Park is approximately 0.45 miles southwest of the existing bridge and Riverfront Park is approximately .73 miles from the existing bridge. Riverview Park is roughly 310 feet south of the existing bridge. Although the park itself would not be affected, there is a publicly owned parcel between the park and the existing bridge that would be used by the preferred Green alternative. This parcel is not designated as parkland and the city has no plans to use it as parkland as indicated in a letter to MoDOT dated April 15, 2014 (see Appendix D). All other parks are farther from the bridge and are not potentially impacted by the project. See Figure 2-1 – Initial Range of Alternatives for park locations.

Illinois

On the Illinois side of the river, the USACE owns land on both sides of the existing alignment. Their Two Rivers Recreation Area, which includes the Two Rivers Marina, is a Section 4(f) protected resource located north of existing Route 54. It consists of two boat ramps, a parking lot, and a closed commercial building. The area is used for fishing and fishing tournaments, boating, sightseeing, bird watching, swimming, and general day use activities at the marina.

The Red and Yellow alternatives would impact Two Rivers Marina in the area of one of the boat ramps located adjacent to MoDOT right of way. The Red alternative would require approximately 2.66 acres of new right of way and the Yellow alternative would require roughly 3.56 acres of new right of way. Both alternatives would require taking the boat ramp. The Green alternative would only require temporary easement on the marina and have no impact on the boat ramp.

For all build alternatives, permanent impacts to Two Rivers Recreation Area would occur at the entrance to the marina. The proposed improved Route 54 roadway is designed for construction eight to ten feet above the existing roadway making it necessary to modify the entrance to

maintain access to Two Rivers Marina. The area of the current entrance is approximately 0.07 acre. The new entrance would be widened on either side of the existing entrance approximately 0.16 acre. Currently this land consists of grass that is mowed and does not contain recreational uses. The area of the new completed entrance would total 0.23 acre.

Once tied into Route 54, the entrance would be repaved. The new paved entrance would be designed to accommodate vehicles pulling large trailers to facilitate turning movements. Auxiliary lanes such as a right lane and a center left turn lane are proposed to enhance safety for users as they enter the marina.

MoDOT will construct a temporary entrance to the marina to provide continuous access during construction. This entrance approximately 140 feet east of the existing entrance would use 0.17 acre of adjacent USACE land consisting of a grassy area that is currently mowed and does not contain recreational uses. The temporary entrance would include a 20-foot wide, 270-foot long aggregate drive that could be constructed in one day. MoDOT will ensure that upon completion of the Two Rivers Marina permanent entrance, the temporary entrance would be re-graded to pre-existing conditions to match the surrounding area.

For any of the three build alternatives, only a 0.91-acre temporary construction easement would be required to access and construct both the permanent and temporary entrances.

The No-build alternative would not construct improvements that would impact Two Rivers Recreation Area.

MoDOT and IDOT have determined that potential impacts to Two Rivers Recreation Area, including Two Rivers Marina, are de minimis in that the proposed construction and completed project would not adversely impact the activities, features, and attributes of the facility that qualifies the property for Section 4(f) protection. To make the Section 4(f) de minimis finding, written concurrence is required from the USACE and the management of Two Rivers Marina as the officials with jurisdiction (OWJ). Concurrence letters were sent to the OWJs on October 1, 2015. After concerns were expressed that campers using the campsites in the marina area would be unable to come and go for several days during the time new connections to the roadway are constructed, an additional, but temporary access entrance described above was added to the project. An updated concurrence letter was sent to the OWJs on December 22, 2015.

Prior to the OWJs' written concurrence with the Section 4(f) de minimis determination, impacts to Two Rivers Marina will be presented at a public hearing in 2016 to allow the public an opportunity to comment. This will enable the OWJs to consider any public comments when making their decisions to concur with the Section 4(f) de minimis determination. Once concurrences from the OWJs are received, FHWA's approval of the de minimis determination can be obtained.

South of Route 54, the USACE owns approximately 72 acres of forested land designated primarily for vegetation management (USACE Rivers Project Master Plan) but also is open to hunting, bird watching, and hiking. Recreational and parking facilities are not associated with this property. This is multiple-use land in which Section 4(f) does not apply (23 CFR 774.11(d)). USACE land on the south side of Route 54 was addressed under Right of Way Acquisition and Easements, page 42.

Hazardous Waste Sites

Potential Sites

Illinois

A Preliminary Environmental Site Assessment (PESA) was conducted by the Illinois State Geological Survey (ISGS) to identify potential sites of concern for the Illinois portion of the project area. The Illinois Emergency Management Agency (IEMA) was contacted regarding the proposed project. The IEMA incident reports #H 2005 0833 and #H 2005 0834 were obtained as a result. The PESA identified 20 sites determined to contain Recognized Environmental Conditions (RECs) in accordance with Illinois protocols. Properties were not accessed and no interviews were conducted with owners or operators during the field reconnaissance. The majority of these sites are listed because of a "June 2005 release of an unspecified petroleum product from a pipeline." The location and aerial extent of the release could not be determined and it is unknown whether any of the listed properties were affected. Historically, the Illinois portion of the project area has been largely undeveloped because of flooding and its main use has been agricultural. Only limited residential development has occurred in this area. Given the nature of the development, there is only slight potential for historical contamination issues. Based on this information, none of the 20 sites listed in the PESA are likely to have significant or regulated environmental conditions requiring additional work beyond that which has already been completed or that could be addressed in accordance with standard demolition procedures during preparation for construction.

Missouri

A database search, field reconnaissance, and review of historical aerial photographs were performed to identify potential hazardous waste sites and to evaluate the likelihood of soil and groundwater contamination within the project corridor. The Missouri portion of the project corridor is located in the city limits of Louisiana and includes hazardous waste site potential that could be affected by the various intersection options.

Four sites on the Missouri side were found within the project corridor at the intersection of Route 54 and 3rd Street, in Louisiana (Figure 3-8 – Potential Hazardous Waste Sites). Sites 1 and 2 are active gas stations, Site 3 is currently a used car dealership, previously a gas station, and Site 4 is the Chamber of Commerce, a previous gas station. The Red and Yellow alternatives would require taking the two active gas stations, Sites 1 and 2, and the car dealership, Site 3. The preferred Green alternative would require taking one active gas station, Site 1, and some right of way from a second active gas station, Site 2.

Priorities

Priorities for the potential sites in both Illinois and Missouri were assigned based on the following definitions:

"None-to-Low" – These sites could include Resource Conservation and Recovery Act (RCRA) small quantity generators or underground storage tanks (UST) sites for which releases of hazardous constituents have not been documented.

Site 5 located in Illinois, was observed to contain several drums of unknown content and is identified as a low priority (Table 3-8 – Low-to-Moderate Rank Potential Hazardous Waste Sites). These drums would require proper characterization and may require disposal.

After a review of available database information and its location in relationship to the project build alternatives, there is no indication that the proposed project would impact Site 5, in Illinois.

It is possible that potential contaminants could have been generated or handled on the site; however, all information indicates potential impact to a proposed alternative would be minimal.

"Low-to-Moderate" – These sites include any former or current operations identified as large quantity hazardous waste generators. Also included in this category are locations where releases of hazardous materials or petroleum products have been reported and remediation has been completed. These sites include leaking UST (LUST) sites that have been listed in the database as closed following completion of remediation.

Sites 1, 2, 3, and 4 were identified during the government database search as having a "Low-to-Moderate" potential for contamination in the vicinity of the project corridor. These sites primarily consist of active and former gas stations that would be affected by the project. However, as previously mentioned, the hydrogeologic regime of the project corridor and surrounding area is dynamic. Changes in direction of groundwater flow, quality, and composition is common. Because of the dynamic nature of hydrogeologic regime, spills and leaks of potentially hazardous waste from off-site sources have the potential to contaminate groundwater resources underlying the project corridor. All sites containing underground storage tanks require further evaluation, proper closure, and possible remediation of contaminated soil.

"Moderate-to-High" – A site is listed as *Moderate-to-High* if a review of available information indicates that known soil and/or groundwater contamination is present and the site is either undergoing remediation or continued groundwater monitoring. There are no known sites within the project corridor in this category.

For hazardous waste sites at Ayerco #65 and Abel's Quick Shop #1, MoDOT will conduct additional sampling and testing of soils within the footprint of the preferred alternative to determine the level of contamination and any required remediation. The remediation or "clean-up" would be required to bring the contamination to levels acceptable to the MDNR for proper site closure and follow-on use as public right-of-way.

Once property can be accessed an environmental contractor would be used to excavate areas proposed for construction within any of the properties identified with contamination. This process would allow any contamination encountered to be characterized, removed, treated and buried or contained by trained professionals following applicable regulations prior to initiating roadway construction. The level of impact to a potentially contaminated site would depend on the type and amount of excavation and the final design of bridge footings and foundations and/or roadway embankment. At this time, the type of construction and mitigation needed to limit impacts to any area of contamination is unknown. Remediation activity may be warranted in the future if it is determined that the project has negatively impacted any potential contamination. The type of remediation would be determined at that time.

Figure 3-8 Potential Hazardous Waste Sites

Table 3-5 Low-to-Moderate Rank Potential Hazardous Waste Sites

Site No	Site	Alternatives	Site Location	Federal/State Program List	Comments	Potential for Impacts
1	Ayerco #65	Green Yellow Red	222 Mansion, Louisiana, MO	*UST / LUST	Active gas station. No known releases.	Low to Moderate
2	Abel's Quik Shop #1	Green Yellow Red	Third & Mansion, Louisiana, MO	*UST / LUST	Active gas station. No known releases.	Low to Moderate
3	Bill Poor's Standard Service	Green Yellow Red	201 S Third, Louisiana, MO	*UST / LUST	Inactive gas station. Tanks removed. Release known to have occurred.	Low to Moderate
4	Chamber of Commerce	Yellow Red	221 Mansion, Louisiana, MO	*UST / LUST	Inactive gas station. No known releases.	Low to Moderate
5	Vacant building and mobile homes	None	Parcel 17, Pike County, Illinois	Illinois Geological Survey Report	Drums of unknown content.	Low
		*UST/LUST – Underground Storage Tank/Leaking Underground Storage Tank from Missouri Department of Natural Resources (MDNR) database				

No construction would occur and no new right-of-way would be acquired under the No-build alternative. Therefore, the No-build alternative would not affect potential hazardous waste sites. For the Build Alternatives, the preferred mitigation measures for these sites would be avoidance. However, because all sites could not be avoided and contamination could be found to be present, investigative or remedial activities for hazardous waste would need to be coordinated with MDNR's Hazardous Waste Management Program or IEPA and comply with all EPA requirements.

Eventual closure and removal of the existing bridge would require evaluation of the potential presence of asbestos containing materials prior to demolition. These materials, depending on their condition and quantity, would need to be removed and disposed according to current regulations and MoDOT/IDOT procedures.

Any lead-based paint disturbance would not occur until the demolition team prepares the bridge for removal. The amount of work required to prepare the bridge for demolition would not meet the threshold for containment.

MoDOT will ensure that all structures scheduled for demolition are inspected for asbestos and lead based paint. MoDOT and the contractor shall submit all required demolition notices, abatements notices, and project notifications to MDNR as required by regulation prior to beginning demolition activities. Asbestos containing material and demolition debris shall be disposed according to state and federal regulations. The reports of these inspections for asbestos and the presence of lead-based paint will be included in the construction bid proposal.

MoDOT will ensure that any known and unknown hazardous waste sites that are found during project construction are handled in accordance with Federal and State Laws and Regulations. If regulated solid or hazardous wastes are found during construction activities, the MoDOT construction inspector will direct the contractor to cease work at the suspect site. The construction inspector will contact the appropriate environmental specialist to discuss options for remediation. The environmental specialist, the construction office, and the contractor will develop a plan for sampling, remediation and continuation of project construction. Independent consulting, analytical and remediation services shall be contracted if necessary. As necessary, the MDNR, the IEPA, and USEPA will be contacted for coordination and approval of required remediation activities.

Construction Impacts

Construction

The No-build alternative would not produce construction impacts for several years since it would not involve new construction. However, over time increased bridge maintenance would be required for continued use of the 87-year-old Champ Clark Bridge. The Bridge has reached the end of its useful life and could potentially close in the very near future. Bridges of this age generally experience increased maintenance activities and unexpected repairs that temporarily cause bridge closures and impede traffic flow in the short term.

Even with continued routine upkeep and rehabilitation activities, delays would occur over the next few years. Short-term impacts such as noise, dust, and pollutant discharges from maintenance activities associated with the No-build alternative would be minor and mitigated in a similar manner as those for build alternatives.

During construction of the proposed build alternatives, there would be short-term, temporary adverse impacts near the proposed action, including noise, dust, and pollutants discharged by construction equipment, as well as impacts to motorized and non-motorized traffic and businesses in the area.

Pollution control measures outlined in the Missouri Standard Specifications for Highway Construction would be implemented to minimize construction impacts that would be associated with any of the alternatives. These measures would address air quality, noise, and water pollution as well as traffic control (e.g., detours) and safety measures. Best management practices would be employed to minimize or mitigate potential impacts.

Traffic Control/Detours During Construction

MoDOT will ensure that traffic control including warning signs, channelizers, and barricades needed to maintain vehicular traffic safely away from the contractor's operations would be implemented according to MoDOT Standard Specifications and traffic plans. Any proposed bridge project over the Mississippi River would require regulating river traffic during construction through coordination with the USACE.

All of the build options would construct a new bridge independent of the existing bridge and roadway alignment, resulting in only minor disruptions to traffic. Construction of a new bridge would result in some degree of impact on local traffic in the immediate area during the contractor's work in and around the project site. A Traffic Management Plan (TMP) will be developed during project design as part of the final design activities. A TMP defines a set of coordinated traffic management strategies to control work zone impacts. As outlined in the TMP, proposed strategies for managing traffic on this project would include construction staging, providing public information and conducting active outreach, scheduling high-impact work

during off-peak traffic periods, installing temporary traffic control devices, and as necessary, enlisting the assistance of law enforcement for additional traffic control. MoDOT and IDOT will seek input from the city of Louisiana, Twin Rivers Marina, and local businesses in the development of the TMP.

Short-term lane closures would be necessary to allow the contractor to relocate materials and equipment and to connect the new roadway approaches to the existing Route 54 alignment. Additional short-term closures would be necessary for the Red and Yellow alternatives while bridge girders are placed over existing Route 54 near the marina. The Yellow alternative would require a temporary bypass on the east end of the project, which would involve an additional short-term closure to connect to the existing Route 54 alignment. Once construction of the new bridge is complete employing any of the build alternatives, the existing bridge structure would be removed. Removal would require approximately five, fifteen-minute traffic closure periods to clear the bridge area during explosive demolition operations.

MoDOT and IDOT will deploy proactive communications to the public notifying them of traffic closures through a variety of tools including web-based applications, digital sign messaging, and other conventional media outlets. MoDOT and IDOT will publish construction-related news releases and information on their web sites at www.modot.org and www.idot.illinois.gov, for those with Internet access. Work zone impacts and issues would vary throughout the stages of construction thereby making these timely announcements a valuable part of the Traffic Management Plan.

Barge traffic would continue throughout the bridge construction project. The river's navigation channel must be kept clear during the navigation season. It is anticipated that river traffic would be halted only during demolition of the existing bridge. MoDOT, IDOT and the contractor will work closely with Twin Rivers Marina to provide the marina with suitable uninterrupted river access. MoDOT will coordinate with the USCG to schedule dates of the closures of the navigation channel including the duration of these closures.

Railroad

The BNSF railroad, located in Missouri between the Mississippi River and the city of Louisiana, is situated under the existing Champ Clark Bridge west span. This location experiences approximately 20 trains per day. It is not anticipated that rail traffic would be impacted by construction of any of the alternatives.

MoDOT will negotiate and execute an agreement with the Burlington Northern Santa Fe Railroad prior to seeking project federal authorization for construction. To avoid train traffic interruptions, the contractor shall coordinate with Burlington Northern Santa Fe to schedule girder settings and for handling other materials over the railroad tracks. Railroad flagmen shall be retained during construction when potential impacts to the rail system could occur. Construction of nearby bridge piers will require flaggers during construction operations.

Utilities

Various utilities are located within or outside the right of way off either end of the bridge. Local utility lines cross Route 54 on the west end of the project site in the city of Louisiana, and near the Sny Levee in Illinois. Underground communication lines are present on both sides of the river. There is a 2-inch conduit that carries electrical lines across the existing bridge. Temporary power or lights would be maintained during construction for navigational lighting.

All alternatives would impact existing utilities. MoDOT will ensure that details of utility disposition are determined during project design. Agreements with utilities will be negotiated

and executed prior to seeking project federal authorization for construction. MoDOT's and IDOT's utility engineers and representatives of the various utilities shall plan the details of individual utility adjustments on a case-by-case basis. MoDOT and IDOT will disconnect and reconnect electrical service lines on the bridge responsible for navigating lighting to the new structure. Temporary power or lights will be maintained for navigational lighting during construction.

Air Quality

Air quality concerns associated with bridge construction typically arise from the operation of construction equipment such as barges and cranes. Similarly, equipment such as bulldozers, haul trucks, and pavers are used in the construction of the roadway approaches to the bridge. Emissions from construction equipment would be controlled in accordance with emission standards prescribed under state and federal regulations.

MoDOT will ensure that materials resulting from clearing and grubbing, demolition, or other operations, except materials to be retained, are removed from the project site and disposed at a construction landfill by a licensed contractor.

MoDOT will ensure that open burning of trees, brush, or other waste are limited to amounts that cannot be marketed or reused on site. The contractor may attempt to harvest any marketable timber, use mulched timber for erosion control, where appropriate, and/or compost excess mulch.

Under dry conditions, heavy traffic or strong winds can produce dust from the soil causing it to become airborne (called fugitive dust), which can result in air quality impacts. MoDOT will ensure that contractors control fugitive dust to prevent it from migrating off the limits of the project corridor. Watering the ground or using dust-retarding chemicals, and washing vehicles prior to leaving the construction site may be employed to reduce the generation and transport of fugitive dust. All methods must comply with applicable federal, state, and local laws and regulations.

MoDOT will include standard specifications in the construction contract that emissions from construction equipment are controlled in accordance with emission standards prescribed under state and federal regulations.

Noise

Noise is anticipated to be generated during the installation of steel piles through the use of a pile driver. Pile-driving would be relatively short in duration, lasting a few days or weeks until the work is complete, and occurring only during daylight hours. Noise also is expected from the operation of equipment such as cranes, bulldozers, front-end loaders, scrapers, and other typical earth-moving equipment. MoDOT will include standard specifications in the construction contract requiring all contractors to comply with every applicable local, state, and federal laws and regulations relating to noise levels permissible within and adjacent to the project construction site. Construction equipment shall be required to have noise-reducing mufflers in accordance with the equipment manufacturer's specifications. MoDOT will schedule demolition blasting during daylight hours to avoid disrupting residential nighttime quiet.

If reuse of the bridge by others is not feasible, use of explosives is likely for demolition of the trusses and bridge piers. These blasts are expected to be limited in number and would be scheduled during daylight hours to avoid disrupting residential night-time quiet. Blasting large bridges such as this generally are a publically attended event with a temporary closing of the new bridge and established safety zones.

Water Quality

Erosion and sediment controls for the roadway approaches may include a combination of ditch checks, silt fence berms, sediment basins, temporary and permanent seeding, and slope drains. While controlling erosion during construction of the roadway approaches is important, work in the river itself must be given special attention. Barge traffic continues during bridge construction. When water level drops too low, the river must be dredged to deepen the channel so that barges are able to maneuver. The dredged material must then be disposed in some manner. Any dredged material would not be disposed on state right of way in Missouri or Illinois.

MoDOT will ensure that all necessary measures to control turbidity would be employed, which may include methods such as the use of curtain walls in slack waters. The use of equipment in the river would be minimized as much as possible by constructing work pads or coffer dams to access the river and by placing equipment onto barges. All drilled shaft water will be pumped into settling basins and best management practices will be implemented before discharging water back into the river. If possible, dredged material will be discharged toward the bottom of the river rather than at the surface of the water to reduce suspended solids, turbidity, and downstream sedimentation that may degrade water quality and adversely impact aquatic life.

MDNR and Illinois Environmental Protection Agency regulate the control of runoff from land disturbance. Erosion control measures would be in place as land clearing begins. MoDOT's SWPPP provides for temporary erosion and sediment control measures that would be included within construction contract specifications. MoDOT will ensure that careful refueling practices are employed to limit spills of gasoline and diesel fuels. Oil spills will be minimized by frequently evaluating construction equipment.

MoDOT will ensure, at a minimum, the following measures will be included in the SWPPP:

- Locate and protect all temporary storage facilities containing petroleum products, other fuels, and chemicals to prevent accidental spills from entering the streams. Spills that are within 1,640 feet (500 m) of any stream would be addressed within 24 hours of the incident.
- Avoid disposing of cement sweepings, washings, concrete wash water from concrete trucks and other concrete mixing equipment, treatment chemicals, and grouting and bonding materials into streams, wetlands, and any location where water runoff would carry pollutants into streams or wetlands.
- Reseed all areas within the project limits stripped of vegetation as a result of construction activities.
- Protect from draining or filling adjacent wetlands during construction activities within the project corridor.
- In accordance with project permits, excavate, dredge, and fill in watercourses in a manner that would minimize increases in suspended solids and turbidity.
- Remove and properly dispose of all debris during every phase of the project.
- To prevent the accumulation of unsightly, harmful, and toxic material in or near area water bodies, avoid disposing of any construction debris or waste material below the ordinary high water mark (OHWM) of any water body or at any location where the material could be introduced into the water or an adjacent wetland due to run-off, flood, wind, or other natural forces.

Impacts to Floodplains/Floodways and the Existing Levee System

All alternatives cross the Sny Levee. Various construction techniques may be used that could adversely impact the levee and river system. To mitigate for these impacts, temporary measures used for the construction of a Mississippi River bridge of this type may include the following:

- Cofferdam construction could be proposed for pier foundations in the river channel. Cofferdams are generally constructed using steel sheet piling then excavated and dewatered to allow for concrete construction in dry conditions. Cofferdams are removed after completion of pier construction.
- A temporary causeway may be proposed from either bank toward the river channel. Causeway construction is often used when piers are required in shallow conditions near the bank making barge operation difficult.
- Temporary supports such as pile bents may be proposed in the navigation channel to support girder erection in stages. Close coordination with the USCG is required.
- In the event of flood conditions, pier construction in the vicinity of the levee system would likely require contingency for emergency backfill. In addition, impacts to critical elements of the levee system such as the landward drainage system or relief wells would be minimized. Excavated construction in the vicinity of the levee would require strict backfill measures to restore the system to its original condition.
- Construction access may be permitted on the levee road(s); however, due to the steep incline up and over the levee, additional material may be required to safely haul equipment used for construction. Additional material deposited against the levee would be positioned to avoid compromising the integrity of the levee system.
- Construction staging areas may be proposed on the riverward, and more likely, the landward side of the levee. Any staging area would be restored to its original condition.

MoDOT will obtain a Rivers and Harbors Act Section 408 Permit from the USACE for alterations to the levee system.

Indirect and Cumulative Effects

Indirect Effects

Indirect effects are effects caused by the project, but occurring later in time or are farther removed in distance than direct effects, including changes in land use attributable to the project such as induced growth, and impacts on environmental resources that occur as a result of the project's influence on land use.

The proposed project does not introduce a new transportation facility or corridor into the region, and will not provide any new access. The proposed project is not intended to serve an explicit economic development purpose. However, there would be both immediate and long-term potential economic impacts around the study area. The bridge replacement and intersection improvements could influence a business's decision to locate or expand within the area. Immediate, positive economic impacts would occur during the time required for property acquisition and design and construction of the bridge and roadway. These impacts would be generated by the work and incomes provided by construction. Additionally, to the jobs supported by the direct infusion of construction dollars into the local economy, there would be secondary effect of those dollars in the economy and the increase in tax monies received.

On the Illinois side, land within the project area outside of the levee system is owned by the USACE and is not available for development. The proposed project would be limited to

conversion of this property to a transportation use and impacts would be minimized throughout the design process. Land outside of right of way is a mix of agricultural and recreational. These land uses would likely remain unchanged as a result of this proposed project. Likewise the adjacent wetlands and management of that land through a vegetative plan by the USACE would likely remain unchanged regardless of the proposed project.

On the Missouri side, land within the project area is a mix of commercial and residential. The proposed project could encourage new or redevelopment as a result of improved access to the area, but would be subject to comprehensive plans and future planning and zoning ordinances that would continue to serve as appropriate mechanisms to guide land use and development.

Cumulative Effects

Cumulative effects include the total of all effects to a particular resource that have occurred, are occurring, and will likely occur as a result of any action or influence, including the direct and reasonably foreseeable indirect effects of a Federal activity.

Placing new bridge piers in the river could contribute to cumulative negative effect on the habitat of some species of fish that live in the Mississippi River; however, these effects are anticipated to be minimal. Both MoDOT and IDOT have Pollution Prevention Plans that describe erosion control practices that will be implemented for the project. Given the existing Mississippi River natural sediment load and contributions from agricultural runoff, river dredging, and other developments, the sediment contribution from the project is expected to be minimal. MoDOT and IDOT will implement best management practices to minimize off-site transport of sediment. The implementation of these practices should afford adequate protection of sensitive aquatic resources in the Mississippi River and minimize this project's contribution to any potentially negative cumulative impacts associated with sedimentation. The use of cofferdams during pier construction will further minimize sedimentation from this project.

Elevating Route 54 to a 500-year flood level as it crosses the Sny Levee in Illinois was requested by the Sny Levee Drainage District in their comments about the project. Elevating the highway to this level enables the Drainage District to raise the Sny Levee from its 100-year to a 500-year flood protection level. The later action would then protect agricultural lands behind the levee at a greater flood level. Raising the levee with its resulting larger footprint would have potential impacts throughout Reach 3 of the Sny Levee. Those could include impacts on farmland, cultural resources, wetland, floodplain, hazardous waste, water quality and threatened and endangered species. At this time the USACE and the Sny Levee District are in dispute over past alterations to Reach 3 of the levee so it is uncertain whether future alterations of the flood protection level would be allowed by USACE until the existing levee comes into compliance.

Bridges along the Mississippi River were constructed beginning around the 1920s with many designed as truss structures to allow lengthy spans needed to bridge the navigational channel of the Mississippi River. Due to the ages of these bridges and their individual significance, many have been listed or are eligible for listing in the NRHP. However, many bridges that have been listed may be functionally obsolete or are structurally deficient. The higher volume of traffic, as well as the heavier loads that trucks carry today, far exceed the loads for which these bridges were designed. Additionally, the aging steel structures may need substantial repairs to prolong function life. Most of these truss bridges were built with narrow traffic lanes and do not have shoulders. Modern traffic requirements call for wider lanes, separation between opposing traffic, and shoulders to accommodate disabled vehicles. Widening an existing truss bridge is typically not economically feasible. For these reasons, many of these Mississippi River bridges are being replaced.

Overall, no significant cumulative effects are anticipated as a result of the implementation of the proposed project,

Public and Agency Involvement

MoDOT held a series of Community Advisory Group (CAG) meetings with area community members to enlist their feedback and support for the project (See Appendix F for CAG meeting summaries). Meetings with this group were held on October 9, 2012; November 13, 2012; March 12, 2013; June 7, 2013; September 18, 2013; April 22, 2014; and November 4, 2014. The meetings included information on the project progress and opportunities for the CAG to express their opinions about the project (Table 3-6 Public Comments and Responses).

Topics of general discussion in each of the meetings were the progression of the project through the NEPA process and information that would be introduced to the public. The city of Louisiana expressed their willingness to inform the public about the bridge options.

Issues brought to the meetings to be addressed included:

- The impact of bypasses on the community, if the bridge were to be closed because of its condition or for an alternative that would close the bridge during construction.
- Checking on the possibility of relocating the bridge to near the railroad bridge crossing the Mississippi River south of the Louisiana.
- Possible reuse of the Champ Clark Bridge.
- Making sure that intersection improvements are undertaken with the current bridge project.
- Funding for the bridge project.

In response to these concerns the preferred alternative retains the existing Champ Clark Bridge until a replacement can be built so no bypasses would be needed. Environmental impacts and additional right of way needs would be greater for a bridge and its connecting roads if it were located near the rail line south of Louisiana. So far there have been no proposals for the reuse of the Champ Clark Bridge; however, there are plans to document the bridge by preserving portions of it in the nearby Riverview Park. Intersection improvements have been incorporated in the bridge replacement project. Funding has been secured for the design of the bridge.

Table 3-6 Public Comments and Responses

Public Comments from November 8, 2012 Meeting		
Public Comments	**No. Of Comments**	**Responses**
Would the project include a ferry during construction if the new bridge would be located in the current bridge location?	1	Providing funding for a ferry was done in the past and may be considered for this project. Any ferry operation would be dependent on securing locations for docking facilities on each side of the river and securing a ferry company to provide the service.
Keeping the bridge open during construction is important to the city of Louisiana and region.	1	Project team will provide alternatives allowing the bridge to remain open during construction.
Prefer the new bridge alignment be close to the present Champ Clark Bridge location.	1	Project team will look at a variety of alignments close to the present Champ Clark Bridge as well as alignments away from the present location.

		UPDATE: Preferred alternative located adjacent to existing bridge.
Any new bridge alignment close to the present Champ Clark Bridge needs to include an entrance capable of handling large trucks into a new grain facility development.	1	Any new entrance onto the new facility will be designed to accommodate the expected users of those businesses using that entrance.
Consider replacing the Champ Clark Bridge and aging railroad bridge as one facility.	1	MoDOT contact Kansas City Southern Railroad which responded they were absolutely not interested in a shared highway/railroad river crossing.
Construct the new bridge to accommodate future traffic needs of a 3-4 lane highway.	1	The bridge currently has 4000 vehicles/day. Future traffic projects do not justify construction of a four-lane facility. A two-lane facility with wide shoulders could be converted to a three-lane facility.
Construct the new bridge similar to the Mark Twain Bridge at Hannibal by spanning the Sny Levee with approach spans to increase river flow and reduce river elevations during high river flows.	1	Extending the bridge past the Sny Levee will be considered. Any new bridge must comply with a no-rise certification from the USACE.
Make immediate safety improvements to restrict large trucks from crossing the bridge while meeting other vehicles.	1	MoDOT installed signs aiding large trucks in contacting local law enforcement to close the bridge to they can safely cross.
Relocate Route 54 south of Louisiana near the railroad bridge.	1	Project team will look at a variety of alignments close to the present Champ Clark Bridge location as well as alignments away from the present location. **UPDATE: Environmental and social impacts substantially greater for bridge near railroad.**
Public Comments from March 21, 2013 Meeting		
Public Comments	**No. of Comments**	**Responses**
The Adjacent Upstream Alternative is the best possible choice, least disruptive to businesses and environment.	3	No response needed.
Please don't even consider closing the bridge for any extended time.	1	Project team will provide alternatives for the bridge to remain open during construction.
Imperative to have easy to get off of 54 to go south on 79.	1	All new bridge alternatives will include an improved intersection of Route 54 and Route 79 for all traffic, including large trucks, to make turning movements without encroaching into opposing lanes of traffic.
Adjacent Downstream Alternative is the best choice. Minimal disruption to businesses and local traffic.	3	No response needed.
Adjacent Upstream Alternative is the second choice.	1	No response needed.
Can a ferry be operated during construction?	1	Providing funding for a ferry was done in the past and may be considered for this project. Any ferry operation would be dependent on securing locations for docking facilities on each side of the river and securing a ferry company to provide the service.

The generally north alignment takes too much property and would probably hurt high traffic businesses.	1	No response needed.
Issue of property owners and businesses being negatively impacted not receiving enough compensation.	1	Project team will work to minimize impacts to businesses. If businesses are impacted MoDOT and IDOT must comply with federal regulations in providing fair compensation to business owners for those impacts.
I believe it is in the best interest of the city of Louisiana, and its residents, to keep the current location. Having the bridge closed for up to 4 years will be inconvenient. However, if the ferry can be used during this time to transport workers, as it was during a recent closure, that inconvenience will be minimized. Also, I've driven over that bridge for years and would appreciate a new bridge with wider lanes.	1	Providing funding for a ferry was done in the past and may be considered for this project. Any ferry operation would be dependent on securing locations for docking facilities on each side of the river and securing a ferry company to provide the service.
Partial Replacement: Yes	1	No response needed.
On Illinois side, use curves that flatten and go SOUTH of marina and existing road on river side of levee, but goes NORTH of road on land-side of levee. Put road on piers on river-side of marina entrance and fill east of marina through levee. Continuous turn lanes into marina, into proposed grain terminal on land-side of levee, and intersection before Pike Station buildings. Remove existing approach to old bridge to make wider river cross-section toward channel.	1	Turn lanes will be provided at the marina similar to the current turn lanes.
What is wrong with bridge closer to Clarksville? Calumet access area?	1	Relocation of Route 54 to the south several miles is beyond the scope of this project and will not be considered. During the purpose and need phase it became clear the majority of the local community wants the bridge to remain located near Louisiana.
Maintain access to cemetery and historic downtown.	1	Access to cemetery and downtown will be maintained.
Add a stoplight to the Route 54 and Route 79 intersection.	2	Several different methods of traffic control at the Route 54 and Route 79 intersection will be considered.
Extend Route 79 north to Route 54.	1	Intersection with Route 79 north previously tied into Route 54 as a straight alignment. The alignment was changed to aid vehicles' turning movements and will likely remain in the same location.
Public Comments from October 1, 2013 Meeting		
Public Comments	**No. of Comments**	**Responses**
Like Adjacent Upstream Improve Alignment (Yellow). Best alignment for east approach. Least impact to marina and boat launch facilities.	4	No response needed.
Prefer Adjacent Upstream Alignment (Red),	4	No response needed.

close to existing and don't take every business. Less impact on businesses on Missouri side.		
Adjacent Upstream Alignment (Red) is my second choice.	2	No response needed.
Adjacent Downstream (Green) seems to meet up best with approach roadway. I like the downstream (Green). This will affect less businesses. Least impacts to marina.	3	No response needed.
Adjacent Downstream (Green) is my second choice.	2	No response needed.
Don't like where Adjacent Upstream Improved Alignment (Yellow) comes into 54. It is already too crowded in marina area.	2	No response needed.
Please, please put bridge replacement on fast track. People very literally risk their lives daily crossing the bridge. I cross it twice a day and there is never a day I do not have someone on my side of the centerline. I understand environmental concerns, but Kyle Brown's children have no father. There are more priorities than wildlife and wetlands. Please put human life first and allow the rest of our children to grow up having parents. I'm glad to see the process started, but it needs to move more quickly.	1	Once the environmental phase is completed MoDOT and IDOT can begin the design phase of the project. Neither MoDOT nor IDOT has funding identified to replace the bridge but it is important to complete the environmental study to be ready when funding becomes available.
I like Intersection Option 1. Should disturb the existing businesses the least.	9	No response needed.
Keep Intersection Option 2 and Option 3 as close to the existing Route 54 as possible.	1	No response needed.
Intersection Option 4 would require purchase of a lot of real estate but would allow considerable expansion. This in my opinion is the very best! Will accommodate future traffic in future years. No doubt there will be much more traffic. Also takes out some of the curve.	3	No response needed.
Intersection Option 2 has too much infringement on existing businesses. Keep curve out. What about traffic at the intersection. Not good.	3	No response needed.
Intersection Option 3 is the 2nd best option – still affects businesses too much.	1	No response needed.
Intersection Option 4 – No. Absolutely not, bad idea. Don't like at all.	6	No response needed.
I like the roundabout but is too costly and infringement on businesses. Slowing traffic through the intersection would be great.	1	No response needed.
Intersection Option 2 would be my second choice. Would provide softer approach the intersection. Would cause some disruption to businesses but would be good alternative.	2	No response needed.
Intersection Option 3 – Not in favor of this choice. Too much curve.	5	No response needed.

Intersection Option 2 – Yes	1	No response needed.
I don't think Intersection Option 1 would help any traffic problems.	1	No response needed.

Illinois NEPA-404 Merger and Agency Scoping Meetings

MoDOT, IDOT, FHWA, and USACE met on May 14, 2012, for a pre-scoping meeting where the USACE brought to the attention of the project team the need for a Section 408 permit and USACE real estate concerns. These included access to the marina, taking of public lands, and Sny Levee impacts. MoDOT, IDOT, and FHWA planned and participated in an agency scoping meeting held on August 29, 2012, where 19 agencies and 12 tribes were invited to attend and share their processing needs and thoughts on the project (See Appendix F for summaries of Agency Coordination Meetings). FHWA, USACE, IDOT, and MoDOT met on March 19, 2014, to discuss USACE's real estate policy. Issues brought up at the meeting included the need for one-to-one replacement of USACE land along with wetlands, and that the USFWS may require habitat replacement. The Illinois NEPA-Clean Water Act Section 404 Merger Process meetings were held in Springfield, Illinois, June 25, 2013, seeking concurrence with the purpose and need for the project; on September 5, 2013, seeking concurrence on the alternatives to be carried forward for detail analysis; and September 4, 2014, to seek concurrence on the preferred alternative. Agencies at the merger meetings concurred with each process point.

Table 3-7 is a summary of and responses to substantive comments made during the Scoping Meeting and Section NEPA/Clean Water Act Section 404 Merger Process meetings.

Table 3-7 Agency Coordination Meetings Comments and Responses

Comments	Responses
Address resource impacts of project on mussels, lake sturgeon, bats, eagles, forested wetlands, caves, floodplains, Waters of the US, Sny Levee, marina, restaurant in Illinois, and historic resources in Louisiana.	All of these resources have been addressed in the Environmental Assessment. It has been determined that there will not be impacts on protected mussels and caves. Mitigation or conservation measures will be put in place to avoid, minimize, and/or compensate for impacts on wetlands, lake sturgeon, the floodplain, waters of the US, the Sny Levee, marina, and historic resources in Louisiana. The restaurant in Illinois has closed for reasons unrelated to the bridge project.
Address gap in Sny Levee.	All build alternatives being considered would address the gap by building the road surface to at least the elevation of the existing levee or possibly to a level of a proposed 500-year levee.
Avoid Ted Shanks Conservation Area.	Ted Shanks Conservation Area is avoided by all build and the no-build alternatives.
Could Louisiana gas stations at the intersection with Route 79 be relocated?	Suitable locations are found along Route 54.
Provide information on the USACE land holdings.	USACE land is located on both sides of the Route 54 in Illinois. To the north the USACE has a public recreation area, which a Section 4(f) resource, that includes a marina, boat ramp and camp ground. To the south the USACE holds land that is designated for vegetative management. This is not a Section 4(f) resource but will be replaced under the USACE outgrant process. Access to the marina, boat ramp and camp ground will not be impacted except to rebuild the entrance and will be maintained during the construction by building a temporary access just to the east of the existing access.

Compare impacts between the skewed Blue and the Green alternatives.	The Blue alternative would impact 6 more acres of forested land than the Green alternative.
Status of levee breach and Section 408 permit process needs to be started early.	Levee breach addressed for all build alternatives. Initial discussions about Section 408 permit have begun.
Are mitigation costs included in the right of way estimate?	Mitigation costs were not included in the right of way estimate at the time of the meeting since one mitigation option is to use an existing Illinois mitigation bank. Since the time of the meeting purchase of land to replace USACE land taken for the project are included in the right of way costs.
All costs should be included in the project estimates.	All foreseeable costs have been included in the cost estimates for the alternatives.
Questions about impacts to mussels in the Mississippi River. If threatened or endangered species of mussels are found they will need to be relocated. Mitigation plans should involve USFWS, MDC, and IDNR.	Several studies had been conducted with inconclusive results. Since the time this topic was mentioned, a brailing survey was conducted. No threatened or endangered mussel species were discovered in the mussel bed. No mitigation for mussels is needed.
Will there be a wetland delineation report?	Yes. The results of the wetland delineation are included in the EA. Any wetland compensation for the USACE property involves statutory and non-statutory requirements.
Protection of bats.	Tree clearing date restrictions will be observed for trees that have to be removed so that there are no direct impacts on roosting bats.
Protection of archaeological and architectural resources.	Studies indicate that there are no impacts to known archaeological sites in Illinois for any of the alternatives and potential prehistoric archaeology sites in Missouri have been disturbed by historic activities. Historic archaeology will be conducted when access to property is obtained. MoDOT is advertising the Champ Clark Bridge for reuse.
What are the impacts to the BNSF railroad on the Missouri side of the Mississippi River?	There is no plan to take permanent right of way from BNSF railroad; however, minimum vertical and horizontal clearance will be maintained and notification will be given to BNSF as the construction schedule is developed for that area.
How are Section 4(f) properties being avoided?	Section 4(f) properties include the Champ Clark Bridge, the USACE recreational land on the north side of the bridge and one other eligible for listing on the National Register. It is impossible to avoid all Section 4(f) properties and meet the purpose and need of the project. However, impacts to the USACE recreational land are limited to reconfiguring the entrance and a temporary construction access. The one property in Louisiana that is eligible for listing on the National Register has been avoided. The Champ Clark Bridge continues to be advertised for reuse. And if reuse is not possible, MoDOT will be doing standard mitigation along with producing a documentary video, a brochure for distribution, and installing an interpretive panel at the Riverview Park in Louisiana. MoDOT is also considering the feasibility of LIDAR imaging of the bridge for archival documentation.

Will The Proposed Project Result In Any Controversy Yes [ ] No [X]

While any project offers the potential for controversy, through seven meetings with the Community Advisory Group and three public meetings, public opinion overwhelmingly supports the construction of a new Mississippi River bridge. Throughout the NEPA process the only public comments MoDOT and IDOT have encountered revolve around minimizing the impacts to existing businesses.

Commitments – Chapter 4

1. MoDOT and IDOT will explore ways to minimize impacts to the USACE lands throughout the design process, which may include the use of rock fill to steepen the fill slopes, retaining walls, or other methods to reduce the roadway footprint.
2. MoDOT and IDOT will upgrade to current ADA standards in accordance with the Americans with Disabilities Act of 1990 (ADA) any sidewalks that are within right of way and the project construction limits.
3. MoDOT and IDOT will ensure that the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended be carried out without discrimination based on race, color, national origin, religion, and age and in compliance with Title VI (the Civil Rights Act of 1964), the President's Executive Order on Environmental Justice, and the Americans with Disabilities Act. In accordance with the Uniform Act and the states' relocation programs, fair market compensation will be provided to property owners who are affected by this project.
4. IDOT will make the USACE "whole" by acquiring in fee 7.13 acres of property considered at least equal to or greater in wetland value and function and transfer title to the USACE. Project construction will not begin until a specific site plan for the out-grant replacement and wetland mitigation is agreed upon by the USACE and IDOT. MoDOT and IDOT will ensure all environmental and cultural resources reviews are complete and approved by the appropriate regulatory agencies for the Great Rivers Land Trust (GRLT) property prior to FHWA's issuance of the authorization to construct.
5. MoDOT will coordinate with the Louisiana Water Department should water quality concerns arise that may negatively affect public drinking water such as an accidental petroleum or chemical spill from contractor operations. If dredge discharge were to be authorized in the Mississippi River, MoDOT would discharge this material downstream from Louisiana's public drinking water intake.
6. IDOT will compensate for permanent impacts to wetlands resulting from this project through standard mitigation practices. An accepted mitigation plan and replacement ratio will be established during permitting and in place prior to project construction.
7. MoDOT will coordinate with USCG to halt river traffic during demolition activities. The contractor shall submit a work plan to the USCG who would in turn issue a permit that includes specific requirements such as displaying lights to alert river traffic of barges and new piers. Temporary lighting and signing will be installed to direct and warn boaters and barges of construction on the bridge.
8. MoDOT will design the roadway to a 500-year flood level to accommodate the potential Sny Levee 500-year certification.
9. MoDOT will conduct a noise analysis should changes to the proposed project result in reclassification to a Type I project.
10. MoDOT will inspect the Champ Clark Bridge for nests prior to demolition. If active nests (those with eggs or young) are observed, measures will be taken, including seasonal demolition restrictions, to prevent killing birds and destruction of their eggs and to avoid conflict with the MBTA. Seasonal restrictions on removal of nests are placed during nesting

season, generally between April 1 and August 15. If restriction dates are not feasible, the bridge will be maintained to prevent birds from nesting using methods such as exclusionary devices or nest removal prior to egg laying. In some instances, MoDOT has obtained depredation permits from the USFWS with the help of U.S. Department of Agriculture/Animal and Plant Health Inspection Service (USDA/APHIS) for removal of nests that contain eggs from bridges under construction. This permit will be used as a "last resort" where methods to prevent nesting have been unsuccessful.

11. MoDOT will employ the use of repelling charges and millisecond delays during demolition of the bridge to scare fish from the area before bridge spans are dropped into the water.
12. MoDOT will conduct another habitat assessment within the project corridor during the design phase to identify new potential roost trees. MoDOT will mark and record GPS coordinates of potential roost trees to be removed. MoDOT will incorporate seasonal tree clearing restrictions of suitable roost trees as a conservation measure to avoid adversely affecting northern long-eared and Indiana bats.
13. MoDOT or IDOT will conduct an additional survey for bald eagle nests during the design phase and will inspect the existing Champ Clark Bridge for nests of species protected by the MBTA. If nests are discovered, seasonal restrictions for demolition or exclusionary devices will be employed.
14. MoDOT and IDOT will conduct additional archaeological investigations when a final alignment is selected and right of access is received. Any additional archaeological sites that might be affected by the project will be addressed in accordance with the regulations (36 C.F.R. 800) implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470). Identified cultural resources will be evaluated according to the Department of the Interior's "Standards and Guidelines for Archaeology and Historic Preservation," in consultation with the Missouri and Illinois SHPOs.
15. As stipulated in the Section 106 MOA, MoDOT and IDOT will operate under a phased approach, which will ensure that additional work is completed for identifying and assessing the archaeological resources for this project. MoDOT and IDOT will ensure that all stipulations outlined in the Section 106 Memorandum of Agreement (MOA) be fulfilled within ten years of the date of execution of the MOA by FHWA.
16. If a viable reuse plan is presented for the bridge, FHWA, MoDOT, IDOT and the SHPO will evaluate the plan to determine whether the Champ Clark Bridge can be preserved. If the bridge cannot be preserved, MoDOT will:
    a. remove name plates and donate them to the City of Louisiana
    b. take archival photographs and prepare a history of the bridge
    c. prepare an interpretive panel on the history and engineering of the Champ Clark Bridge for installation in Riverside Park in Louisiana
    d. prepare a brochure on Mississippi River Bridges for distribution through area attractions and Visitor's Bureaus
    e. prepare a short documentary video of the Champ Clark Bridge
17. MoDOT will construct a temporary entrance to the marina to provide continuous access during construction. MoDOT will ensure that upon completion of the Two Rivers Marina permanent entrance, the temporary entrance would be re-graded to pre-existing conditions to match the surrounding area.

18. For hazardous waste sites at Ayerco #65 and Abel's Quick Shop #1, after right of way is purchased and before construction begins, MoDOT will conduct additional sampling and testing of soils within the footprint of the preferred alternative to determine the level of contamination and any required remediation.

19. MoDOT will ensure that all structures scheduled for demolition are inspected for asbestos containing material and lead-based paint. MoDOT and the contractor shall submit all required demolition notices, abatements notices, and project notifications to MDNR as required by regulation prior to beginning demolition activities. Asbestos containing material and demolition debris will be disposed according to state and federal regulations. The reports of these inspections for asbestos and the presence of lead-based paint will be included in the construction bid proposal.

20. MoDOT will ensure that any known and unknown hazardous waste sites that are found during project construction are handled in accordance with Federal and State Laws and Regulations. If regulated solid or hazardous wastes are found during construction activities, the MoDOT construction inspector will direct the contractor to cease work at the suspect site. The construction inspector will contact the appropriate environmental specialist to discuss options for remediation. The environmental specialist, the construction office, and the contractor shall develop a plan for sampling, remediation and continuation of project construction. Independent consulting, analytical and remediation services shall be contracted if necessary. As necessary, the MDNR, the IEPA, and USEPA will be contacted for coordination and approval of required remediation activities.

21. MoDOT will ensure that traffic control including warning signs, channelizers, and barricades needed to maintain vehicular traffic safely away from the contractor's operations would be implemented according to MoDOT Standard Specifications and traffic plans. A Traffic Management Plan (TMP) will be developed during project design as part of the final design activities. MoDOT and IDOT will seek input from the city of Louisiana, Twin Rivers Marina, and local businesses in the development of the TMP.

22. MoDOT and IDOT will deploy proactive communications to the public notifying them of traffic closures through a variety of tools including web-based applications, digital sign messaging, and other conventional media outlets. MoDOT and IDOT will publish construction-related news releases and information on their web sites at www.modot.org and www.idot.illinois.gov, for those with Internet access.

23. MoDOT, IDOT and the contractor will work closely with Twin Rivers Marina to provide the marina with suitable uninterrupted river access. MoDOT will coordinate with the USCG to schedule dates of the closures of the navigation channel including the duration of these closures.

24. MoDOT shall negotiate and execute an agreement with the Burlington Northern Santa Fe Railroad prior to seeking project federal authorization for construction. To avoid train traffic interruptions, the contractor shall coordinate with Burlington Northern Santa Fe to schedule girder settings and for handling other materials over the railroad tracks. Railroad flagmen shall be retained during construction when potential impacts to the rail system could occur. Construction of nearby bridge piers shall require flaggers during construction operations.

25. MoDOT will ensure that details of utility disposition are determined during project design. Agreements with utilities shall be negotiated and executed prior to seeking project federal authorization for construction. MoDOT's and IDOT's utility engineers and representatives of the various utilities shall plan the details of individual utility adjustments on a case-by-case basis. MoDOT and IDOT will disconnect and reconnect electrical service lines on the bridge

responsible for navigating lighting to the new structure. Temporary power or lights will be maintained for navigational lighting during construction.

26. MoDOT will ensure that materials resulting from clearing and grubbing, demolition, or other operations, except materials to be retained, are removed from the project site and disposed at a construction landfill by a licensed contractor.
27. MoDOT will ensure that open burning of trees, brush, or other waste are limited to amounts that cannot be marketed or reused on site.
28. MoDOT will ensure that contractors control fugitive dust to prevent it from migrating off the limits of the project corridor. Watering the ground or using dust-retarding chemicals, and washing vehicles prior to leaving the construction site may be employed to reduce the generation and transport of fugitive dust. All methods must comply with applicable federal, state, and local laws and regulations.
29. MoDOT will include standard specifications in the construction contract that emissions from construction equipment are controlled in accordance with emission standards prescribed under state and federal regulations.
30. MoDOT will include standard specifications in the construction contract requiring all contractors to comply with every applicable local, state, and federal laws and regulations relating to noise levels permissible within and adjacent to the project construction site. MoDOT will schedule demolition blasting during daylight hours to avoid disrupting residential nighttime quiet.
31. MoDOT will ensure that all necessary measures to control turbidity are employed, which may include methods such as curtain walls in slack waters. The use of equipment in the river shall be minimized as much as possible by constructing work pads or coffer dams to access the river and by placing equipment onto barges. All drilled shaft water will be pumped into settling basins and best management practices will be implemented before discharging water back into the river. If possible, dredged material will be discharged toward the bottom of the river rather than at the surface of the water to reduce suspended solids, turbidity, and downstream sedimentation that may degrade water quality and adversely impact aquatic life.
32. MoDOT will ensure that careful refueling practices are employed to limit spills of gasoline and diesel fuels. Oil spills will be minimized by frequently evaluating construction equipment.
33. MoDOT will ensure, at a minimum, the following measures will be included in the SWPPP:
    a. Locate and protect all temporary storage facilities containing petroleum products, other fuels, and chemicals to prevent accidental spills from entering the streams. Spills that are within 1,640 feet (500 m) of any stream would be addressed within 24 hours of the incident.
    b. Avoid disposing of cement sweepings, washings, concrete wash water from concrete trucks and other concrete mixing equipment, treatment chemicals, and grouting and bonding materials into streams, wetlands, and any location where water runoff would carry pollutants into streams or wetlands.
    c. Reseed all areas within the project limits stripped of vegetation as a result of construction activities.
    d. Protect from draining or filling adjacent wetlands during construction activities within the project corridor.
    e. In accordance with project permits, excavate, dredge, and fill in watercourses in a manner that would minimize increases in suspended solids and turbidity.

f. Remove and properly dispose of all debris during every phase of the project.

g. To prevent the accumulation of unsightly, harmful, and toxic material in or near area water bodies, avoid disposing of any construction debris or waste material below the ordinary high water mark (OHWM) of any water body or at any location where the material could be introduced into the water or an adjacent wetland due to run-off, flood, wind, or other natural forces.

34. If changes in the project footprint or scope occur that were not evaluated in this document, MoDOT shall re-evaluate the NEPA document to ensure the determinations remain valid.

Required Permits

1. MoDOT will obtain authorization by an Individual Clean Water Act Section 404 Permit from the USACE including Section 401 Water Quality Certification from MDNR/IEPA.
2. MoDOT will develop and implement two SWPPPs to comply with the Missouri State Operating Permit No. MO-R 100007 and the Illinois Environmental Protection Agency general NPDES Permit ILR10.
3. MoDOT will obtain a Section 10 Rivers and Harbor Act of 1899 Letter of Permission from the USACE for fill and excavation within the Mississippi River.
4. MoDOT will obtain a Section 9 Bridge Permit from the USCG prior to construction, approving the location and plans of bridges over a commercially navigable waterway in accordance with all applicable federal laws. The contractor shall submit a work plan to the USCG who would in turn issue a permit that includes specific requirements such as displaying lights to alert river traffic of barges and new piers.
5. MoDOT will conduct an engineering analysis for the build alternative prior to submission of the floodplain development permit application to SEMA and IDNR/OWR. The contractor shall obtain a floodplain development permit and "no-rise" certification.
6. MoDOT will obtain a Rivers and Harbors Act Section 408 Permit from the USACE for alterations to USACE structures.