Illinois Department of Natural Resources
Office of Resource Conservation

CONSERVATION PLAN FOR THE INCIDENTAL TAKING OF THE STATE THREATENED SPIKE MUSSEL (*Elliptio dilatata*), BLACK SANDSHELL (*Ligumia recta*), PURPLE WARTYBACK (*Cyclonaias tuberculata*), RAINBOW MUSSEL (*Villosa iris*), SLIPPERSHELL MUSSEL (*Alasmidonta viridis*), RIVER REDHORSE (*Moxostoma carinatum*), GREATER REDHORSE (*Moxostoma valenciennesi*), and STARHEAD TOPMINNOW (*Fundulus dispar*)

At Milwaukee West Line Fox River Bridge Improvement Project
(Metra Bridge Z-100)

Near U.S. Route 20 and the Fox River
Elgin, Illinois

Applicant: Metra

March 2018

Introduction

The project undertaking described within this document is for the improvement of the Milwaukee West Line bridge over the Fox River in the City of Elgin, Kane County, Illinois. The project is known as the Milwaukee West Line Fox River Bridge Improvement Project (Metra Bridge Z-100) (the Project). The existing bridge provides a river crossing for the Metra Milwaukee West Line commuter rail service and the Canadian Pacific (CP) Railroad. The existing bridge carries one mainline track over the river and connects to two tracks beyond both ends of the bridge. The Project is sponsored by Metra. Metra proposes to improve the existing bridge to address its poor and deteriorated condition and to provide a second mainline track across the Fox River.

The Project, located about 35 miles northwest of downtown Chicago, is a railroad bridge that carries 54 Metra commuter trains and up to 8 Canadian Pacific Railroad (CP) freight trains daily. The bridge (also known by its bridge number, Metra Bridge Z-100) was originally constructed in 1881. Although the structure has been regularly maintained, many components are substantially deteriorated and can no longer be economically repaired. The 500-foot bridge is the only single-track segment on the Milwaukee West Line between Elgin and downtown Chicago, creating a bottleneck at both ends of the bridge. Trains must reduce speed to move through switches, and train schedules must be carefully coordinated to avoid trains arriving on the bridge at the same time. Any blockages on this single-track segment delays passenger and freight trains throughout the corridor. Impacts on freight traffic may extend outside the Chicago region. To address these issues, Metra proposes to replace the bridge with a completely new structure, expanded to accommodate two tracks and controlled by a modern signal system.

An Environmental Assessment (EA) document was prepared for the project by Metra. The EA was approved by the Federal Transit Administration (FTA) on February 2, 2017. The EA is electronically available from the Metra Project Website: https://metrarail.com/about-metra/reports-documents/project-studies/current-project-studies/z-100-ea. The Finding of No Significant Impact (FONSI) was made on May 22, 2017. A copy of the FONSI is included in **Appendix C**.

1. Description of Project Impact Assessment for Illinois State Threatened and Endangered Species

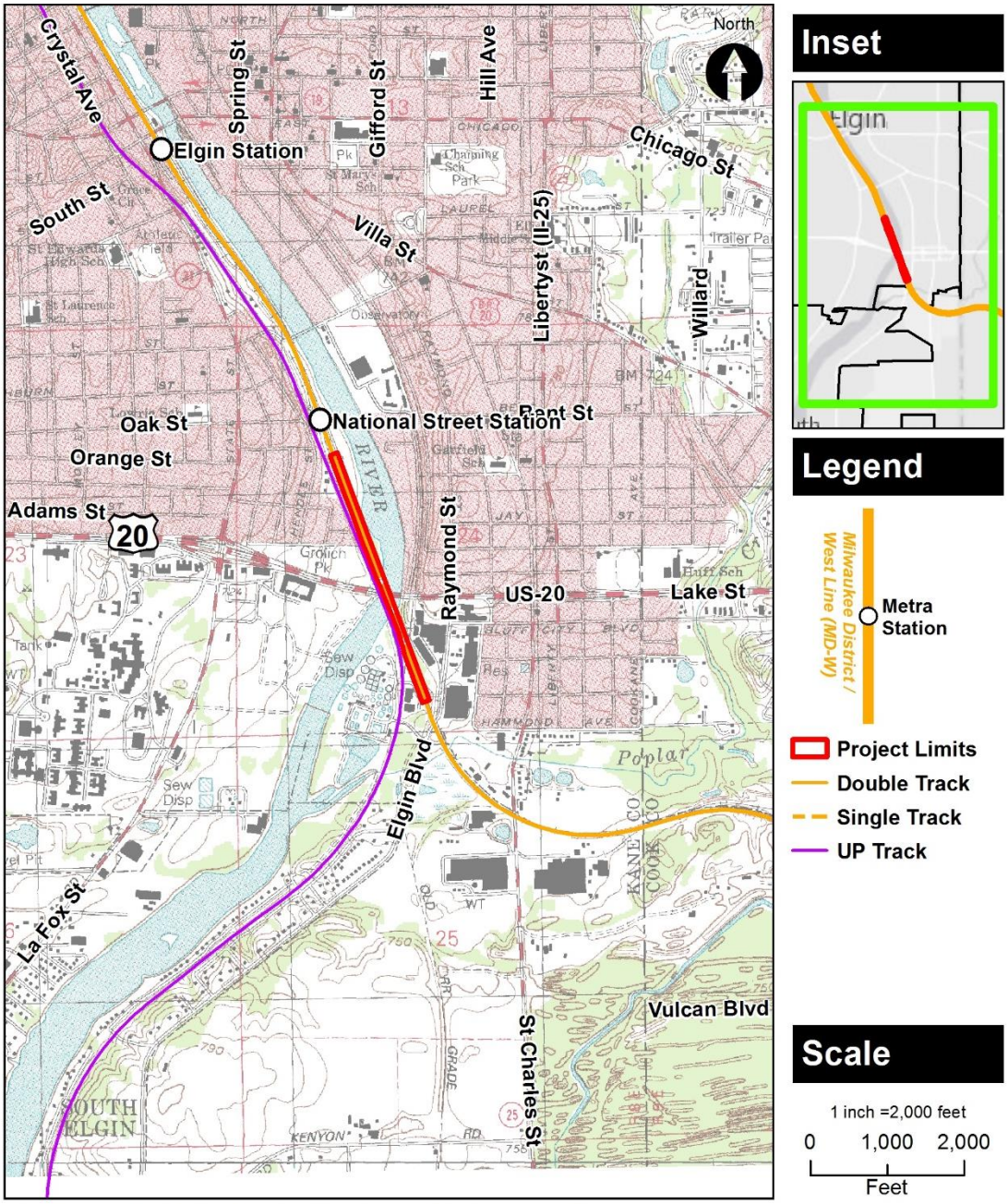
The Illinois State threatened species, the spike mussel (*Elliptio dilatata*) is known to be in the Fox River in the immediate vicinity of the existing Metra track. See **Figure 1, Project Area Map**. The Illinois State threatened species, the black sandshell mussel (*Ligumia recta*) is found sporadically within the Fox River, based on historical occurrences of this species in the Fox River mainstem.

Although the following mussel and fish species have not been reported within the area of proposed construction they are included within this document in order to provide a thorough consideration of potential impacts to Illinois state listed species; the purple wartyback mussel (*Cyclonaias tuberculata*), the rainbow mussel (*Villosa iris*), the slippershell mussel (*Alasmidonta viridis*), the river redhorse (*Moxostoma carinatum*), the greater redhorse (*Moxostoma valenciennesi*), and the starhead topminnow (*Fundulus dispar*). Because recent mussel and fish surveys (within the last five years) have not been completed within the area of proposed construction, potential presence was assumed and an anticipated take numbers for the above listed species have been provided.

Anticipated take numbers for each Illinois State listed mussel and fish species assessed for potential impacts as a result of the Milwaukee West Line Fox River Bridge Improvement Project are presented in **Table 1**.

An Incidental Take Authorization (ITA) for the spike mussel, the black sandshell mussel, purple wartyback mussel, rainbow mussel, slippershell mussel, river redhorse, greater redhorse, and the starhead topminnow is requested by Metra to pursue bridge reconstruction.

Figure 1: Project Area Map



Topo Source: INHS/USGS 7.5-minute DRG, Elgin 1:24,000 Quadrangle, 2000

Table 1[1]
Anticipated Take Numbers for the Proposed Project

Common Name	Scientific Name	Anticipated Take Number (Individuals)
Spike	*Elliptio dilatata*	6 to 12
Black sandshell	*Ligumia recta*	1 to 3
Purple Wartyback	*Cyclonaias tuberculata*	1
Rainbow	*Villosa iris*	1
Slippershell	*Alasmidonta viridis*	1
River redhorse	*Moxostoma carinatum*	1
Greater redhorse	*Moxostoma valenciennesi*	1
Starhead topminnow	*Fundulus dispar*	1

[1]Table 1 presents the estimated take numbers for each state listed species assessed as part of the conservation plan.

No federally protected mussels or fish are known or expected in the Fox River.

A field visit was conducted August 25, 2010, and a spike mussel was found along the southeast bank of the Fox River under the existing Metra railroad bridge. The spike mussel was exposed onshore, likely dragged up by a muskrat (*Ondatra zibethicus*) for later consumption. The spike was photographed and returned to the river. No other live mussels were observed during the site investigation. A secondary field visit was conducted on September 25, 2010 to assess the potential for the project to impact the habitat of the spike mussel. The assessment and wading mussel survey, completed by Huff & Huff, Inc. (H&H), revealed no live spike mussels in the river, but fresh dead shells of various species were found at the site. H&H searched the sediments by tactile means for approximately 180 feet of shoreline on the north side of the river and 190 feet on the northwest shore of the river. The reconnaissance started at the northeast corner abutment of the Metra Bridge Z-100 and proceeded downstream along the shore. The first 60 feet had fine sediment approximately one to two inches deep covering cobble and had few live mussels. The remaining shoreline was sandier with fine gravel and some scattered cobble. The shoreline dropped off to unworkable depths within approximately ten feet of the shore. H&H found six living giant floaters (*Pyganodon grandis*), and two plain pocketbooks (*Lampsilis cardium*), both are common and widespread species in Illinois. Relic shells of the giant floater were plentiful, along with several relic plain pocketbook shells.

H&H surveyed the southeast shore and examined approximately 190 feet of shoreline. The shoreline waters were generally rocky under the bridges where large boulders and cobble were placed to armor the shoreline. Small pockets of sandy gravel were present here, and larger exposures of sandy substrates were found northeast of the Metra Bridge Z-100. This shoreline was the area where the living spike was encountered several weeks earlier. H&H found one living mussel, a Threeridge (*Amblema plicata*). In addition, well-worn relic shells of the purple wartyback (*Cyclonaias tuberculata*, - state threatened), spike, mucket (*Actinonaias ligamentina*), and round pigtoe (*Pleurobema sintoxia*) were found. In addition to these relic shells, H&H found a fresher specimen of the spike, which was probably dead earlier during 2010. Also, many live and dead specimens of zebra mussels (*Dreissena polymorpha*), were present with the living zebra mussels attached underneath the large boulders. There is a large amount of predation ongoing here with several diffuse middens present. The recently preyed upon spike shell, which was a smaller and younger individual than the one photographed in August 2010, was taken from a midden, which was predominantly composed of zebra mussel shells. H&H searched for the photographed specimen, which was a large old individual, but could not locate it.

This information was forwarded to the IDNR for further consultation on August 5, 2011. An updated EcoCAT submittal was made on August 12, 2011. **Table 2** presents the data from the 2010 mussel survey.

Table 2
Mussel Survey Fox River, Kane County, Illinois
At Metra and U.S. Route 20 Bridges, September 25, 2010

Common Name	Scientific Name	Numbers	Notes
Mucket	*Actinonaias ligamentina*	3 relics	South Shore only
Threeridge	*Amblema plicata*	1 live	South Shore only
Purple Wartyback	*Cyclonaias tuberculata*	1 relic	South Shore only
Spike	*Elliptio dilatata*	1 recent dead	South Shore only
Plain pocketbook	*Lampsilis cardium*	2 live	North Shore only
Round pigtoe	*Pleurobema coccineum*	1 relic	South Shore only
Giant floater	*Pyganodon grandis*	6 live	North Shore only
Zebra mussel	*Dreissena polymorpha*	Many live	Invasive species

Although there are no known records of state listed fish in the immediate vicinity of the Metra bridge, the river redhorse, and greater redhorse, are known to be in the Fox River. Therefore, an ITA is being requested for these species. This conservation plan includes discussion of presence of the two listed fish species as well as the starhead topminnow to examine the likelihood of their occurrence within the project area during construction. An ITA is also being requested for the starhead topminnow.

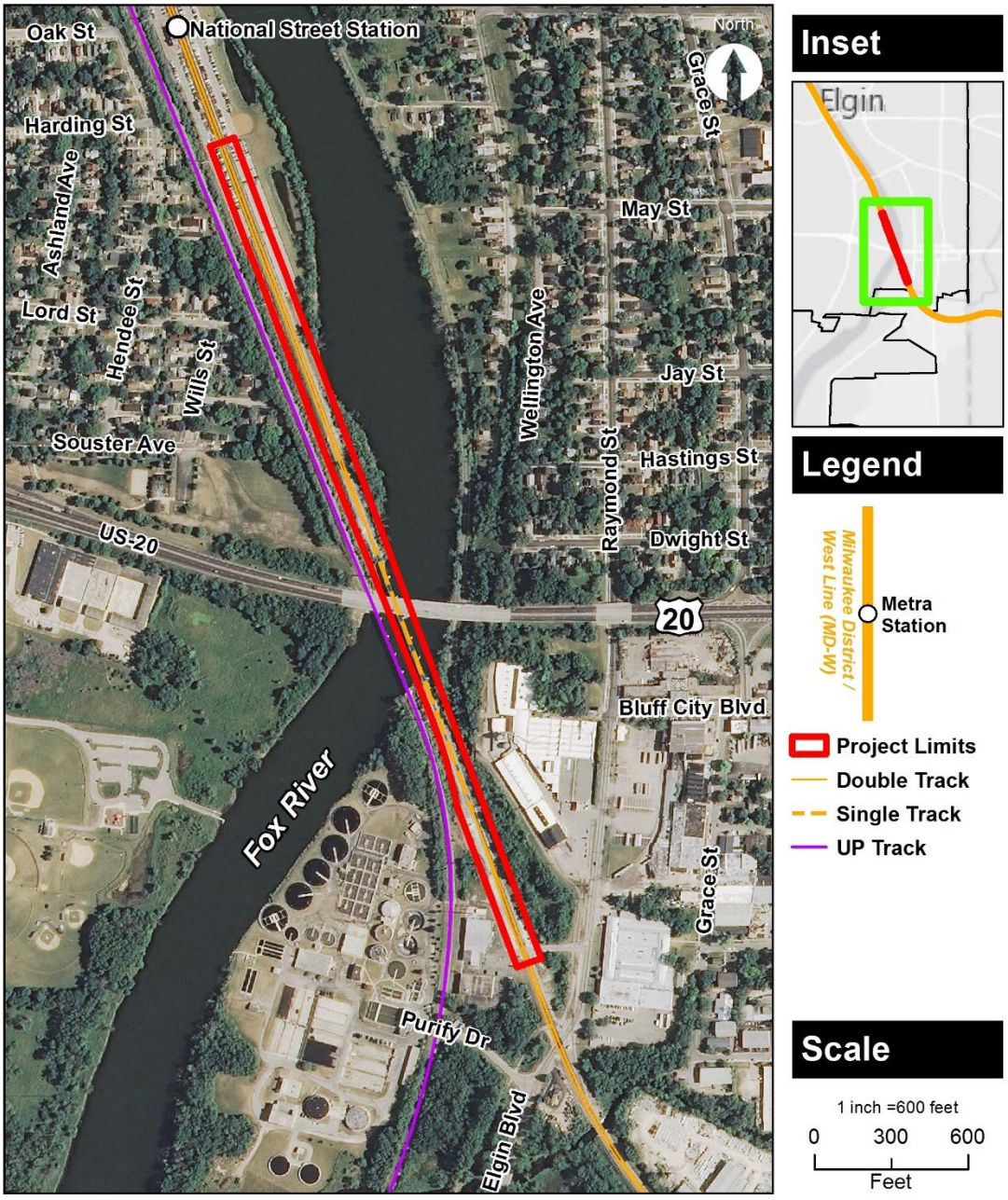
The IDNR agreed with previous decisions to prepare the Conservation Plan for all listed mussel and fish species that could be present in this section of the Fox River. While the fish are mobile, the Conservation Plan should consider instances in which fish may get caught behind a cofferdam and what handling procedures will be in place. The IDNR allowed the development of the Conservation Plan before full surveys could be completed. The applicant took a conservative approach on the Take numbers and utilized previous studies completed in the Fox River in the vicinity of the Metra Bridge Z-100.

A) Description of the area to be affected:

The Metra Bridge Z-100 is located in Township 41N, Range 8E, in Section 24 within the City of Elgin, Kane County, Illinois (42.019876 N, -88.275342 W). The project is sponsored by, under the jurisdiction and maintenance of, and owned by Metra. The bridge construction and track addition will occur within and over the Fox River, and the alignment will be adjusted to meet the existing double-track alignments within approximately 500 to 600 feet on both sides of the river. The Fox River Bridge is on the Milwaukee District West Line, over the Fox River and under U.S. Route 20. See **Figure 2, Project Limits Map**. The final alignment for the new bridge/track construction has been developed and is presented in **Appendix A, Preferred Improvement Plan**. There is a parallel railroad bridge, owned by the Union Pacific Railroad, to the southwest of the Metra Milwaukee West Line bridge. This Union Pacific Railroad bridge is not included in the scope of the project.

The Fox River Bridge is a single-track structure which carries Metra's Milwaukee West Line over the Fox River in Elgin, Illinois. The bridge was originally constructed in 1881, consisting of six steel spans resting on masonry abutments and five piers. Three of the original spans were replaced in 1905, and the other three were replaced in 1926. The piers and abutments date from the original 1881 construction, with cast-in-place concrete modifications as required to accommodate the new span beams from 1905 and 1926.

Figure 2: Project Limits Map



Aerial Source: ESRI Online World Imagery

The bridge is nearing the end of its useful life; although the masonry piers and abutments are in good condition, they need to be strengthened to come into compliance with current railroad design criteria. The bridge has reached the point where further repairs would not be economically feasible. Therefore, replacement of the bridge is required in the near future. It is important for maintenance and train operations to keep mainline track alignments straight, especially passenger train mainlines. Four alternatives were studied by Metra for the new structure keeping any track alignment changes as minimal as possible.

The single-track Fox River Bridge is the only single-track segment on the double and triple mainline track alignment between Elgin and Chicago. The replacement bridge will be constructed to accommodate a second Metra mainline track bridge at this location.

The construction sequence will start with the construction of temporary access roads to the east and west embankments. All four quadrants of the bridge are expected to be used for access during construction. The temporary causeway will then be constructed, and the cofferdam sheet piling will be installed. The downstream half of piers 1, 2, and 3 (east to west) will be constructed, and construction on the abutment and approach embankment can begin. The superstructure for Track 2 will be erected, and then Metra traffic will be shifted onto the new alignment. After traffic has shifted, the existing superstructure and piers will be removed. The second half of the new piers, abutments, and approach embankments will be constructed. After pier construction is finished, the cofferdams will be removed, and the superstructure for Track 1 will be erected. The causeway will then be removed from the river. Construction is expected to take place over 2 years.

The construction operations within the Fox River will include the placement of temporary causeways and cofferdams as required to facilitate the removal of the five existing piers and placement of the three proposed piers, as well as the removal of existing embankment and re-grading of new slopes on either end of the bridge. The temporary causeways and cofferdams will be removed upon the completion of the bridge project and the stream will be restored to a natural flow regime.

The causeways will be constructed using excavators, cranes or similar heavy equipment to place the clean crushed stone/rip rap into the river, which is sloped down to the riverbed around the perimeter of the causeway.

Three temporary causeway platforms will be constructed totaling approximately 37,300 square feet in area (Appendix A, Temporary Causeway Plans). Two 25-foot wide flow channels will be provided between the three causeway platforms and will be oriented parallel to the river to maintain flow. Two jumps spans will be used over the channels to provide contractor access. One jump span will remain in place for the entire duration of the construction, while the second jump span will only be in place while the contractor is on site. This jump span will be removed as necessary to accommodate boat traffic. Cofferdams will be located within the causeway.

Coordination with the IDNR was initiated in August 2011 and the IDNR responded on August 17, 2011 concerning the presence of the spike mussel and the latest EcoCAT submittal (See **Appendix B**). The IDNR is requesting that Metra obtain an ITA prior to the commencement of construction activities. A mussel survey will be completed within the project vicinity prior to the commencement of construction activities. All native mussels identified during the survey will be relocated to an area that has similar habitat characteristics to that of the area from which they are removed. The relocation area will be reasonably close to the collection area without putting the relocated native mussels in jeopardy of construction activities, or other anthropogenic activities that could negatively affect their survival. Please see *Survey Methodology* (Page 12) for a detailed discussion of the methods to be utilized for the mussel survey and relocation.

Other state protected mussels and fish known from the Fox River are included in the ITA.

Additional coordination between Metra and the IDNR occurred on March 28, 2014. The purpose of the coordination call was to provide the IDNR with an update of the project and to request any additional information that the IDNR may have concerning threatened and endangered species near the project. Because a full mussel survey had not been conducted for the project at this time, the IDNR concurred with the development of the ITA for all potential mussel species that could be encountered in the Fox River to cover

all bases in the event species other than the spike are encountered. The IDNR requested that the EcoCAT be resubmitted for the project. The IDNR Project number for the Metra Bridge Z-100 over the Fox River is 1201964.

Since the 2014 coordination efforts, there has been staff turnover at the IDNR. As a result, additional coordination occurred on June 30, 2017 to bring IDNR staff up to speed on the decisions made previous to their involvement. The conference call included Metra, the consultant team, and newer staff at the IDNR. The IDNR was informed that the Environmental Assessment (EA) was completed and a Finding of No Significant Impact (FONSI) was approved. Based on previous discussions with the IDNR, a commitment was approved in the EA which required the applicant (Metra) to prepare a Conservation Plan and obtain an ITA prior to construction.

B) Biological Data for Various Protected Mussels and Fishes Potentially present in the Fox River in Illinois

The Metra Bridge Z-100 reconstruction is situated in Kane County bounded on the north by the Kimball Street Dam in Elgin, approximately 1.6 river miles from the bridge. The bridge is bounded on the south by the Panton Mill Park dam in South Elgin, approximately 2 miles downstream of the bridge. It is a further 6.1 river miles to the dam at Carpentersville on the north, and a further 7.4 miles to the St. Charles dam on the south. This section of the Fox River is the most impounded portion of the river and the impoundments severely limit fish passage and mussel re-colonization.

Mussels

1. Spike (*Elliptio dilatata*), Illinois State threatened species.

The spike mussel is found throughout midwestern states and is an inhabitant of small to large streams, where it can be found in slow to fast moving water. Substrates inhabited include compacted silt, sandy substrates and gravelly substrates. The shell can grow to approximately 5.5 inches and is moderately thick. The nacre is often a pinkish or purple color though white nacre is less common. Native freshwater mussels require a fish host to distribute their larvae (glochidia). The spike breeds yearly during the warmer months (May in Michigan), and uses several host fish to carry glochidia including the gizzard shad (*Dorosoma cepedianum*), white crappie (*Pomoxis annularis*), black crappie (*Pomoxis negromaculatas*), and flathead catfish (*Pylodictis olivaris*). (Cummings and Mayer, 1992, Klocek et al, 2007, Watters, et al. 2009.)

The INHS database contains 358 records for spike in Illinois waterways. There are 27 records of the spike in the Fox River in Kane County, Illinois. Of the 27 records for spike mussels, six records range from 2000 to 2009, and the remaining 21 records predate 2000. Shasteen et al. (2013) found no live spike in the Fox River mainstem but found live spike at Ferson, Brewster, and Big Rock Creeks. The spike was known to be present at or near the southern end of the Metra Bridge Z-100 over the Fox River during 2009/2010. The largest collection of living spikes is known from Ferson Creek, a Fox River tributary and six live specimens were noted. Mainstem spike records are usually for dead or relic shells. Without a further mussel survey, an estimated six to twelve spike mussels might exist in the bridge impact area.

2. Black Sandshell (*Ligumia recta*), Illinois State threatened species

The black sandshell inhabits larger streams and rivers with hard bottoms such as firm, compacted sand, sandy gravel, or gravel/cobble in fast flowing water. Despite its name, the black sandshell is rarely found in readily shifting sands and is never found in silty conditions (Parmalee and Bogan, 1998, Montana, 2012). The black sandshell can reach a length of approximately eight inches. (Cummings & Mayer 1992, Klocek et al. 2006).

Black sandshells are bradytictic, or long-term brooders. Females brood their glochidial larvae from August through the winter to the following July before they are released (Ortmann 1919). Host fish for the glochidia of the black sandshell include the bluegill (*Lepomis macrochirus*), largemouth bass (*Micropterus salmoides*), sauger (*Stizostedion canadense*), and white crappie (*Pomoxis annularis*) (Watters 1994). Additionally, yellow perch (*Perca flavescens*), green sunfish (*Lepomis cyanellus*), rock bass (*Ambloplites rupestris*), and white perch (*Morone americana*) were identified as suitable hosts for black sandshell by Steg, (1998). Saugers are considered by some to be a primary host fish for black sandshell (Khym and Layzer. 2000).

Despite the relatively large number of host fish that carry larval black sandshell, the black sandshell appears to be declining throughout its midwestern range. While exact causes of black sandshell decline are not reported in the literature, general declines or extirpations in mussel populations are attributed to habitat changes and water quality changes that can be linked to pollution from siltation and urban runoff. (Downing et al. 2010). Recent findings that mussel glochidia are acutely sensitive to small ammonia spikes (USEPA, 2009), indicate that ammonia runoff from lawns, turf grass, farms, and perhaps wastewater treatment plant overflows during heavy rain events may contribute to a lack of recruitment for larval mussels.

The Illinois Natural History Survey (INHS) database contains 279 records of black sandshell occurrences in Illinois, dating back to 1878. Recent reports (2000 onwards), of the black sandshell are from 20 discrete river/stream systems with approximately 37 populations known based on Illinois county distributions within the twenty river/stream systems. Black sandshells are known from the Fox River system in Kane County from ten records, with eight records spanning from 1914 to 1995 and two records from the year 2000. Schanzle et al. collected the two Kane County records from West Dundee, Illinois. Huff & Huff (2009) collected a live *L. recta* during surveys conducted for Stearns Road in Kane County, prior to construction of that project. Shasteen et al. (2013) found no live *L. recta* in the Fox River mainstem but found live *L. recta* in the Nippersink in McHenry County. **Table 3** presents the INHS records of black sandshells historically collected in Kane County.

Black sandshells are sporadic in the Fox River and are usually taken as single live specimens when they are found at all during a survey. If they occur at the Metra Bridge Z-100 site as living specimens, they will be found in small numbers, with approximately 1-3 individuals present in the area of concern, based on historical occurrences of this species in the mainstem Fox.

Table 3

Black Sandshell Records from Kane County, Illinois

Illinois Natural History Survey Database Accessed September 13, 2017

Year Collected	Live/Dead	Location
1990	1 valve, dead	West Dundee, Rte 72 Bridge
1992	1 valve, dead	South Elgin, old Railroad Bridge
1993	1	West Dundee, City Park
1993	1 valve, dead	North Aurora, 1st island below treatment plant
1994	1 valve, dead	Elgin, at Elgin Yacht Club
1995	1 valve, dead	Fox River, West Dundee
2000	1 LIVE, Returned	Fox River, West Dundee
2000	1 valve, dead	South Elgin, Blackhawk Forest Preserve
1914	1	Fox River, Aurora
No Year Given	1	Fox River, West Dundee

3. Purple Wartyback (*Cyclonaias tuberculata*), Illinois State threatened species

The purple wartyback is found in medium to large rivers with large to medium gravel or mixed sand and gravel substrates. Cobble and boulders may be present in the substrate. The purple wartyback's distinguishing features include a rounded shell with a fairly prominent wing, numerous bumps (or warts), and a purple nacre, though white nacre is present in some populations. Known fish hosts for the purple wartyback include: the black bullhead (*Ameiurus melas*), yellow bullhead (*Ameiurus natalis*), flathead catfish, and the channel catfish (*Ictalurus punctatus*), all of which are common and widespread fish in Illinois (Cummings & Mayer 1992, Badra 2004, OSU, 2013).

The purple wartyback is found throughout most of the Midwest and Eastern United States and is found as far west as Oklahoma. Within Illinois, Michigan, Wisconsin, Iowa, and Minnesota the specie's conservation status is listed as imperiled. The purple wartyback is state threatened in Illinois. (Nature Serve, 2014). The INHS database contains 259 records for purple wartyback in 20 counties and from 25 discreet streams in Illinois. Of the 25 discreet stream records, only ten records are known from the Fox River basin with eight records from 1992-1995 and two records from 2001 and 2003 respectively, see **Table 4**. Schanzle et al. 2004 publication of Fox River basin mussels recorded no recent specimens from the Fox River mainstem. Shasteen et al. (2013) found relic purple wartyback shells at Algonquin and Sandwich, Illinois, well outside of our area of interest.

Table 4
Purple Wartyback, *Cyclonaias tuberculata* in Kane County, Illinois Records
From Illinois Natural History Survey Data Accessed September 13, 2013

Scientific Name	Year	# Taken	Locality
Cyclonaias tuberculata	1992	.....	Fox River, South Elgin, at old R.R. bridge, North America
Cyclonaias tuberculata	1993	1 valve	Fox River, 1 mi N North Aurora, 3rd island downstream of Mooseheart STP
Cyclonaias tuberculata	1993	.....	Fox River, West Dundee, city park, North America
Cyclonaias tuberculata	1993	.....	Fox River, between Algonquin & Carpentersville, North America
Cyclonaias tuberculata	1994	1 valve	Fox River, Elgin, Elgin Yacht Club, North America
Cyclonaias tuberculata	1994	.....	Fox River, South Elgin, North America
Cyclonaias tuberculata	1995	1 valve	Fox River, West Dundee, North America
Cyclonaias tuberculata	2001	1 valve	Fox River, Batavia, Glenwood Park Forest Preserve, North America
Cyclonaias tuberculata	2003	1 valve	Fox River, Geneva, below Rt. 38 bridge, North America
Cyclonaias tuberculata	1994	1 valve	Fox River, Carpentersville, downstream of dam, North America

Because the purple wartyback mussel occurs sporadically in relatively un-polluted and less urbanized waters, it is unlikely that the purple wartyback will be found as living specimens at the Metra Bridge Z-100 Elgin location, or at any other Illinois mainstem Fox River location above the Dayton Dam at the Illinois River. A take of one individual of the purple wartyback mussel is anticipated as a result of the proposed project. This is a conservative estimate as this species is not anticipated to be encountered within the project vicinity based on historic occurrences of this species in the mainstem Fox.

4. Rainbow (*Villosa iris*), Illinois State endangered species

The rainbow mussel is found in small to medium sized streams with sand and gravel substrates. Its distinguishing characteristics include a small, relatively thin, and elongate shell, a double looped beak structure, and with numerous broken green rays (Cummings & Mayer 1992). The rainbow grows to about two inches in length. The fish hosts for the rainbow in Illinois include: the striped shiner (*Luxilus chrysocephalus*), smallmouth bass (*Micropterus dolomieu*), largemouth bass (*Micropterus salmoides*), mottled sculpin (*Cottus*

bairdi), rock bass (*Ambloplites rupestris*), green sunfish (*Lepomis cyanellus*), rainbow darter (*Etheostoma caeruleum*), and yellow perch (Badra, *Villosa iris*, 2007, OSU, 2013).

The rainbow mussel's range is through much of the Midwest and Eastern states and extends as far west as Oklahoma. Although the species population's Conservation Status is listed as secure or apparently secured in many states, the rainbow mussel is listed as critically imperiled in Illinois (Nature Serve, 2013). The rainbow is listed as endangered by the State of Illinois.

The INHS database contains 119 records for rainbow mussel in Illinois waterways. The rainbow mussel is known from records to occur in: the Kankakee River in Will County, (2008), Vermillion River (1991) in Livingston County, and Kickapoo Creek (2004) Logan County. Four records of rainbow mussel are from the Fox River in Kane County, Illinois. Two records are undated, indicating an early year of occurrence, and two records are from 1987, see **Table 5**. Schanzle et al. (2004) found no living rainbow mussels in the Illinois Fox River and noted only weathered shells from near Yorkville, Illinois and from tributaries to the Fox River near Geneva, Illinois. Shasteen et al. (2013) found no living rainbow mussels in the Fox River and records a relic from the Fox River found at Sandwich, Illinois. Due to the rainbow mussel's occurrence in unpolluted, non-urbanized waters, it is unlikely that living rainbow mussels will be found in the vicinity of the Metra Bridge Z-100, Elgin location.

A take of one individual of the rainbow mussel is anticipated as a result of the proposed project. This is a conservative estimate as this species is not anticipated to be encountered within the project vicinity based on historic occurrences of this species in the mainstem Fox.

Table 5
Rainbow Mussel, *Villosa iris* in Kane County, Illinois Records
From Illinois Natural History Survey Data Accessed September 13, 2013

Scientific Name	Year	# Taken	Locality
Villosa iris	1987	1 valve	Fox River, Geneva, below Rt. 38 bridge, North America
Villosa iris	1998	1 valve	Otter Creek, 3 mi SW South Elgin, Silver Glen Rd., North America
Villosa iris	2011	1 valve	Blackberry Creek, 5.6 mi SE Kaneville, Bliss Wood Forest Preserve
Villosa iris	1987	1 valve	Fox River, South Elgin, Blackhawk Forest Preserve, North America
Villosa iris	.....	5	Fox River, [West] Dundee, North America
Villosa iris	.....	2	Fox River, Elgin, North America

5. Slippershell (*Alasmidonta viridis*), Illinois State threatened species

The slippershell is a small mussel with a maximum size of about 1.5 inches. The relatively thick shell has pronounced beak sculpture of several thick ridges, and the shell surface is often marked with green markings radiating from the beak. The slippershell can be found in sandy gravel, silty sand, and fine gravel in headwater streams to larger rivers. Host fish for the slippershell are fantail darter (*Etheostoma flabellare*) and mottled sculpin (*Cottus bairdi*), both of which are found in cooler waters.

Schanzle's Fox River Basin Survey (2004), returned no living specimens of the slippershell from the mainstem Fox River but did find live specimens in several Fox River tributaries in Illinois including Big Rock, Little Rock, Rob Roy, Blackberry, Nippersink, Poplar, Roods, and Somonauk Creeks.

The INHS records show one undated collection of the slippershell mussel from Kane County, taken from the Fox River. Undated collection records generally indicate an early date of collection, perhaps around the 1900's. Shasteen et al. (2013) records live slippershells from five tributaries but no slippershells from the Fox River

mainstem. The slippershell is unlikely to be found near the Metra Bridge Z-100 site due to the slippershell's host fish needs and the specific habitat occurrences of the mussel, see **Table 6**.

A take of one individual of the slippershell mussel is anticipated as a result of the proposed project. This is a conservative estimate as this species is not anticipated to be encountered within the project vicinity based on historic occurrences of this species in the mainstem Fox.

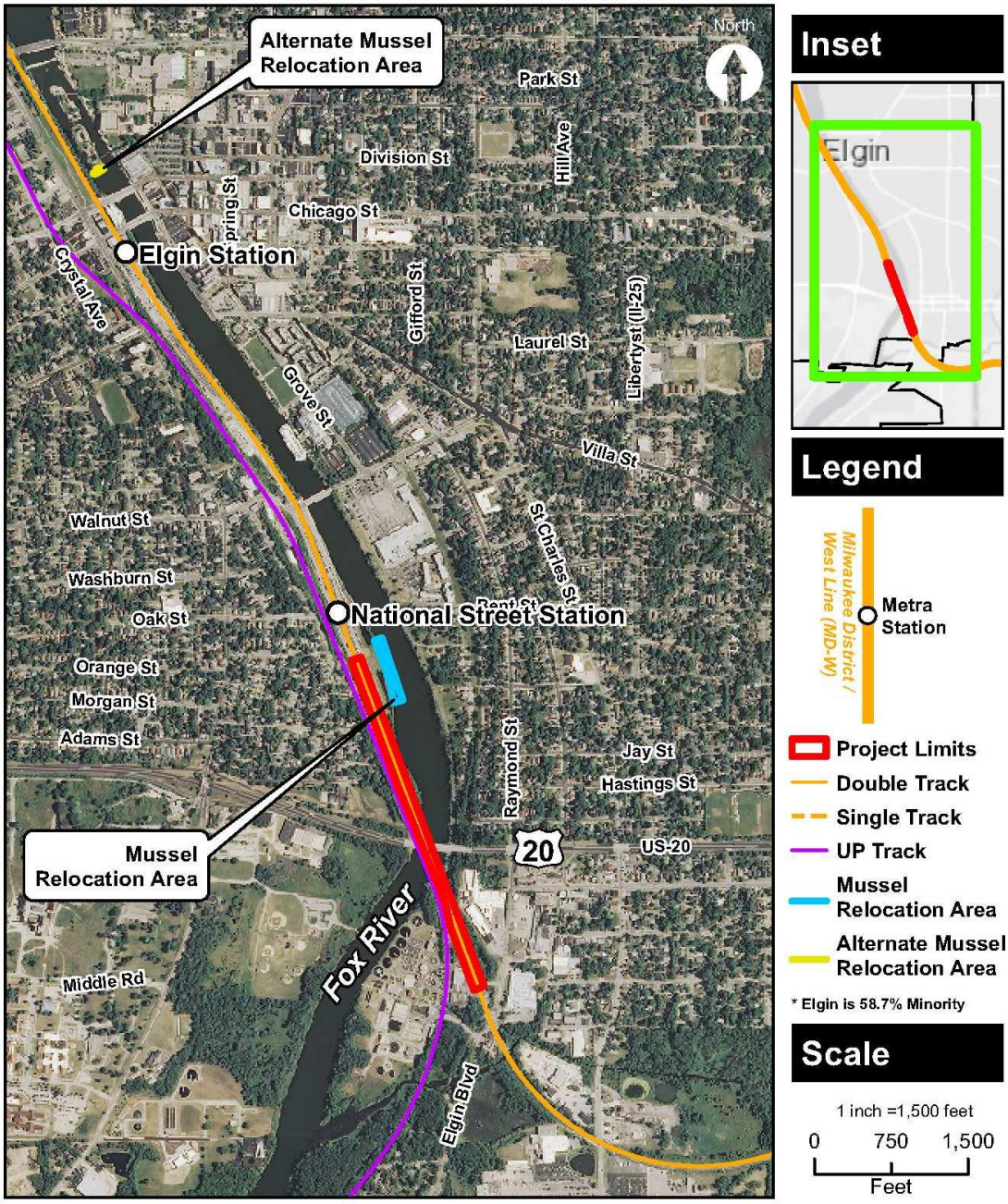
Table 6
Slippershell, *Alasmidonta viridis* Kane County, Illinois Records
From Illinois Natural History Survey Data Accessed September 13, 2013

Scientific Name	Year	# Taken	Locality
Alasmidonta viridis	1988	.....	Blackberry Creek, 6.5 mi N Sugar Grove, Smith Rd. bridge, North America
Alasmidonta viridis	1994	2 valves	Tyler Creek, 2 mi NW Elgin, Big Timber Rd., North America
Alasmidonta viridis	1995	1 valve	Ferson Creek, St. Charles, N of Leroy Oakes Forest Preserve
Alasmidonta viridis	1997	1 valve	Brewster Creek, 0.5 mi NE Valley View, Hwy. 25, North America
Alasmidonta viridis	1997	.....	Blackberry Creek, 1.5 mi N Sugar Grove, Ka-De-Ka Rd., North America
Alasmidonta viridis	1997	.....	Blackberry Creek, 6.5 mi N Sugar Grove, Smith Rd. bridge, North America
Alasmidonta viridis	1997	.....	East Branch Big Rock Creek, 3 mi NW Big Rock, County Line Rd.
Alasmidonta viridis	1998	.....	Tyler Creek, 2 mi NW Elgin, Big Timber Rd., North America
Alasmidonta viridis	1998	.....	Waubansee Creek, 3.5 mi E Montgomery, Farnsworth Rd. bridge
Alasmidonta viridis	1998	2 valves	Big Rock Creek, 1.5 mi SSE Big Rock, North America
Alasmidonta viridis	1999	LIVE	Tyler Creek, 2 mi NW Elgin, Big Timber Rd., North America
Alasmidonta viridis	1999	LIVE	Tyler Creek, Elgin, Eagle Heights Park, North America
Alasmidonta viridis	2001	LIVE	Tyler Creek, 2 mi NW Elgin, Big Timber Rd., North America
Alasmidonta viridis	2003	1 valve	Big Rock Creek, 2 mi SW Sugar Grove, Jericho Rd. bridge, North America
Alasmidonta viridis	2003	1 valve	Welch Creek, 3 mi SW Sugar Grove, Camp Dean, North America
Alasmidonta viridis	2003	1 valve	West Branch Big Rock Creek, 2.25 mi W Big Rock, Hinckley Rd. bridge
Alasmidonta viridis	2005	1 valve	Ferson Creek, 2 mi W Valley View, Bolcum Rd. bridge, North America
Alasmidonta viridis	2006	1 valve	Tyler Creek, 3 mi W Starks, Big Timber Rd. bridge, North America
Alasmidonta viridis	2006	LIVE	Tyler Creek, 2 mi NW Elgin, Big Timber Rd. bridge, North America
Alasmidonta viridis	2009	2 valves	Tyler Creek, Elgin, Eagle Rd. bridge, North America
Alasmidonta viridis	2010	2 valves	Tyler Creek, 2 mi NNW Elgin, Tyler Creek Forest Preserve, North America
Alasmidonta viridis	2010	.....	Tyler Creek, Elgin, Randall Rd. bridge, North America
Alasmidonta viridis	2011	1 valve	Blackberry Creek, 5.6 mi SE Kaneville, Bliss Wood Forest Preserve
Alasmidonta viridis	2012	LIVE	East Branch Big Rock Creek, 2.6 mi NE Hinckley, County Line Rd.
Alasmidonta viridis	2009	LIVE	Brewster Creek, 1.5 mi SE South Elgin, R.R. bridge, North America
Alasmidonta viridis	.....	.....	Fox River, [West] Dundee, North America

Summation of Mussel Presence and Relocation

If further mussel surveys are required, a diving survey will be conducted that will sample all proposed causeway and cofferdam areas for mussel resources. All encountered living native mussels will be removed and released by replanting into suitable and similar habitat away from the influence of construction activity. Special survey attention will be paid to areas near sightings of protected species. Living native mussels will be handled in a manner consistent with IDNR standards and guidelines. Relocation of all living mussels will be accomplished by moving mussels upstream of the project area to one of two sites containing appropriate habitat. **Figure 3, Proposed Mussel Relocation Map** shows the proposed relocation area, and an alternate relocation area close to Walton Island. The IDNR may propose other relocation areas and protocols for consideration.

Figure 3: Proposed Mussel Relocation Map



Aerial Source: ESRI Online World Imagery

Survey Methodology

Mussels will be collected along transects and brought to the surface for identification by a qualified biologist. Measurement and field aging of protected mussels will be accomplished. Native mussels will be relocated to an area that has similar habitat characteristics to that of the area they are removed from. The relocation area should be reasonably close to the collection area without putting the relocated native mussels in jeopardy of construction activities, or other anthropogenic activities that could negatively affect their survival. The IDNR will review and approve the proposed relocation site or offer up another site if necessary.

Work will be accomplished under a scientific permit issued by the IDNR. Habitat information will be noted and incorporated into a final report. Visibility is expected to be poor. Substrates will be examined by passing hands through and over the surface layers of substrate to feel for buried mussels. Rocks and obstructions will be examined for mussels around them.

As mussels are collected, they will be accumulated in a mesh bag and kept submersed in water as much as possible to prevent thermal shock and desiccation. Native mussels will be kept aboard a boat in a tub filled with ambient water for transportation purposes. Collection will continue until all transects are covered. The methodology is similar to those used by state and federal agencies.

Returned specimens of all protected species will be hand placed into the substrate in a natural position (posterior end protruding above the bottom and pointing in the direction collected).

Specimens will be held in mesh bags in the water or held in containers of water aboard a boat when necessary with the water changed frequently enough so it maintains ambient river conditions.

Specimens will be relocated unharmed within approximately six hours following collection. Zebra mussels will be removed from all native mussel shells before native mussels are released. Mussels will remain submersed during transport to the relocation site.

All live specimens of threatened or endangered (T&E) species taken will be photographed, measured (length and height) and, if possible, sexed and aged. No intrusive activities are permitted. Collection of T&E species will be reported to the IDNR Endangered Species Biologist(s) within 48 hours of discovery.

Freshly dead specimens, if encountered, will be preserved according to standard museum practices for fleshy tissue preservation. Old dead shells may be retained without preservation. Dead specimens retained as voucher material may be sent to a public scientific or educational facility or to a museum in the state in which they were collected.

The species locations and release point will be located using Global Positioning System (GPS). The GPS data will be provided to the IDNR for their record keeping and will be utilized for the future years' monitoring efforts.

Identifications will be verified using the *Field Guide to Freshwater Mussels of the Midwest* (Cummings and Mayer, 1992), and *Field Guide to Mussels of the Chicago Wilderness* (Klocek, Barghusen and Bland 2010).

Fishes

1. River Redhorse (*Moxostoma carinatum*), Illinois State Threatened species

The river redhorse is a large fish belonging to the sucker family (*Catostomidae*), which occurs in several swiftly flowing Illinois rivers, and is considered a threatened species in Illinois. The river redhorse grows to more than 27 inches in length with a weight greater than 11 pounds, and feeds on mollusks and benthic insects. The river redhorse is regularly collected in the Kankakee River but is uncommon elsewhere in Illinois, (Smith, 1979). The Kankakee River holds the most abundant spawning population of river redhorse in the state (Taylor, 2013b). The Illinois Natural History Survey has 17 records of the river redhorse from Will and Kankakee Counties on the Kankakee River between 1975 and 2008.

It prefers clearer large to medium-sized rivers and is considered inflexible in its habitat requirements. Habitat degradation and alteration are the main threats to the river redhorse and its prey. The species' food resources

require clean gravel-sand stream bottoms and are sensitive to siltation and turbidity. Reductions in mussels may equate to reductions in river redhorse populations. Maximum longevity is understood to be 16 years.

The river redhorse spawns in April in the southern part (Alabama) of its North American range, when the water temperature is between 18-24.4° C. In Wisconsin, the river redhorse spawns in the Chippewa River in Eau Claire County during mid-May when the water temperature fluctuated from 20° C in the morning to 23.3° C in the afternoon. Spawning took place over gravel and rubble in a water current (1.97 to 3.3 feet per second) in water from 1 to 2 feet deep. Redds (depressional nests), were constructed in gravel and measured from 4 to 8 feet in diameter. Eggs approximately 0.12 to 0.16 inches in diameter are buried in the gravel. An average sized female (22 inches), contained approximately 23,000 eggs. Laboratory hatching of eggs is accomplished in 3-4 days at 72°F, (Becker, 1983). Spawning in Wisconsin coincides with the simultaneous spawning of the Golden redhorse (*Moxostoma erythrurum*).

The exact spawning time in Illinois is unknown, because water temperature and flow rates which help trigger spawning activity vary yearly during the spring season with changing weather. Spawning of the golden redhorse which spawns at the same time as river redhorse in Wisconsin, was documented in Stony Creek of the Vermillion River in May of 1984 through 1986. A reasonable assumption of spawning times for the river redhorse in the Fox River would be approximately the month of May. A buffer period may extend this time period.

The river redhorse is listed as a threatened species in Illinois because of its limited range and threats to its habitat such as siltation and pollution. The species has no formal federal conservation status. Historically, it was found in the Wabash, Rock, and Illinois River drainages.

The Illinois Natural Heritage Database includes 31 occurrences of the river redhorse that are classified as extant. Only five records are found for River redhorse in the Fox River mainstem from Kane County. The species is most often found in deep, gravelly riffles of small and medium-sized rivers. Recent records of the species are from the Illinois River and its tributaries (Kankakee, Fox, Vermilion), Wabash River and its tributaries, and Mississippi River.

The Department has issued six previous authorizations for incidental take of the river redhorse. These were for bridge replacement projects in Kane and Vermilion Counties, installation of hydropower facilities in an existing Illinois River dam in LaSalle County, a cooling water discharge in Will County, and two dam removal projects in Vermilion County. Avoiding instream work during the spawning season of river redhorse and control of erosion and siltation have been the most common measures for minimizing adverse effects on the species. **Table 7** presents the collection data for River redhorse suckers in Illinois. Based on past collection data. One upstream record is for the River redhorse in Carpentersville, Illinois, which is separated from the area of construction by a dam at Elgin. One record for redhorse at East Dundee is separated from the construction by the same dam at Elgin. The closest downstream redhorse record is from South Batavia, separated from the construction by three dams at North Batavia, Geneva, and St. Charles.

While the presence of the river redhorse is unlikely in the project area due to damming, the record of river redhorse both upstream and downstream of the project area since 2000 makes the presence of River redhorse in the project area possible. Metra (the applicant) estimates the take of one river redhorse during project construction.

Table 7

River Redhorse, *Moxostoma carinatum* Illinois Records

From Illinois Natural History Survey Records Accessed September 13, 2017ral

Catalog #	Scientific Name	Year	# Caught	County	Locality
99111	Moxostoma carinatum	2000	2	Cass	Illinois River, 2 mi SW Beardstown, Grape Island
84633	Moxostoma carinatum	1901	1	Douglas	Kaskaskia River, Bourbon Township
111271	Moxostoma carinatum	2016	3	Fulton	Otter Creek, 2.5 mi NE Summum, Branson School Rd.
65226	Moxostoma carinatum	1987	2	Grundy	Illinois River, Dresden Island Dam,
103186	Moxostoma carinatum	2009	1	Grundy	Illinois River, below Dresden Island Lock & Dam
110401	Moxostoma carinatum	2016		Grundy	Illinois River, Marseilles, downstream of Dresden Lock & Dam
99501	Moxostoma carinatum	2000	1	Kane	Fox River, Aurora, 0.5 km below Hurds Island Dam
99500	Moxostoma carinatum	2000	2	Kane	Fox River, Batavia, 0.5 km below South Batavia Dam
4718	Moxostoma carinatum	1958	1	Kane	Fox River, Carpentersville
99100	Moxostoma carinatum	2003	1	Kane	Fox River, North Aurora
96628	Moxostoma carinatum	2003	1	Kane	Fox River, West Dundee, Main St. bridge
100495	Moxostoma carinatum	2006	1	Kankakee	Baker Creek & Kankakee River, Maple St. bridge
92141	Moxostoma carinatum	2000	1	Kankakee	Iroquois River, 5 mi E Chebanse
92642	Moxostoma carinatum	2000	1	Kankakee	Kankakee River, 4 mi E Kankakee, Rt. 17 bridge
26735	Moxostoma carinatum	1975	1	Kankakee	Kankakee River, Kankakee
92542	Moxostoma carinatum	2000	1	Kankakee	Kankakee River, Langham Island
32933	Moxostoma carinatum	1994	1	Kankakee	Kankakee River, Kankakee, Rt. 17 bridge
52221	Moxostoma carinatum	1999	1	Kankakee	Kankakee River, Momence, Rt. 17
103332	Moxostoma carinatum	2010	1	Kendall	Fox River, 1 mi upstream Silver Springs State Park
27898	Moxostoma carinatum	1991	3	Kendall	Fox River, Yorkville, Hwy. 47
61193	Moxostoma carinatum	1991	1	Kendall	Fox River, Yorkville, Hwy. 47
28322	Moxostoma carinatum	1991	2	Livingston	Vermilion River, 4 mi S Cornell
105229	Moxostoma carinatum	2005	1	Livingston	Vermilion River, Pontiac, below dam
110534	Moxostoma carinatum	2014	1	Livingston	Vermilion River, S edge of Streator, Old Rt. 23
28321	Moxostoma carinatum	1991	1	Livingston	Vermilion River, Streator, below dam
85594	Moxostoma carinatum	1898	1	Mason	Illinois River, Havana, Cook's Island
86039	Moxostoma carinatum	1901	1	Ogle	Rock River, Oregon, below dam
41988	Moxostoma carinatum	1997	1	Vermilion	Middle Fork Vermilion River, 2.8 mi NNW Catlin
11884	Moxostoma carinatum	1968	1	Vermilion	Middle Fork Vermilion River, 4 mi SE Collison
11721	Moxostoma carinatum	1958	1	Vermilion	Salt Fork Vermilion River, 3 mi N Fairmount
11751	Moxostoma carinatum	1957	2	Vermilion	Salt Fork Vermilion River, 3 mi N Fairmount
62909	Moxostoma carinatum	1961	1	Vermilion	Salt Fork Vermilion River, 4 mi NE Homer
100689	Moxostoma carinatum	2006	1	Vermilion	Vermilion River, Danville, downstream Rt. 150
63438	Moxostoma carinatum	1987	3	Will	Kankakee River, 0.5 mi N Custer Park
63529	Moxostoma carinatum	1987	4	Will	Kankakee River, 0.5 mi N Custer Park
69178	Moxostoma carinatum	1985	1	Will	Kankakee River, 0.5 mi N Custer Park
57660	Moxostoma carinatum	1989	1	Will	Kankakee River, 3 mi ESE Ritchie
92769	Moxostoma carinatum	2000	2	Will	Kankakee River, 5.5 mi ESE Ritchie, Warner Bridge access
26839	Moxostoma carinatum	1975	2	Will	Kankakee River, 5.5 mi SE Ritchie
26917	Moxostoma carinatum	1977	1	Will	Kankakee River, Custer Park
68050	Moxostoma carinatum	1984	2	Will	Kankakee River, Custer Park
87489	Moxostoma carinatum	1981	1	Will	Kankakee River, Custer Park
90761	Moxostoma carinatum	2000	1	Will	Kankakee River, I-55 bridge
93037	Moxostoma carinatum	2000	1	Will	Kankakee River, Wilmington, 1 mi below Wilmington Dam
110069	Moxostoma carinatum	2014		Will	Kankakee River, Wilmington, R.R. bridge 0.4 mi N Rt. 53
4886	Moxostoma carinatum	1962	1	Will	Prairie Creek, 3.5 mi NW Wilmington, at mouth

2. Greater Redhorse (*Moxostoma valenciennesi*) Illinois State Endangered species

The greater redhorse is listed as an endangered species in Illinois because of its limited abundance and distribution in the state. The species has no formal federal conservation status. The species was thought to be extirpated from Illinois, but was rediscovered in 1985. Since then, it has been found in several locations, primarily in the Vermilion River and Aux Sable Creek (Illinois River drainage), Fox River, and tributaries within these two drainage basins. There is also one record from the Wabash River in Clark County.

The greater redhorse is a sucker with large scales and a stout body. The species spawns in May or June throughout most of its range. It takes males between five and six years to reach maturity. The species can live nearly two decades. The greater redhorse prefers fast-flowing, medium-sized to large rivers with clear water and substrates of clean sand, gravel, and boulders. Threats to the species include siltation and chemical pollutants, habitat fragmentation, loss of suitable feeding spawning areas, and blockage of spawning migration routes by dam construction. The greater redhorse feeds on insect larvae and other crustaceans.

The Illinois Natural Heritage Database includes 16 element occurrence records for the greater redhorse that are classified as extant populations. Those occurrences are in small to medium rivers, as described above. Though the number of locations at which the greater redhorse is found has increased in recent years, the species is seldom found in large numbers at these locations.

The Department has issued two previous authorizations for incidental take of the greater redhorse. One was for the installation of hydropower facilities in an existing dam on the Illinois River and the other for a bridge replacement project in Kane County. For the hydropower project, minimization/mitigation measures included design features intended to reduce the risk of impingement or entrainment of greater redhorse and the avoidance of instream construction during the spawning season of the species. At the bridge replacement site, effects on the greater redhorse were minimized by doing no instream work during the spawning season.

Table 8 presents the collection records for the Greater redhorse. In Kane County, a single collection record exists for Illinois Route 56 at Moosehart, separated by three dams from the bridge site. It is not likely that Greater redhorse occur above the Illinois Route 56 Moosehart site.

A take of one individual of the greater redhorse is anticipated as a result of the proposed project. This is a conservative estimate as this species is not anticipated to be encountered within the project vicinity based on historic occurrences of this species in the mainstem Fox River.

Table 8

Greater Redhorse, *Moxostoma valenciennesi* Records for Illinois

From Illinois Natural History Survey Records Accessed September 13, 2017

Catalog #	Scientific Name	Year	Caught	County	Locality
65239	Moxostoma valenciennesi	1987	1	Grundy	Illinois River, Dresden Island Dam
91262	Moxostoma valenciennesi	2000	1	Grundy	Mazon River, S of Morris, at mouth
30925	Moxostoma valenciennesi	1993	1	Kane	Fox River, Mooseheart, Rt. 56
50739	Moxostoma valenciennesi	1998	11	Kendall	Aux Sable Creek, Minooka, Holt Rd.
50709	Moxostoma valenciennesi	1998	1	Kendall	Aux Sable Creek, Rt. 52 bridge
110064	Moxostoma valenciennesi	2007	....	Kendall	Big Rock Creek, Plano, Henning Rd.
37674	Moxostoma valenciennesi	1996	1	Kendall	Fox River, Oswego, Hwy. 34
61192	Moxostoma valenciennesi	1991	1	Kendall	Fox River, Yorkville, Hwy. 47
69169	Moxostoma valenciennesi	1985	1	LaSalle	Illinois River, Marseilles, R. Mile 248.3
59345	Moxostoma valenciennesi	1990	1	Livingston	Mud Creek, 2 mi NW Cornell
108972	Moxostoma valenciennesi	2014	1	Livingston	Rooks Creek, 3 mi NE Graymont
90730	Moxostoma valenciennesi	1999	1	Livingston	Rooks Creek, 3 mi NE Graymont
91124	Moxostoma valenciennesi	1999	1	Livingston	Scattering Point Creek, 3 mi SW Cornell
104664	Moxostoma valenciennesi	2005	1	Livingston	Vermilion River, Pontiac, Ladd St.
91276	Moxostoma valenciennesi	1999	1	Livingston	Wolf Creek, 4 mi SE Cornell

3. Starhead Topminnow (*Fundulus dispar*) Illinois State Threatened species

The starhead topminnow is deep-bodied killifish with olive coloration on its back upper sides and yellow coloration on its flanks with small flecks of red, blue, or green. It has a prominent blur-black notch or tear drop beneath the eye. The males have 10 to 14 thin dark vertical bars on its flanks while females have numerous longitudinal bars. Its adult length is approximately 1.8-2.2 inches (47-55 millimeters). They occur singly or in pairs just below the water's surface. The starhead topminnow rarely dives deeply so as to avoid predators. The typical habitat for the starhead topminnow is glacial lakes and clear, well-vegetated floodplain lakes, swamps, and marshes. Spawning occurs in late spring and early summer among dense beds of vegetation. Its diet includes snails, crustaceans, aquatic insects, and algae. The distribution of the starhead topminnow is sporadic in the state of Illinois, hence its threatened status on the Illinois Endangered Species Protection Board, Illinois threatened and endangered species list. According to the INHS, previously mapped distributions are shown in Lake County, Illinois.

The starhead topminnow occurs in Fox River, White County Illinois (tributary to the Wabash River in southern Illinois with no relation to the Fox River in Kane County), and other lakes and creeks in McHenry and Lake County (especially the Chain-O'-Lakes area), but not in Kane County. See **Table 9**.

A take of one individual of the starhead topminnow is anticipated as a result of the proposed project. This is a conservative estimate as this species is not anticipated to be encountered within the project vicinity based on historic occurrences of this species in the mainstem Fox River.

Table 9

Starhead Topminnow, *Fundulus dispar,* Illinois Records

From Illinois Natural History Survey Records Accessed September 13, 2017

Catalog #	Year	# Taken	County	locality
106213	2006	1	Bureau	Fairfield Union Special Ditch, 1 mi S Thomas
105561	2005	4	Bureau	Fairfield Union Special Ditch, 4 mi W New Bedford, Co. Rd. 2500N
14071	1972	1	Calhoun	slough, Illinois River, 0.1 mi S Michael
67372	1962	18	Cook	trib. Wolf Lake, Chicago
84574	1903	3	Cook	Wolf Lake, South Chicago, W side of lake
11280	1963	8	Fulton	Anderson Lake, 2 mi S Marbletown
7288	1968	1	Iroquois	Beaver Creek, 7 mi E Beaverville
7302	1962	20	Iroquois	Hooper Branch, 4 mi ENE Beaverville
109221	2012	1	Iroquois	Hooper Branch, 5.5 mi ENE Beaverville
7293	1963	1	Iroquois	Hooper Branch, 7 mi NE Beaverville
98279	2003	1	Iroquois	Little Beaver Creek, 2 mi N Papineau, Co. Rd. 2150E bridge
102527	2007	2	Iroquois	pond, Iroquois Conservation Area, 0.45 mi NE jct. Co. Rd. 3300N & 2800E
104357	2008	85	Iroquois	pond, Iroquois County Conservation Area
105672	2011	10	Iroquois	trib. Beaver Creek, 3 mi NE Beaverville, Iroquois County Conservation Area
95401	2002	1	Iroquois	trib. Beaver Creek, 4 mi NE Beaverville
25400	1967	4	Jersey	Illinois River, Pere Marquette State Park, river mile 6.9
98657	2003	1	Kankakee	ditch, Hopkins Park
107651	2014	2	Kankakee	Kankakee River, 1 mi E Illiana Heights, Stateline Rd./Co. Rd. 18000E
110059	2015	2	Kankakee	Kankakee River, 1 mi E Illiana Heights, Stateline Rd./Co. Rd. 18000E
85767	1979		Kankakee	Kankakee River, 1.5 mi NE Aroma Park
85743	1979	1	Kankakee	Kankakee River, 2 mi NE Aroma Park
92716	2000	2	Kankakee	Kankakee River, 3 mi E Momence, River Isle
39034	1996	1	Kankakee	Kankakee River, 3 mi E Momence, River Isle Campground
56824	2000	2	Kankakee	Kankakee River, River Isle Campground, backwater
52812	1999	4	Kankakee	slough, 6.5 mi E Momence
5675	1960	1	Kankakee	slough, 6.5 mi E Momence
99942	2005	1	Kankakee	slough, 6.5 mi E Momence
98660	2003	7	Kankakee	trib. Little Beaver Creek, 3 mi S Hopkins Park
98365	2003	4	Kankakee	trib. Little Beaver Creek, Hopkins Park
85198	1882	1	Lake	Cedar Lake
27308	1979	2	Lake	Cedar Lake, Lake Villa
4163	1964	3	Lake	Cedar Lake, Lake Villa
4200	1972		Lake	Cedar Lake, Lake Villa
68033	1984	4	Lake	Cedar Lake, Lake Villa
48245	1998	1	Lake	Deep Lake, 0.5 mi E Lake Villa, Rt. 132
4394	1969		Lake	Deep Lake, Lake Villa
52738	1999	7	Lake	East Loon Lake, 0.9 mi NE Loon Lake, NW Bay near channel to Loon Lake
45717	1998	2	Lake	East Loon Lake, 1.5 mi N Lake Villa
48012	1998	3	Lake	East Loon Lake, 1.5 mi N Lake Villa
68017	1984	6	Lake	East Loon Lake, 1.5 mi N Lake Villa
64140	1984	1	Lake	Lake Catherine, 1 mi W Antioch
4052	1963	1	Lake	Little Silver Lake, 1.5 mi E Antioch
4146	1968		Lake	Loon Lake, 2 mi S Antioch, 0.5 mi N Loon Lake
52782	1999	9	Lake	Loon Lake, 2 mi S Antioch, along shore near boat ramp
48156	1998	4	Lake	Loon Lake, 2 mi SE Antioch
50600	1997	2	Lake	trib. Sequoit Creek, 0.7 mi ESE Loon Lake at Grass Lake Rd., Sun Lake F.P.
44973	1997	1	Lake	trib. Slocum Lake, 0.5 mi E Fox River Valley Gardens, Roberts Rd.

Table 9 (continued)

Starhead Topminnow, *Fundulus dispar,* Illinois Records

From Illinois Natural History Survey Records Accessed September 13, 2017

Catalog #	Year	# Taken	County	locality
4084	1965	3	Lake	Turner Lake, Chain O' Lakes State Park
85360	1884	1	Lawrence	Rapid Pond, St. Francisville
100256	2003	2	Mason	Crane Creek, 2 mi W Easton
60957	1991	1	Mason	Crane Creek, 2 mi W Easton
99487	2004	20	Mason	Hardin Ditch, 3 mi N Easton, Co. Rd. 1400N bridge
85566	1894	15	Mason	Illinois River, Havana
85568	1895	50	Mason	Illinois River, Havana
85576	1896	2	Mason	Illinois River, Havana
87284	1898	2	Mason	Illinois River, Havana
85572	1895	3	Mason	Illinois River, Havana, Sta. H East
98651	1995	1	Mason	Matanzas Lake, 3 mi W Kelsey, 4 mi SW Havana
14664	1973	8	Mason	trib. White Oak Creek, 2 mi E Kelsey
53154	1999	11	McHenry	Elizabeth Lake, 2.5 mi NE Richmonc
103777	2007	1	McHenry	Griswold Lake, near shore of new private boat launch
104691	2003	1	McHenry	Lac Louette, 1.5 mi NE Eastwood Manor
103925	2011	3	McHenry	North Branch Nippersink Creek, 2 mi E Richmond, Hwy. 173
67228	1927	1	Morgan	Illinois River, Meredosia Bay
85895	1899	3	Morgan	Illinois River, Meredosia, below narrows
85950	1900	5	Morgan	Meredosia
87291	1899	2	Morgan	Meredosia
86058	1878	5	Peoria	Illinois River, Peoria
86367	1880	18	Tazewell	Illinois River, Pekin
14839	1963	13	Tazewell	Spring Lake, NW Manito
15066	1967	3	Tazewell	Sunset Lake, 4 mi NE Spring Lake State Park
86408	1883	4	Union	Andersons Branch
86402	1877	15	Union	mud holes in bottoms
17537	1958	1	Union	Pine Hills Swamp, La Rue
17560	1963	1	Union	Pine Hills Swamp, La Rue
17573	1964	42	Union	Pine Hills Swamp, La Rue
17580	1965	6	Union	Pine Hills Swamp, La Rue, Pine Hills Recreation Area
17586	1971	11	Union	Pine Hills Swamp, La Rue, Pine Hills Recreation Area
86424	1882	1	Union	Running Lake [Ditch]
53123	1999	2	Union	Winters Pond, N edge Pine Hills Recreation Area
50148	1962	6	Union	Wolf Lake, Elm Springs [=Wolf Lake]
18137	1973	1	Union	Wolf Lake, Wolf Lake
86576	1884	1	Wabash	Greathouse Creek, Mt. Carmel
86618	1900	1	White	Fox River
65402	1989	1	Will	Kankakee River, 5.5 mi ESE Ritchie
104897	2011	1	Winnebago	[East Fork] Raccoon Creek, 2.7 mi NW Rockton, Williams Tree Farm
103718	2010	1	Winnebago	Raccoon Creek, 2 mi ENE Shirland, just off Clover Rd., confluence small trib
52089	1998	2	Winnebago	Raccoon Creek, 2.4 mi NW Rockton, Yale Bridge Rd. bridge
46372	1998	1	Winnebago	Raccoon Creek, 4.1 mi NE Shirland, upstream from East Fork Raccoon Creek
3521	1968	1	Winnebago	Sugar River & pond, 4 mi NW Shirlanc

C) Description of the activities that could result in the taking of a threatened or endangered species:

Direct impact of the causeway and cofferdam construction would impact mussels present by burying them under crushed stone. It is anticipated that river redhorse, greater redhorse, or starhead topminnow fish will not be impacted directly by cofferdam construction as fish generally abandon an area of construction and flee for more quiet habitats.

The nearest waterbody to the proposed bridge replacement and track addition is the Fox River, located directly beneath the bridge. The bridge replacement and track addition is expected to impact this waterbody.

The replacement and track addition of the Metra Bridge Z-100 over the Fox River will not increase the amount of impervious land coverage or increase the amount of stormwater runoff entering the Fox River. The quality of the stormwater runoff will be typical of that from railways in urban areas and will not have an impact on water quality to the Fox River.

Sediment is expected to be disturbed temporarily, during construction of the piers and abutments for the new bridges. Temporary cofferdams and causeways are proposed to minimize these impacts during construction. After construction activities have been completed, these water quality impacts would be expected to cease. Sediment and the noise from construction activity will have an indirect impact on river redhorse, greater redhorse, and starhead topminnow fish present and will cause the fish to seek more quiet waters, potentially impacting spawning activities.

D) Explanation of the anticipated adverse effects on the listed species:

Protected mussels will likely not be visible during construction activities and avoidance of mussels will not be possible during in-stream preparations for bridge construction. Protected mussels may be subject to injury or death during in-stream phases of construction. Siltation from construction activities may harm protected mussels beneath the bridge or downstream from the construction site, unless the mussels are relocated. Noise and vibration from construction activities (construction of causeways and bridges) may also have an effect on the life history stages of some mussel and fish species. Noise related impacts would only occur during construction activities. The proposed bridge improvement project will add an additional track over the Fox River; however, no additional train traffic is proposed. The same number of trains that currently utilize the bridge will remain the same, so no additional noise is anticipated after construction is completed than currently exists.

Fish species are mobile and are not expected to be impacted by construction activities.

After the mussel survey has been completed and the survey area cleared of any endangered, threatened or native mussels, the causeway would be installed. The cofferdams would be constructed within the causeways. See **Appendix A, Temporary Causeway Plan and Elevation**. Metra will take extra efforts to have a biologist present during the construction of the causeway. If any of the listed species, or other native fish species are trapped in the course of constructing the causeway, the biologist will work with contractors to safely capture and release the fish to safe areas away from construction.

2. Measures to minimize and mitigate impacts and funding available to undertake these measures.

A) Plans to minimize affected area, and estimated number of protected mussels and fish that will be taken and amount of habitat affected.

Minimization of the area affected through the use of temporary causeways has been considered and the proposed temporary causeways are the smallest needed for safe construction practices. When the survey is

conducted, collection of living native mussels present in the survey area will be accomplished with scuba diver/collectors familiar with mussel detection, assisted by shore collectors to cover more shallow areas. Relocation of protected mussels within the surveyed area will be accomplished once the permit has been finalized.

Aquatic habitat that may be affected due to siltation will be minimized through the use of silt fences/erosion structures to prevent runoff from entering the river. A designated crew will install, inspect and maintain silt fences.

The bridge abutments are approximately 37 feet wide. An additional area of approximately 40 feet upstream of the proposed bridge and 38 feet downstream of the bridge is included in the right-of- way and temporary easements and will be used for causeways/cofferdams during construction. Thus, the total width of the affected area is 115 feet. The width of the Fox River at the bridge site is approximately 510 feet measured diagonally at its longest leg at the bridge crossing. The total area of immediate impact is approximately 59,000 square feet, or approximately 1.4 acres. The area of the instream work zone has been minimized to reduce the impact to aquatic habitat. The amount of habitat affected is equal to the area required to complete the instream portion of the work. See **Figure 4, Schematic of the Proposed Improvements**.

Minimization of the area affected directly is feasible through the judicious use of anti-erosion and sediment blocking construction techniques. All efforts to reduce in-stream siltation and in-stream work, especially during the late March to June spawning period, should be taken to lessen the impact to protected fish species.

During construction, adjacent land areas will be protected with erosion and sediment control features. Erosion and sediment control policy and specifications (Storm Water Pollution Prevention Plan (SWPP) contained in the bid specifications) will be followed and will be in compliance with the U.S. Army Corps of Engineers (USACE) Section 404 permit, the water quality certification policies of Illinois EPA, and the requirements within the NPDES construction permit. The Kane-DuPage Soil and Water Conservation District, as required by the USACE, reviewed and approved the erosion and sediment control plans and SWPPP. It is expected, that after the instream work has been completed, the area will be available for re-colonization by all species of fish.

A blackout period will be established between April 1 and June 15, in which no instream work will be conducted in the Fox River. This will avoid conducted work in the river during the optimal spawning seasons for these fishes.

Final mitigation measures for the fish and mussels will be coordinated with the IDNR as part of the final ITA.

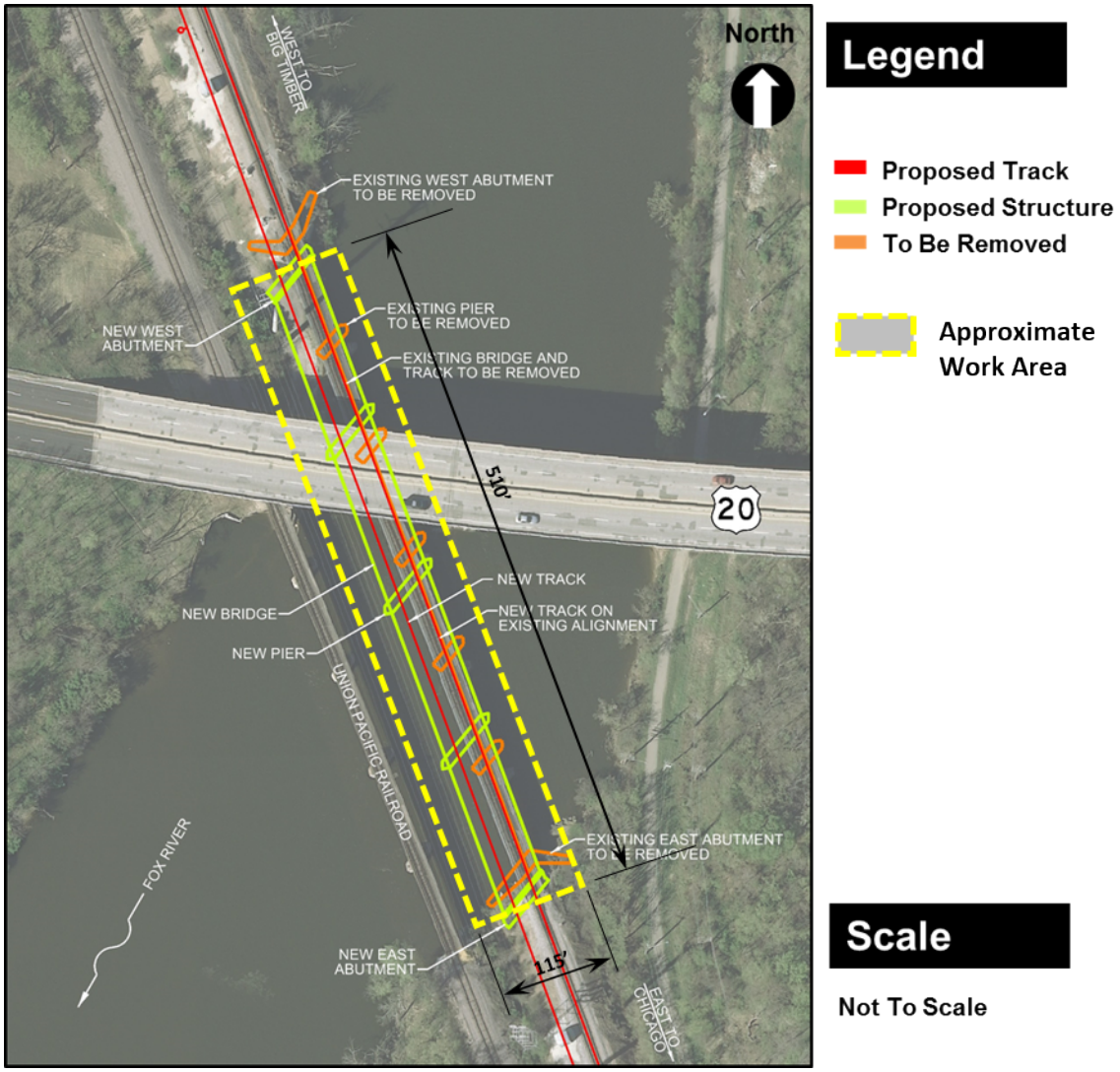
B) Plans for management of the affected area that will enable continued use by the listed species:

1. Siltation during all phases of construction will be minimized through use of erosion control devices such as silt fences to prevent runoff from entering the river and affecting aquatic habitat. A designated crew will inspect and maintain silt fences/erosion structures.

2. It is anticipated that any fish or mussels would not be trapped in the cofferdams as they are being constructed after the causeway is installed. The cofferdams are within the causeway. However, if they are present, all fish and mussels including protected mussels will be collected from inside of the cofferdams during pump-out of the project area and relocated to an appropriate location outside of the project area using approved methods for handling mussels with minimal stress.

3. After construction is completed, causeways and cofferdams will be removed and the stream bottom will be restored to its approximate original condition and flow pattern, allowing for re-colonization of biota.

Figure 4: Schematic of the Proposed Improvements



C) Description of all measures to be implemented to minimize or mitigate the effects of the proposed action on listed species:

1. Implementation and maintenance of the soil, erosion, and sedimentation control plan will prevent runoff from entering the river.

2. Collection of all native mussels from draining cofferdams will be accomplished. All mussels will be individually planted in secure areas in the proper position with siphons pointing in an appropriate direction (usually upstream but current dependent). If collected during the fall season, mussels will be hand dug into appropriate substrates similar to the substrates removed from. Mussels must be hand buried to avoid having them use excess energy to rebury themselves, which could deplete the stored lipid reserves the mussels will use during the winter season. Protected mussels will be located, aged, sexed, measured, and marked by GPS coordinates.

3. In-stream work will not be allowed during fish spawning (April 1 to June 15).

4. Metra has accepted the mitigation value proposed ($37,922) by IDNR and further confirm that it will provide compensatory mitigation to the Illinois Wildlife Preservation Fund to be earmarked for the recovery of the listed aquatic species.

D) Plans for monitoring the effects of measures implemented to minimize or mitigate the effects of the proposed action on endangered or threatened species.

1. A mussel and fish survey will be completed within the project vicinity prior to the commencement of construction activities. All native mussels identified during the survey will be relocated to an upstream area that has similar habitat characteristics to that of the area from which they are removed. The relocation site will also be sampled for mussels prior to the relocation. The relocation area should be reasonably close to the collection area without putting the relocated native mussels in jeopardy of construction activities, or other anthropogenic activities that could negatively affect their survival. Please see **Survey Methodology**, Page 13, for a detailed discussion of the methods to be utilized for the mussel survey and relocation.

2. Post-construction monitoring will be required within the project footprint for both mussels and fish, and within the relocation area for mussels. Monitoring of endangered or threatened mussels, if any, will take place approximately two years after relocation to estimate survival. Monitoring will entail removal, logging, and immediate replacement of protected species to their exact location.

3. A monitoring report will be furnished which will include the results of the recapture study for endangered or threatened species including age, numbers, and rationale for mortality of mussels, evidence of recruitment or juvenile mussels, habitat structure, and an analysis of stability or flux of substrates since last monitoring event.

E) Adaptive management practices that will be used to deal with changed or unforeseen circumstances affecting the effectiveness of measures instituted:

1. Sediment/erosion control measures may be modified and supplemented to ensure maximum protection of the aquatic system as different phases of construction shift erosion points and channels. Erosion control measures/sediment structures will be evaluated and modified weekly or more often if weather events or shifts in construction area dictate modifications.

2. If the original mussel relocation area becomes untenable due to substrate flux or other factors, immediate consideration should be given to another relocation area.

F) Verification of adequate funding to support and implement all activities described in the conservation plan:

The monitoring costs for the two phases of monitoring and any mitigation costs will be borne by Metra.

The project is fully funded by Metra for construction under their Capital Improvements Program, a grant funded through the TIGER Program, and contributions from the Canadian Pacific Railroad. The construction costs include adequate funding to support and implement all activities and commitments described in the conservation plan. It will be the responsibility of the selected contractor to comply with the environmental commitments of the plan – an allowance is included in the contract cost specifically for environmental project aspects and tasks. Also, as part of Metra's construction inspection and project oversite, Metra's construction management consultant will provide environmental inspections, reviews and reporting.

3. Description of alternative actions the applicant considered that would not result in take and the reasons that each of those alternatives was not selected. A "no-action" alternative shall be included in this description of alternatives.

The purpose of the project is to reconstruct and widen the Metra Bridge Z-100 over the Fox River to provide for modern safety concerns and for safer operations by removing the single track bottleneck over the river.

The no-action alternative would maintain the existing single track bridge. However, it is important to note that due to the condition of the bridge, repair and maintenance on the existing bridge would continue. The nature and extent of the repairs would become greater, more frequent, and more costly over time. Detailed repairs (as specified by Metra Engineering) would include rehabilitation of the existing masonry piers, including repair of spalled/damaged stone, tuck pointing masonry joints, and pressure grouting to assure internal masonry joints are solid. The underwater concrete encasement (or covering) is exhibiting minor hairline cracks which would require future underwater inspections. The three western spans located under US Route 20 would be replaced in the near future due to accelerated corrosion caused by salt spray and drainage from the highway facility above. Structural steel would require rehabilitation where section loss (i.e. corrosion of the steel such that the beams/girders are weakened) is extensive and cross braced connections have failed or are near failure. Lastly, a crack in the top flange has been identified which would require strengthening with additional installation of steel plates bolted to the top and bottom of the top flange. It is important to note that as a result of these required repairs, some of which are extensive, the no-action alternative does not mean no construction would occur on the bridge.

In addition to the no-action alternative, four build alternatives were evaluated for the bridge replacement:

1. Construct a new double track bridge on new alignment
2. Construct the new bridge on the existing alignment
3. Construct the new bridge with the second mainline built upstream of the existing mainline
4. Construct the new bridge with the second mainline built downstream of the existing mainline

Details on the project Purpose and Need and the Alternatives Analysis are documented in the Environmental Assessment, February 8, 2017 and Finding of No Significant Impact (FONSI), May 22, 2017 prepared by Metra and the Federal Transit Administration. See **Appendix C, Finding of No Significant Impact (FONSI)**

4. Data and information to indicate that the proposed taking will not reduce the likelihood of the survival of the endangered or threatened species in the wild within the State of Illinois, the biotic community of which the species is a part or the habitat essential to the species existence in Illinois.

It is anticipated that mussel relocation, if done, will not significantly reduce the population of protected mussels that may occur near the project area. While historical mussel relocations had various success rates from poor (less than 50% survival) to excellent (90% survival), recent relocations report greater than 90% survival success when relocations are properly planned and executed, (Rueter et al., 2001, Baldridge et al. 2007, Cope et al. 2003, Peck 2007). The objective of this Conservation Plan is to remove as many native mussels from the project area as possible with no mortality aside from natural mortality due to age, natural predation, or catastrophic flooding/drought events. Severe flooding events have the potential to move large bedloads of sediment quickly and potentially smother some mussel beds.

The Fox River is demonstrated as a relatively rich mussel resource and contains a significant but remnant population of protected mussels in Illinois. Mussels in general may not spawn or recruit every year. Spike mussels are not known from nearby upstream or downstream locations relative to the Metra Bridge Z-100, and eventual

recruitment from nearby populations would not be anticipated. The ultimate success of the relocation would be dependent on finding juvenile protected mussels at a future date during monitoring.

The tables presented for each species presented in *Section B, Biological Data for Various Protected Mussels and Fishes Potentially present in the Fox River in Illinois,* illustrates that the species identified in this Conservation Plan are present in other river systems throughout the state. As a result, this project will not reduce the likelihood of survival of the species listed with the State of Illinois.

5. Implementing Agreement

A) The names and signatures of all participants in the execution of the conservation plan

Names and Signatures are provided at the end of this document.

The obligations and responsibilities of each of the identified participants with schedules and deadlines for completion of activities included in the conservation plan and a schedule for preparation of progress reports to be provided to the Department

Applicant. Metra
547 W. Jackson Boulevard
Chicago, IL 60661

Conservation Plan Developers.
Metra, Huff and Huff Inc. (Roger Klocek/Jim Novak)

Conservation Plan Implementers
Metra (Joseph Ott, PE / Director of Construction)

Conservation Plan Monitors. Sedimentation/Erosion control monitors are yet to be determined by Metra. Mussel monitors are yet to be designated by Metra but will likely include private contractors.

Conservation Plan Funder/Enabler, include designees and sub-contractors. Metra is the funder/enabler of the Conservation Plan. Mr. Joseph Ott will be the representative for Metra during this process.

B) Certification

Metra certifies that their agency has the authority to complete the project and to address the issues proposed in the Incidental Take Application/Conservation Plan in the event state listed threatened or endangered species are encountered. Metra is in charge of construction through its designated subcontractors. Metra will assure that all applicable state laws will be adhered to during the completion of the project.

Anticipated Project Milestones Schedule

Project Milestone	Anticipated Completion
Mussel Survey & Mitigation & Relocation	May/June 2018
River Blackout 2018	April 1, 2018 to June 15, 2018
Install Stage I Causeway	July 2018
Construct Stage I Piers and Abutments	October 2018
Install Stage II Causeway	March 2019
River Blackout 2019	April 1, 2019 to June 15, 2019
Demo Existing Piers and Abutments	July 2019
Construct Stage II Piers and Abutments	July 2019
Remove Causeways	February 2020
Project Completion	February 2020

Beginning July 2018, it is expected that Progress and Monitoring Reports will be provided to the Department by Metra (or its contractor) on a monthly basis for the duration of the work occurring within the river.

C) Assurance of compliance with all other federal, state, and local regulations pertinent to the proposed action and to execution of the conservation plan

Metra is compliant with all other federal, state, and local regulations pertinent to the proposed action and execution of the Conservation Plan.

D) Copies of any final federal authorizations for a taking already issued to the applicant.

No federal authorization needed for the Metra Bridge Z-100 project at the Fox River.

Signatories

Name: _____ Date: 11/25/18

Joseph Ott, PE
Metra Director of Construction

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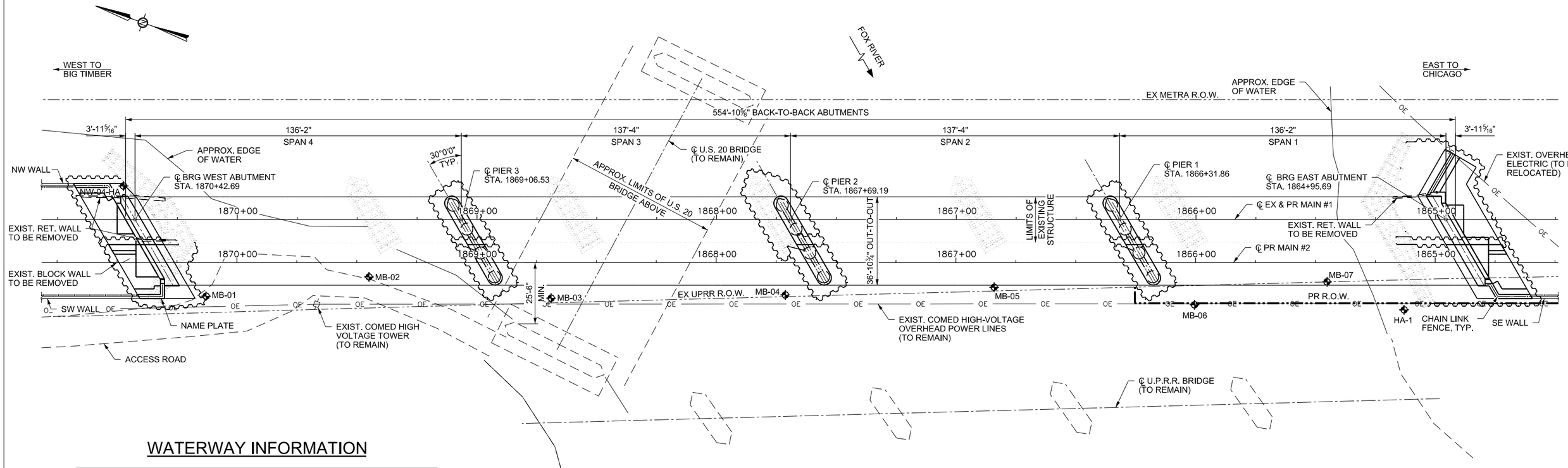
APPENDIX A

Preferred Improvement Plan

- Plan and Profile Sheets
- Temporary Causeway Plan Sheets
- Temporary Access Causeway Specification

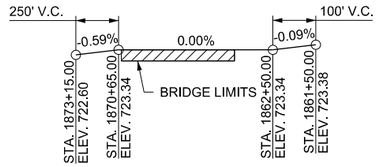


WATERWAY INFORMATION

DRAINAGE AREA = 1,532 MI		EX. LOW GRADE ELEV. 722.27 PR. LOW GRADE ELEV. 723.34						
FLOOD	FREQ. YR.	Q C.F.S.	OPENING SQ. FT. EXIST.	OPENING SQ. FT. PROP.	NAT. H.W.E.	HEAD - FT. EXIST.	HEAD - FT. PROP.	HEADWATER EL. EXIST.	HEADWATER EL. PROP.
	10	6870	3815.60	3991.52	706.46	0.03	0.03	706.49	706.49
DESIGN	50	9965	4457.33	4689.81	708.05	0.04	0.04	708.09	708.09
BASE	100	11305	4706.68	4960.93	708.66	0.05	0.04	708.71	708.70
MAX. CALC.	500	14680	5270.99	5573.43	710.05	0.05	0.05	710.10	710.10

PLAN

SCALE: 1" = 40'-0"

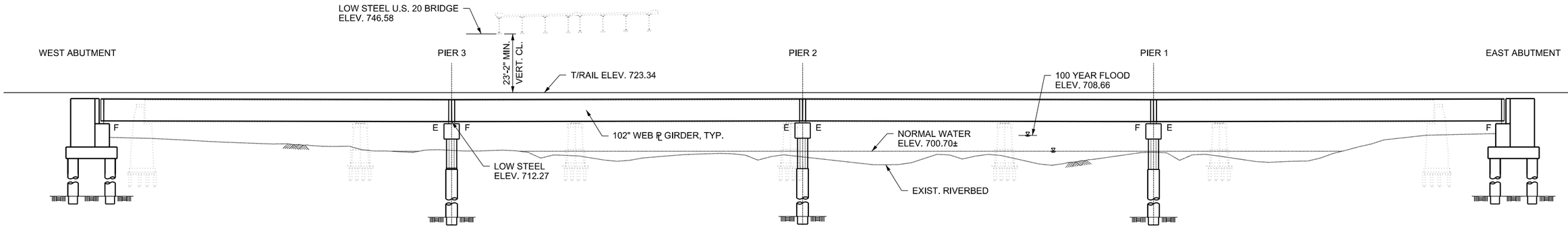


TOP OF RAIL PROFILE

ALONG PR MAIN #1

LEGEND

SOIL BORING



ELEVATION

SCALE: 1" = 40'-0"

REV	DATE	BY	APP	DESCRIPTION
A1	6/2/2017	JRM	TLR	REVISED ISSUED FOR BID
A	4/18/2017	JRM	TLR	ISSUED FOR BID

SUB CONSULTANT N/A

SEAL / SIGNATURE

SEE COVER SHEET FOR SEAL / SIGNATURE

PRIMARY CONSULTANT
TranSystems
222 SOUTH RIVERSIDE PLAZA, SUITE 610
CHICAGO, IL 60606
PHONE: 312-669-9601
FAX: 312-669-9606

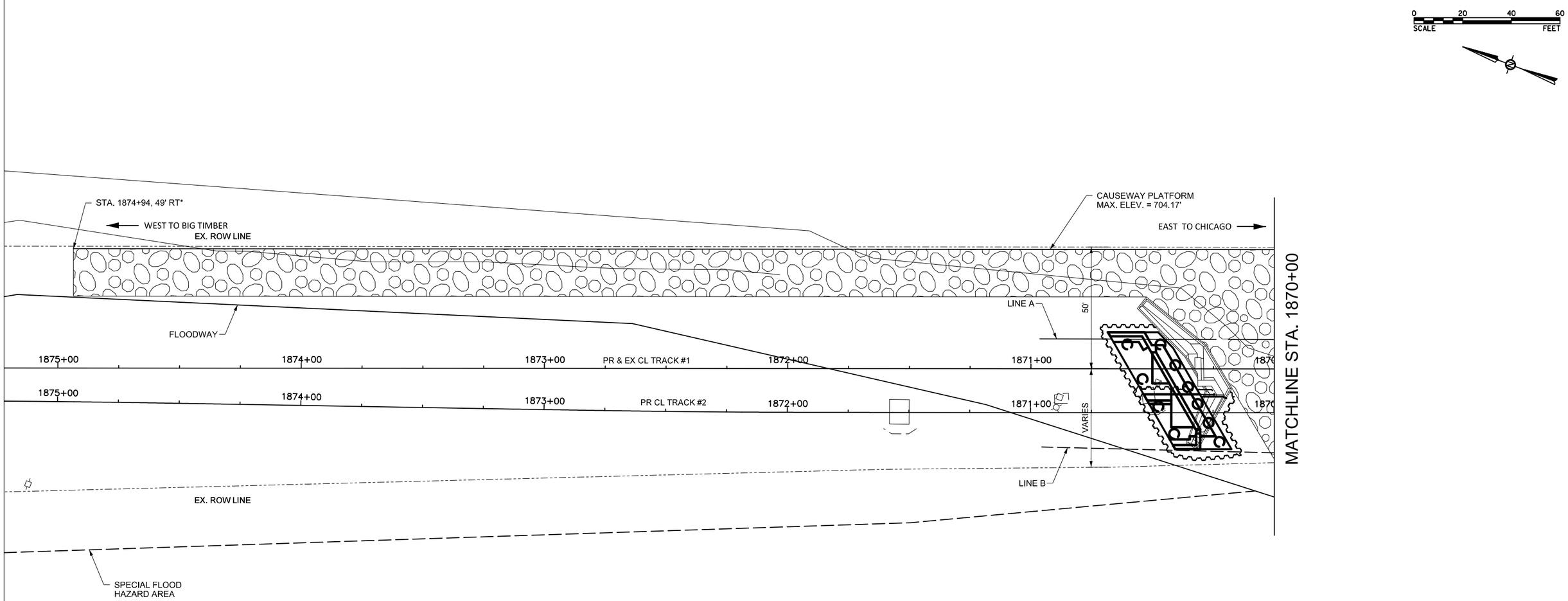
DESIGNED: J. MICKOW
DRAWN: J. MICKOW
CHECKED: T. REVZIN
METRA P.M. D. JURKOWSKI
DATE: 6/2/2017

Metra
ENGINEERING DEPARTMENT
547 W. JACKSON BOULEVARD
CHICAGO, ILLINOIS 60661

LOCATION NAME: Z-100 BRIDGE OVER THE FOX RIVER

TITLE: GENERAL PLAN & ELEVATION

CAD FILE NUMBER: MDW35.3S001_IFB.dgn
SCALE: AS NOTED
DISTRICT: MDW
PROJECT NO. 4794
SHEET NO. S-001
MILE POST NO. 35.3



PLAN

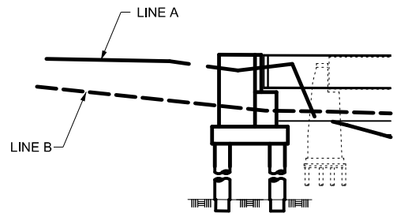
LEGEND

TEMPORARY CAUSEWAY:
FILTER FABRIC
1' THICK RR3
RR5 TO TOP ELEVATION

RIVER CROSS-SECTION, LINE A

RIVER CROSS-SECTION, LINE B

*NOTE: STATION AND OFFSET MEASURED FROM CL TRACK #1, INDICATES PERMITTED MAX. LIMIT OF TOE OF CAUSEWAY



ELEVATION

REV	DATE	BY	APP	DESCRIPTION
A1	6/2/17	CMR	DDM	REVISED ISSUED FOR BID
A	4/18/17	CMR	DDM	ISSUED FOR BID

SUB CONSULTANT
BOWMAN, BARRETT & ASSOCIATES INC.
CONSULTING ENGINEERS
Chicago, Illinois
312.228.0100
www.bbandainc.com

SEAL / SIGNATURE
SEE COVER SHEET FOR SEAL / SIGNATURE

PRIMARY CONSULTANT
TranSystems
222 SOUTH RIVERSIDE PLAZA, SUITE 610
CHICAGO, IL 60606
PHONE: 312-669-9601
FAX: 312-669-9606

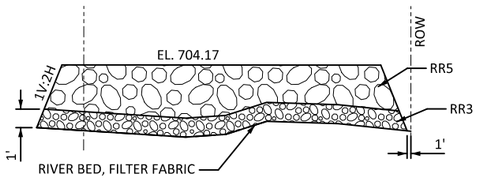
DESIGNED: DDM
DRAWN: CMR
CHECKED: DDM
METRA P.M. D. JURKOWSKI
DATE: 6/2/2017

Metra
ENGINEERING DEPARTMENT
547 W. JACKSON BOULEVARD
CHICAGO, ILLINOIS 60661

LOCATION NAME: Z-100 BRIDGE OVER THE FOX RIVER

TITLE:
TEMPORARY CAUSEWAY PLAN AND ELEVATION

CAD FILE NUMBER: MDW35.3S007.dgn
SCALE: AS SHOWN
DISTRICT: MDW
PROJECT NO. 4794
MILE POST NO. 35.3
SHEET NO. S-007
92 OF 146



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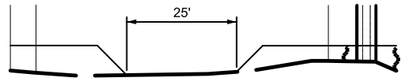
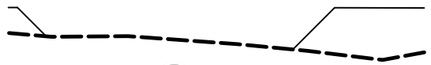


B SECTION

C SECTION



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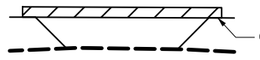
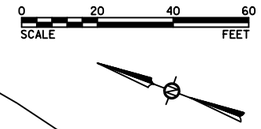
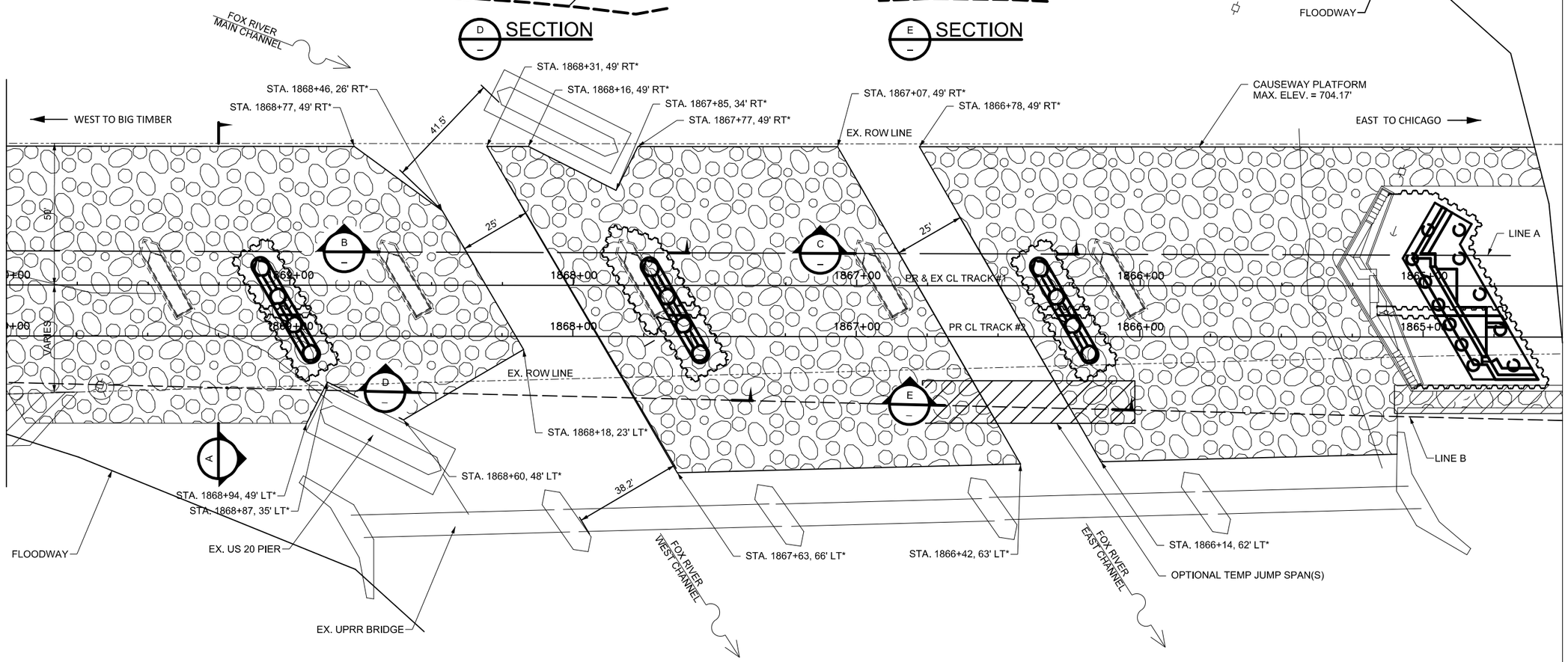
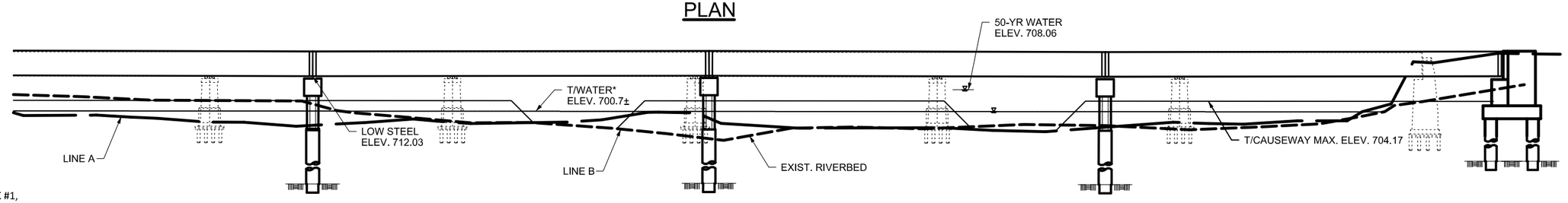


E SECTION





PLAN



ELEVATION

LEGEND

TEMPORARY CAUSEWAY:
FILTER FABRIC
1' THICK RR3
RR5 TO TOP ELEVATION

RIVER CROSS-SECTION, LINE A

RIVER CROSS-SECTION, LINE B

*NOTE: STATION AND OFFSET MEASURED FROM CL TRACK #1, INDICATES PERMITTED MAX. LIMIT OF TOE OF CAUSEWAY

* BASED ON WATER EDGE SURVEYED 11/17

REV	DATE	BY	APP	DESCRIPTION
A1	6/2/17	CMR	DDM	REVISED ISSUED FOR BID
A	4/18/17	CMR	DDM	ISSUED FOR BID

SUB CONSULTANT
BOWMAN, BARRETT & ASSOCIATES INC.
CONSULTING ENGINEERS
Chicago, Illinois
312.228.0100
www.bbandainc.com

SEAL / SIGNATURE
SEE COVER SHEET FOR SEAL / SIGNATURE

PRIMARY CONSULTANT
TranSystems
222 SOUTH RIVERSIDE PLAZA, SUITE 610
CHICAGO, IL 60606
PHONE: 312-669-9601
FAX: 312-669-9606

DESIGNED: DDM
DRAWN: CMR
CHECKED: DDM
METRA P.M. D. JURKOWSKI
DATE: 6/2/2017

Metra
ENGINEERING DEPARTMENT
547 W. JACKSON BOULEVARD
CHICAGO, ILLINOIS 60661

LOCATION NAME: Z-100 BRIDGE OVER THE FOX RIVER

TITLE:
TEMPORARY CAUSEWAY PLAN AND ELEVATION

CAD FILE NUMBER: MDW35.3S008.dgn
SCALE: AS SHOWN
DISTRICT: MDW
PROJECT NO. 4794
MILE POST NO. 35.3
SHEET NO. S-008
93 OF 146

DIVISION 2: SITE WORK

SECTION 02120

TEMPORARY ACCESS CAUSEWAY

PART 1: GENERAL

1.01 DESCRIPTION: This work includes the construction, maintenance, and removal of a temporary access causeway in the Fox River for the construction of METRA Bridge MDW Z-100, in accordance with the plans, as specified herein, and as directed by the Engineer.

1.02 EXPERIENCE: The temporary access causeway Contractor must furnish evidence and obtain METRA's approval that they have been engaged in successful installation of temporary causeways for at least five years.

1.03 RELATED WORK: Related work specified, elsewhere includes:

A.	CONSTRUCTION PROCEDURE	Section 01320
B	TESTING AND INSPECTION	Section 01400
C.	TEMPORARY FACILITIES AND CONTROLS	Section 01500
D.	TEMPORARY EROSION CONTROL	Section 02130
E.	MULCH	Section 02135
F.	COFFERDAM	Section 02140
G.	EXCAVATION FOR STRUCTURES	Section 02201
H.	TRACK ROADBED EXCAVATION	Section 02214
I.	CAST-IN-PLACE CONCRETE	Section 03300
J.	STRUCTURAL STEEL	Section 05120

PART 2: PRODUCTS

2.01 GENERAL: All materials and fabricated items must be furnished by an established and reputable manufacturer or supplier.

2.02 Class RR5 and RR3 stone with 0% passing the 3 inch sieve shall be used in accordance with Article 1005.01(c) of the Standard Specifications. Stone shall be Quality A as per Article 1005.1(b) of the Standard Specifications.

2.03 Filter Fabric shall be used in accordance with Article 1080.03 of the Standard Specifications.

PART 3 EXECUTION

3.01 CONSTRUCTION: The causeway stone shall be placed in accordance with Sections 281 and 282 of the Standard Specifications and as follows:

A. The contractor shall locate the limits of the causeway as indicated on the causeway plans. Filter fabric shall be placed on the streambed or ground line prior to placing the embankment. The limits of the causeway shall be established carefully to ensure that no construction activity will harm the substructure units of the US Route 20 overpass, existing Metra Railroad Bridge, and Union Pacific Railroad Bridge. The Contractor shall take utmost care to minimize disturbance of the riverbed at all times and prevent suspension of riverbed material. If the Engineer determines that the Contractor's activities are producing undue disturbance of the riverbed, creating riverbed material suspension, or damage to the existing substructure units; the Contractor shall stop the work and take corrective action before proceeding. Any damage to the existing bridges shall be repaired at the Contractor's expense.

B. The proposed temporary causeway top elevation must not exceed 704.17' above sea level. The as-designed causeway hydraulic computations and hydraulic report summary will be made available to the Contractor upon his/her request.

3.02 PREPAREDNESS, PREVENTION, AND CONTINGENCY PLAN (PPC): Preventing contamination of causeway rock, preventing damage to adjacent structures, and clean up procedures shall be detailed by the Contractor in a Preparedness, Prevention, and Contingency Plan. Contamination includes, but is not limited to, fuel, hydraulic or lubricating fluids, cleaning solutions, dirt, or other debris, which will cause pollution of the river. Damage to existing substructure units shall be determined by inspection of the Field Engineer. All personnel shall be familiar with the procedures outlined in the PPC Plan. The PPC Plan shall be submitted to the Engineer for review and approval prior to commencing causeway construction activities.

A. The Contractor shall maintain the integrity of the causeway throughout its lifespan by adding embankment, rock, or other appurtenances as required, and as directed by the Engineer. The Contractor shall immediately repair all damage caused by floodwater after the water level has returned to normal elevation and reconstruct the causeway at no additional cost to METRA.

B. Temporary facilities may not be constructed using dumped fill or any other erodible material. Erodible material is defined as material subject to transport due to normal or high river flows, or material which may not be 100% recoverable from the waterway. Crushed concrete or reclaimed asphalt pavement will not be permitted.

C. The Contractor shall assume risk of damage to his equipment and the work caused by inundation of his/her selected river access regardless of the flow

event. No extension of time or compensation will be granted to the Contractor as a result of any river flow events that overtop and/or cause failure of his/her system.

D. The Contractor may remove portions of the temporary facilities during high flow events in order to meet the requirements of the **Contingency Plan.** No extension of time or compensation will be granted to the Contractor to remove and subsequently restore his/her system, regardless of the number of occurrences.

3.03 CONTINGENCY PLAN

A. PURPOSE: The purpose of this contingency plan is to provide the Contractor a guide for modifying the temporary causeway to prevent increases in upstream flood stages. This Contingency Plan is a special condition of Permit No. _____ issued by the Illinois Department of Natural Resources – Office of Water Resources (IDNR-OWR).

B. MONITORING: The Contractor shall be responsible for monitoring water surface elevations in the Fox River. The water surface elevations shall be monitored at the location of the existing METRA Bridge, at the South Elgin USGS gage, and at the Algonquin USGS gage. The water surface elevation at the existing METRA Bridge shall be determined at the upstream face of the causeway using standard survey procedures and the water surface elevations at the USGS gages shall be determined from the USGS website at http://waterdata.usgs.gov/il/nwis. The gage information is as follows:

- USGS 05550000 Fox River at Algonquin, IL
  Datum of Gage: 729.48 feet above sea level (NGVD 29) = 729.29 (NAVD88)

- USGS 05551000 Fox River at South Elgin, IL
  Datum of Gage: 687.95 feet above sea level (NGVD29) = 687.70 (NAVD88)

The contractor will daily monitor the river flow forecast using the National Weather Service's Advanced Hydrologic Prediction Service for the Fox River at Algonquin (http://water.weather.gov/ahps2/hydrograph.php?wfo=lot&prob_type=stage&gage=afbi2).

1. The approximate one-year water surface elevation at the upstream face of the existing METRA Bridge is 704.17 ft., which is equal to the maximum allowed elevation of the top of the temporary causeway. It should also be noted that the Estimated Water Surface Elevation (ESWE), as determined by the procedure shown in IDOT Bridge Manual Section 2.3.6.4.2 based

on the surveyed water surface elevation in May of 2010, is equal to 701.25 ft. The two-year water surface elevation at the South Elgin gage is 701.64 ft., which coincides with a gage height of 13.94 ft.; and the two-year water surface elevation at the Algonquin gage is 732.28 ft., which coincides with a gage height of 2.99 ft.

2. The Contractor shall be solely responsible for determining and recording the water surface elevations at the above three locations (job site, South Elgin, Algonquin) before 9:00 a.m. each calendar day the temporary causeway is installed. If the water surface elevation is 702.75 or higher at the existing METRA Bridge, the Contractor shall determine and record the elevations at four hour intervals for each calendar day the temporary causeway is installed. The recorded water surface elevations shall be kept in a suitable log, approved by the Engineer, and e-mailed to the METRA Project Engineer and the Resident Engineer.

C. MODIFICATION: The temporary causeway shall be constructed in accordance with the plans, specifications, and estimates. The allowable maximum top elevation of the temporary causeway is 704.17 ft. and the minimum waterway openings are 25' through each channel. The temporary causeway will be modified by lowering the causeway platform elevation, according to the action plan in section D.

D. ACTION:

When the river flow of the Fox River at Algonquin is forecasted to exceed the 10-year peak flood (5,280 cfs), the contractor will remove stone to lower the causeway platform elevation to 701.75 or lower. Removed stone materials must be stored/stockpiled outside of the floodplain.

When the river flow is forecasted to exceed the 50-year peak flood (6,820 cfs), the contractor will remove the entire causeway, excepting the bottom 1' thickness and filter fabric to avoid unnecessarily disturbing the river bed. Removed stone materials must be stored/stockpiled outside of the floodplain.

E. Filter fabric must be anchored in accordance with Article 282.06.

3.04 RIVER RECREATIONAL ACCESS: The Fox River is a public recreational and navigable waterway. The Contractor shall furnish, install and, at the completion of work in the river, remove signage in and along Fox River upstream and downstream of construction activities at all times. The verbiage shall highlight caution and clearly indicate canoe routes, closed channels and any other impediments to recreational use of the Fox River through the construction zone. Buoy lines shall be implemented to block off areas and guide recreational users to open "safe" areas.

3.05 RIVER BLACKOUT PERIODS: Any construction impacting spawning in the river shall be coordinated with the Illinois Department of Natural Resources. The Contractor is alerted to the fact that the temporary causeway or any portions thereof may not be installed or removed in the Fox River during the fish spawning period from April 1 to June 15. Other temporary facilities in the Fox River that are placed prior to April 1 may remain in use provided there is no direct disturbance to the water. Work may continue provided that the construction activities do not result in temporary or permanent impacts to the Fox River. During the Fox River blackout period, the Contractor may maintain the temporary facilities already in place prior to the blackout.

3.06 REMOVAL: Upon completion of the proposed bridge construction and existing bridge removal, remove all portions of the temporary causeway and restore streambed and banks to original grades and conditions to the satisfaction of the Engineer.

3.07 ALTERNATE CAUSEWAY BY CONTRACTOR

A. Construction of the METRA Bridge MDW Z-100 will involve work in the Fox River that requires both State and Federal Permits. Appropriate permits for work in the Fox River will be obtained from the U.S. Army Corps of Engineers (USACE), the Illinois Department of Natural Resources – Office of Water Resources (IDNR/OWR), and Illinois Environmental Protection Agency (IEPA). The USACE issues Section 404 permits that fulfill their regulatory function over the “waters of the United States”. IDNR/OWR issues permits for construction in floodways and for crossings of streams within the public waters, which includes the Fox River. IEPA provides water quality certification pursuant to Section 401 of Clean Water Act. This certification is mandatory for all projects requiring a Section 404 Permit.

B. The Contractor is responsible for conforming to the conditions, specifications, and commitments of the final Federal and State permits necessary for construction in the Fox River, including the Section 404 (Army Corp Chicago District Regional Permit Program), Section 401 (Clean Water Act, Water Quality Certification), and IDNR/OWR (Part 3700 rules for Construction in Floodways of Rivers, Lakes, and Streams as well as Part 3704 for Regulations of Public Waters as well as Part 3708 for Floodway Construction in Northeastern Illinois) permits. METRA will submit the permit applications with site-specific information related to anticipated access requirements, construction techniques, Fox River hydraulic analysis, and avoidance and minimization efforts within the Fox River and jurisdictional waterway areas highlighted as part of the permit application.

C. The Contractor shall be solely responsible for preparing and submitting any additional information, exhibits and plans necessary to revise the existing permit prior to construction activities in the Fox River, including all information related to site-specific information that deviates from information previously submitted by METRA for the purpose of securing the permits for this project.

The Contractor is alerted to the fact that deviations from the site-specific information previously submitted from permit approval could result in significant delays with respect to securing the necessary permits for construction in the waterway. No extension of time or compensation will be granted to the Contractor as a result of any delay in securing the permit resulting from deviations in the site-specific information related to the Contractor's proposal.

D. The Contractor may select to implement a temporary causeway alterative provided the Contractor is able to obtain the required permits in a timely manner. An alternate causeway and/or temporary bridge plan would then need to be submitted to the Engineer for approval. Alternate causeway and temporary bridge designs are subject to the requirements of this item and shall be signed and sealed by a Structural Engineer licensed in the state of Illinois. The Contractor is fully responsible for the design of the temporary river access and is not limited to the system shown on the plans, and may propose other systems.

E. The Contractor shall obtain the services of a Professional Engineer, registered in the State of Illinois, to prepare the design of any alternate causeway plan and submit the alternate design, including HEC-RAS hydraulic model and waterway information table, and a permit modification for approval by METRA, U.S. Army Corps of Engineers, and the Illinois Department of Natural Resources. The Contractor may not proceed with alternate causeway construction without written approval from all three agencies.

F. A contingency plan for the alternate causeway, similar to the plan described in the preceding, shall also be provided so that the upstream created head will not be greater than 0.1 foot for all storm events including and up to the 100-year flood frequency (1% exceedance probability).

3.08 TEMPORARY JUMP SPANS:

The contractor will be permitted to use two jump spans to cross the two channels. One jump span can be permanently installed across a channel during the entire duration of construction. The second jump span is only to be in place while the contractor is on-site and available to remove the jump span as needed to accommodate boat traffic.

PART 4: MEASUREMENT AND PAYMENT (NOT USED)

END OF SECTION

APPENDIX B

Coordination Documents

Illinois Department of
Natural Resources
One Natural Resources Way Springfield, Illinois 62702-1271
www.dnr.illinois.gov
Bruce Rauner, Governor
Wayne A. Rosenthal, Director

December 1, 2017

Mr. Loren Wobig
Illinois Department of Natural Resources
Office of Water Resources
One Natural Resources Way
Springfield, IL 62702-1271

RE: Metra Bridge MDW-Z100 Over Fox River, DuPage County
Endangered Species Consultation Program
EcoCAT Review #1708797

Dear Mr. Wobig:

The Department has received your submission for this project for the purposes of consultation pursuant to the *Illinois Endangered Species Protection Act* [520 ILCS 10/11], the *Illinois Natural Areas Preservation Act* [525 ILCS 30/17], and Title 17 *Illinois Administrative Code* Part 1075. Additionally, the Department may offer advice and recommendations for species covered under the *Fish & Aquatic Life Code* [515 ILCS 5, *et seq.*]; the *Illinois Wildlife Code* [520 ILCS 5, *et seq.*]; and the *Herptiles-Herps Act* [510 ILCS 69].

The proposed action consists of removal of the existing railroad bridge with new replacement construction to follow. New bridge abutments will be located behind the existing abutments and the number of piers will be reduced from 5 to 3. The bridge will be expanded from a 1-track bridge to a 2-track bridge. A retaining wall will be constructed for the second track. During construction, a temporary causeway and temporary jump span(s) will be used.

EcoCAT indicated the Bluff Spring Fen INAI Site, Bluff Spring Fen Nature Preserve, Black-crowned Night Heron (*Nycticorax nycticorax*), and Spike Mussel (*Elliptio dilatata*) could be impacted by this project. Upon further review, the Department has determined impacts to the INAI site, Nature Preserve and Black-crowned Night Heron are unlikely. However, impacts to the Spike Mussel are likely.

The project consultant submitted a draft Conservation Plan to the Department on October 31, 2017. It was forwarded to Jenny Skufca for review and initiated the Incidental Take Authorization (ITA) process. She provided comments to the lead project consultant on November 30, 2017. The draft plan includes the Spike Mussel and other mussel species including the state threatened black sandshell (*Ligumia recta*), state threatened purple wartyback (*Cyclonaias tuberculata*), state endangered rainbow (*Villosa iris*), and state threatened slippershell (*Alasmidonta viridis*). Fish species included in the Draft Conservation Plan include the state threatened River Redhorse (*Moxostoma carinatum*), state endangered Greater Redhorse (*Moxostoma valenciennesi*), and state threatened Starhead Topminnow (*Fundulus dispar*). The Department recommends continued coordination of the ITA for the Spike Mussel and other species with Jenny Skufca.

The project was also reviewed for cultural resource impacts and was determined to be in compliance with the Illinois State Agency Historic Resources Preservation Act.

Consultation on the part of the Department is closed, unless the project proponent desires additional information or advice related to this proposal. Consultation for Part 1075 is valid for two years unless new information becomes available which was not previously considered; the proposed action is modified; or additional species, essential habitat, or Natural Areas are identified in the vicinity. If the action has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary.

The natural resource review reflects the information existing in the Illinois Natural Heritage Database at the time of the project submittal, and should not be regarded as a final statement on the project being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are unexpectedly encountered during the project's implementation, the applicant must comply with the applicable statutes and regulations.

Please contact me with any questions about this review.

Sincerely,

Adam Rawe
Resource Planner
Impact Assessment Section
Department of Natural Resources
(217)785-4991
adam.rawe@illinois.gov

cc. Jenny Skufca, IDNR
Grace Dysico, Transystems

EcoCAT
Ecological Compliance Assessment Tool

ILLINOIS DEPARTMENT OF NATURAL RESOURCES

Applicant: Huff & Huff, Inc.
Contact: Evan Markowitz
Address: 915 Harger Rd Suite 330
Oak Brook, IL 60523

Project: Metra Fox River Bridge
Address: Fox River at Metra Bridge, Elgin

IDNR Project Number: 1411846
Date: 06/02/2014
Alternate Number: 1201964

Description: The Fox River Bridge is a single-track structure which carries Metra's Milwaukee District West Line over the Fox River in Elgin, Illinois. The bridge was constructed in 1881, consisting of six steel spans resting on masonry abutments and piers. A new bridge will be constructed adjacent to the existing bridge to provide a second mainline track over the Fox River. Upon completion of the new bridge, the existing older structure will be removed with a new replacement bridge constructed in its place.

Natural Resource Review Results

This project was submitted for information only. It is not a consultation under Part 1075.

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

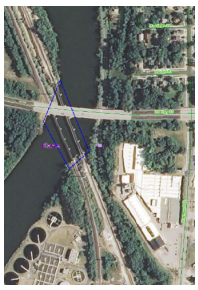
Bluff Spring Fen INAI Site
Bluff Spring Fen Nature Preserve
Black-Crowned Night Heron *(Nycticorax nycticorax)*
Osprey *(Pandion haliaetus)*
Spike *(Elliptio dilatata)*

Location

The applicant is responsible for the accuracy of the location submitted for the project.

County: Kane

Township, Range, Section:
41N, 8E, 24



IL Department of Natural Resources Contact
Impact Assessment Section
217-785-5500
Division of Ecosystems & Environment

Local or State Government Jurisdiction
Other

Disclaimer

The Illinois Natural Heritage Database cannot provide a conclusive statement on the presence, absence, or condition of natural resources in Illinois. This review reflects the information existing in the Database at the time of this inquiry, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, compliance with applicable statutes and regulations is required.

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1. The IDNR EcoCAT website was developed so that units of local government, state agencies and the public could request information or begin natural resource consultations on-line for the Illinois Endangered Species Protection Act, Illinois Natural Areas Preservation Act, and Illinois Interagency Wetland Policy Act. EcoCAT uses databases, Geographic Information System mapping, and a set of programmed decision rules to determine if proposed actions are in the vicinity of protected natural resources. By indicating your agreement to the Terms of Use for this application, you warrant that you will not use this web site for any other purpose.

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Illinois Department of
Natural Resources
One Natural Resources Way Springfield, Illinois 62702-1271
http://dnr.state.il.us

Pat Quinn, Governor
Marc Miller, Acting Director

August 17, 2011

Ms. Alycia A. Kluenenberg
Huff & Huff, Inc.
915 Harger Road, Suite 330
Oak Brook, Illinois 60523-1486

Fox River Bridge Replacement
Metra
IDNR Proj. No. 1201964
Kane County

Dear Ms. Kluenenberg,

The Department of Natural Resources (DNR) has reviewed the above referenced project which was submitted through the Eco-cat review program. Based on further review and information received from your office the project has potential for the need to apply for an Incidental Take Authorization (ITA). The project as described with in-stream work has potential for adverse impact to a listed mussel species, the Spike mussel (Elliptio dilatata). It is important that this process be implemented to assure the project meet any impending construction schedule. Consultation remains open on this project based on your application to implement the ITA.

This coordination effort should be addressed to Mr. Joseph Kath, Endangered Species Project Manager, Division of Natural Heritage, One Natural Resources Way, Springfield, Illinois 62702-1271.

If you have any questions on the above, please contact me at 217-785-4862.

Sincerely,

Steve Hamer

Steve Hamer
Transportation Review Program
Division of Ecosystems and Environment

cc: Joe Kath, IDNR/ORC/Natural Heritage

EcoCAT
Ecological Compliance Assessment Tool

Applicant: Huff & Huff, Inc.
Contact: Alycia A Kluenenberg
Address: 915 Harger Road
Suite 330
Oak Brook, IL 60523

IDNR Project #: 1201964
Date: 08/12/2011

Project: Fox River Bridge Reconstruction
Address: Fox River at Metra Bridge, Elgin

Description: Replacement of the existing bridge, which was built in 1881. Repairs are no longer economically feasible and replacement is necessary to come into compliance with current design criteria.

Natural Resource Review Results

Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)
The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Bluff Spring Fen INAI Site
Bluff Spring Fen Nature Preserve
Black-Crowned Night Heron *(Nycticorax nycticorax)*
Osprey *(Pandion haliaetus)*
Spike *(Elliptio dilatata)*

An IDNR staff member will evaluate this information and contact you within 30 days to request additional information or to terminate consultation if adverse effects are unlikely.

Location
The applicant is responsible for the accuracy of the location submitted for the project.

County: Kane
Township, Range, Section:
41N, 8E, 24

IL Department of Natural Resources Contact
Rick Pietruszka
217-785-5500
Division of Ecosystems & Environment

Local or State Government Jurisdiction
Metra
Andy Roth
547 W Jackson
Chicago, Illinois 60661

Disclaimer

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1. The IDNR EcoCAT website was developed so that units of local government, state agencies and the public could request information or begin natural resource consultations on-line for the Illinois Endangered Species Protection Act, Illinois Natural Areas Preservation Act, and Illinois Interagency Wetland Policy Act. EcoCAT uses databases, Geographic Information System mapping, and a set of programmed decision rules to determine if proposed actions are in the vicinity of protected natural resources. By indicating your agreement to the Terms of Use for this application, you warrant that you will not use this web site for any other purpose.

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MEMORANDUM

To: Kate Sullivan, Project Engineer, Metra
Andy Roth, Manager, Metra

From: Roger Klocek, Senior Scientist, Huff & Huff, Inc.
Jim Novak, Senior Scientist, Huff & Huff, Inc.

Date: November 2, 2010

RE: State Threatened Mussel Species - Metra – Milwaukee District, West Line – Fox River Bridge Reconstruction - Elgin, Illinois

---

Huff & Huff (H&H) conducted a reconnaissance for live mussels in the Fox River for the proposed reconstruction of the Metra Milwaukee District West (MDW) Line Bridge over the Fox River in Elgin, Kane County, Illinois. Figure 1 shows this location and our survey area. This reconnaissance was conducted as a result of the finding of a live spike mussel (*Elliptio dilatata*), a state threatened species at this location on August 25, 2010 during preliminary natural resource investigations for this project. Photographs of the spike mussel are presented in Figure 2.

The reconnaissance was conducted north and south of the existing Metra MDW bridge. This is one of three bridges constructed at this location. The other two bridges include a separate Union Pacific Railroad bridge west of the Metra MDW bridge and the US Route 20 Bridge which spans the river and the two railroad bridges. The reconnaissance was conducted on September 23, 2010. The reconnaissance was limited to the north and south shore near the Metra tracks to record living mussels. H&H combed the near shore area and shoreline for living and dead shells in shallow water on both the north and south shore.

H&H searched the sediments by tactile means for approximately 180 feet of shoreline on the north side of the river and 190 feet on the south shore of the river. The reconnaissance started at the northeast corner abutment of the Metra MDW Bridge and proceeded downstream along the shore. The first 60 feet had fine sediment approximately one to two inches deep covering cobble and had few live mussels. The remaining shoreline was sandier with fine gravel and some scattered cobble. The shoreline dropped off to unworkable depths within approximately six feet of the shore. H&H found six living giant floaters, *Pyganodon grandis*, and two plain pocketbooks, *Lampsilis cardium*, both are common and widespread species in Illinois. . Relic shells of the giant floater were plentiful, along with several relic plain pocketbook shells. Photographs of the live collection are found in Figure 3.

H&H accompanied a Metra flagger to the south shore and examined approximately 190 feet of shoreline. The shoreline waters were generally rocky under the bridges where large boulders and cobble were placed to armor the shoreline. Small pockets of sandy gravel were present here, and larger exposures of sandy substrates were found northeast of the Metra MDW Bridge. This shoreline was the area where the living spike was encountered. H&H found one living mussel, a Threeridge (*Amblema plicata*). In addition, well worn relic shells of the purple wartyback (*Cyclonaias tuberculata*, - state threatened), spike, mucket (*Actinonaias ligamentina*), and round pigtoe (*Pleurobema sintoxia*) were found (Fig. 4). In addition to these relic shells, H&H found a fresher specimen of the spike, which was probably dead earlier this year. Also, many live and dead specimens of zebra mussels, (*Dreissena polymorpha*) were present with the living zebra mussels attached underneath the large boulders. There is a large amount of predation ongoing here with several diffuse middens present. The recently preyed upon spike shell, which was a smaller and younger individual than the one photographed in August, was taken from a midden, which was predominantly composed of zebra mussel shells. H&H searched for the photographed specimen, which was a large old individual, but could not locate it.

Zebra mussel presence is estimated to be low, with six live specimens taken from under one boulder, where they are hard to reach by fish predators. Zebra mussels can overgrow native mussel shells and eventually cause death, but the infestation of zebra mussels on native mussels is not apparent at all at this location.

The immediate environment on the south shoreline of the river provides shelter for many of the fish hosts that carry the larval stage of the spike. However, the habitat of boulders does not provide evident habitat for spike mussels, which are often found in softer bottom conditions. It is possible that these specimens of recent spike have been washed from somewhere upstream by high water events. It is difficult to say if some small population of native mussels is existing in the intestacies between or underneath large boulders. Certainly there are many areas like this that are not searchable by hand.

Recommendations: Live mussels are not abundant at the Metra MDW site in Elgin, especially on the south shore. While it is intriguing that a live spike was found, there seem to be no further spike mussels close to shore in the immediate vicinity of the bridge, which is typical of current spike distribution in the Fox River.

Due to the conditions of the site, no further mussel surveys should be conducted prior to construction as it is unlikely that the spike mussel will be observed; however, because the spike mussel was found in 2010, it is recommended that additional reconnaissance be conducted prior to construction. The reconnaissance can be localized to the exact areas of proposed river disturbance for construction activities. The methods of construction have not been identified at this time. If coffer dams are required for new pier construction, the dewatered areas can be investigated for live mussels and any non-invasive species found will be relocated to safe habitat outside the project limits.

It is also recommended that strict water quality controls be placed on the construction activities, including sediment and erosion control measures in the event that live mussels, including the spike may still be present.

FIGURE 1. Aerial View of Mussel Survey Stations, Fox River, Shown as Dotted Lines

FIGURE 2. Living Spike Mussel Encountered South Shore Fox River 8-25-10

FIGURE 3. Living Giant Floaters and Plain Pocketbooks from the North Shore

FIGURE 4. One Living Threeridge from South Shore Plus Dead and Relic Shells

Illinois Department of
Natural Resources

One Natural Resources Way Springfield, Illinois 62702-1271
http://dnr.state.il.us

Pat Quinn, Governor
Marc Miller, Director

May 12, 2010

Sam Lahniers
Lin Engineering, Ltd.
210 West Chestnut Street
Chatham, IL 62629

Re: Metra Bridge Z-100
Project Number(s): 1009275 [0517-8]
County: Kane

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 is terminated.

This consultation is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, or Natural Areas are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary.

The natural resource review reflects the information existing in the Illinois Natural Heritage Database at the time of the project submittal, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, you must comply with the applicable statutes and regulations. Also, note that termination does not imply IDNR's authorization or endorsement of the proposed action.

Please contact me if you have questions regarding this review.

Steve Hamer
Division of Ecosystems and Environment
217-785-5500

Illinois Natural Heritage Database
Endangered /Threatened Species Occurrence and Sighting Report Form

Name of Species:	Spike mussel (Elliptio dilatata)			**Date Observed:**		Aug 25, 2010	
New Sighting	✓	or **Update**		Entire extent of occurrence is:		**known** OR	✓ **not known**
Naturally Occurring	✓	or **Introduced** Location		**When?**		**From Where?**	

Location: (For more accurate mapping, please provide a map showing the exact location)
Along east bank of Fox River south of Elgin.

County:	Kane	**Latitude**	42.019463	**Longitude**	-88.275177

Direction from Nearest Landmark: Approximately 279 feet south of US Route 20 Bridge over Fox River.

On east bank of the Fox River, under the Metra Milwaukee District line bridge over the Fox River.

Of two railroad bridges here, the Milwaukee District line is the east bridge.

Natural Division and Section:

Legal Description:	Township	41N	Range	8E	Section	24	Quad name	Elgin

INAI Site Name:	N/A	**Survey Site Name (alias)**	N/A

Observations: (evidence of breeding or # of ♂,♀& juvenile animals or # fruiting/flowering/seedling plants, etc.):
fruiting/flowering/seedling plants

One individual spike mussel located on the east shoreline/bank of the Fox River. Approximately 15 years old based on shell.

Description of Area: On the outside bend of the Fox River south of Elgin and underneath the Metra Bridge over the Fox River. Degraded area consisting of large boulders and riprap used to armor the river bank on the outside of the bend.

Comments: Spike mussel was found at water's edge. No other live mussels were noted. Mussel was only partially within the water. After photographs taken, mussel was placed back in river within the boulder riprap area in approximately 18 inches of water. At the time, identification was not known until verified by R. Klocek.

Specimen/voucher #(s):	Photos attached	**Where deposited?**	Within 3 feet of finding.

Name of Observer:	Jim Novak, Senior Scientist, Huff & Huff, verified by Roger Klocek, Senior Scientist Huff & Huff						
Observer's Phone Number	(	630	)	684	-	4411	jnovak@huffnhuff.com

Return to: Illinois Natural Heritage Database Program Manager, Illinois Department of Natural Resources, One Natural Resources Way, Springfield IL 62702-1271

Rev 11/07

EcoCAT
Ecological Compliance Assessment Tool

Applicant: Lin Engineering, Ltd.
Contact: Sam Lahniers
Address: 210 West Chestnut Street
Chatham, IL 62629

IDNR Project #: 1009275
Alternate #: 0517-8
Date: 05/11/2010

Project: Metra Bridge Z-100
Address: US 20 over Fox River, Elgin

Description: Metra bridge over Fox River in Elgin, IL to be replaced and removed.

Natural Resource Review Results

Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)
The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Bluff Spring Fen INAI Site
Bluff Spring Fen Nature Preserve
Black-Crowned Night Heron *(Nycticorax nycticorax)*
Elfin Skimmer *(Nannothemis bella)*
Osprey *(Pandion haliaetus)*

An IDNR staff member will evaluate this information and contact you within 30 days to request additional information or to terminate consultation if adverse effects are unlikely.

Location
The applicant is responsible for the accuracy of the location submitted for the project.

County: Kane
Township, Range, Section:
41N, 8E, 24

IL Department of Natural Resources Contact
Keith Shank
217-785-5500
Division of Ecosystems & Environment

Local or State Government Jurisdiction
IL Department of Natural Resources
Steve Hamer
One Natural Resources Way
Springfield, Illinois 62702-1271

Disclaimer

The Illinois Natural Heritage Database cannot provide a conclusive statement on the presence, absence, or condition of natural resources in Illinois. This review reflects the information existing in the Database at the time of this inquiry, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, compliance with applicable statutes and regulations is required.

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APPENDIX C

Finding of No Significant Impact (FONSI)

Federal Transit Administration

Region V

MILWAUKEE WEST LINE FOX RIVER BRIDGE IMPROVEMENT PROJECT (Metra Bridge Z-100) Elgin, Illinois

Finding of No Significant Impact (FONSI)

A. Introduction

This document provides the basis for a determination by the U.S. Department of Transportation (USDOT), Federal Transit Administration (FTA), of a Finding of No Significant Impact (FONSI) for the Milwaukee West Line Fox River Bridge Improvement Project (Metra Bridge Z-100) (the Project). This determination is made in accordance with the National Environmental Policy Act (NEPA) of 1969, 42 United States Code (U.S.C.) § 4331 *et seq*.; FTA's implementing procedures (23 Code of Federal Regulations [CFR] § 771.121); Section 4(f) of the USDOT Act of 1966, 49 U.S.C. § 303; and the National Historic Preservation Act of 1966, 54 U.S.C. § 300101 et seq.

FTA, as the federal lead agency, and Metra, as the local project sponsor, jointly prepared the Environmental Assessment (EA) to describe potential impacts on the physical, human, and natural environment that may result from the proposed Milwaukee West Line Fox River Bridge Improvement Project (Metra Bridge Z-100). The EA was prepared pursuant to 23 CFR § 771.119 and issued by FTA on February 8, 2017. This FONSI is prepared by FTA pursuant to 23 CFR § 771.121, and incorporates, by reference, the EA and other cited documentation.

B. Existing Conditions

The Project is located at the Metra Milwaukee West Line's crossing of the Fox River in Elgin, Illinois. **FIGURE 1** is a map of the project limits. The Metra Bridge Z-100 is located approximately 35 miles northwest of downtown Chicago. It is a single-track, 12-foot wide, 504-foot long railroad bridge structure over the Fox River. The Fox River is a tributary of the Illinois River, flowing from southeastern Wisconsin to Ottawa, Illinois. The Project is located in Township 41N, Range 8E, in Section 24 within the City of Elgin, Kane County, Illinois. Approximately 50 feet west of (downstream) and parallel to the Project bridge is another railroad bridge which is owned and operated by the Union Pacific Railroad (UPRR). US Route 20 is located adjacent to, and over, the two railroad bridges. It is owned and operated by the Illinois Department of Transportation (IDOT).

The Metra Milwaukee West Line is one of 11 commuter rail lines that Metra operates in northeastern Illinois. The Milwaukee West Line is 39.8 miles long and operates between the Big Timber Road Station in the City of Elgin and Chicago Union Station in the City of Chicago. Fifty-four Metra Milwaukee West Line commuter rail trains operate over the Fox River bridge daily, carrying over 6.8 million passengers per year. In addition to these commuter rail trains, up to eight Canadian Pacific (CP) freight trains also use the bridge over the Fox River daily.

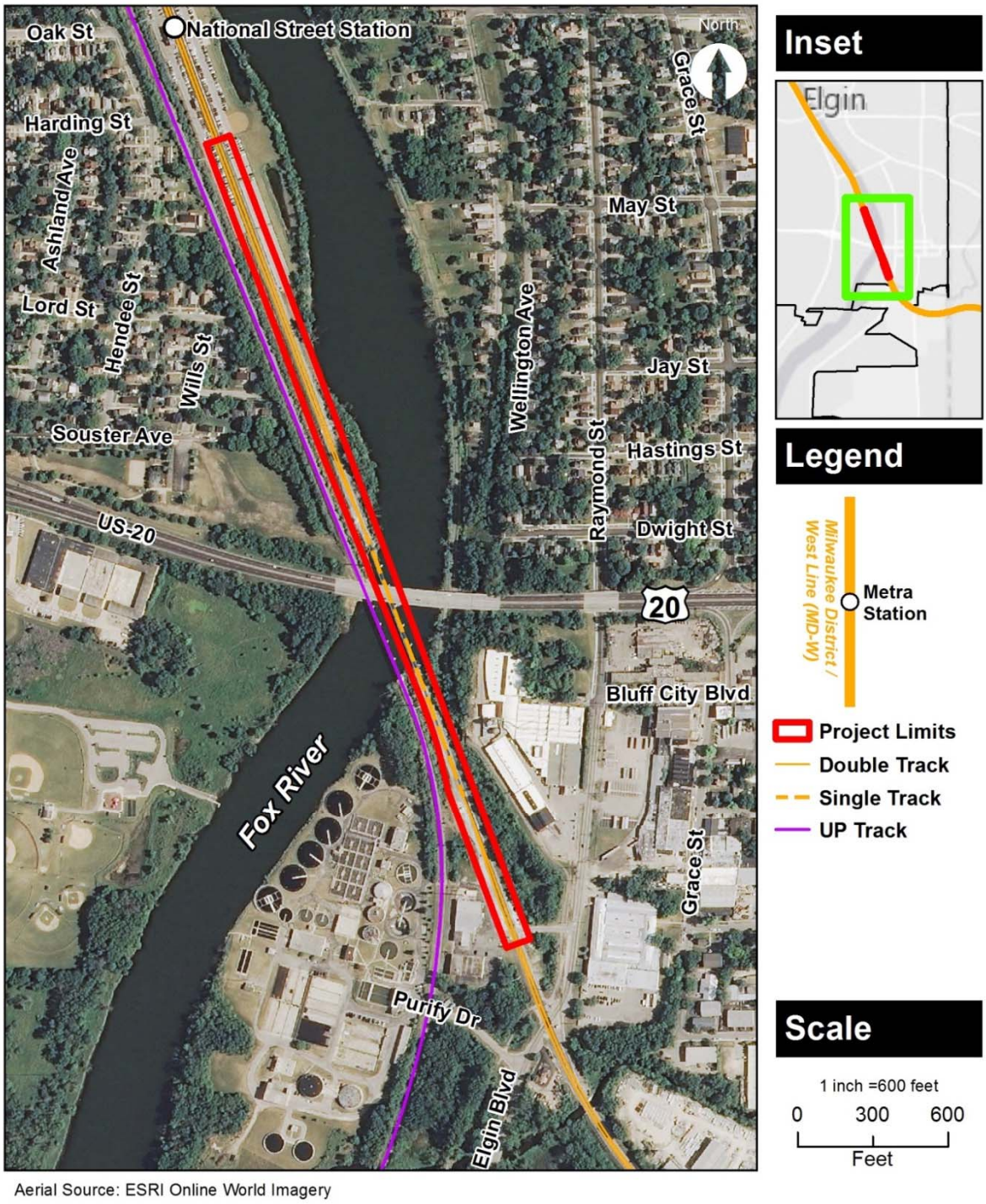

Figure 1: Project Limits Map

The existing, single-track bridge was constructed in 1881, consisting of six steel spans resting on masonry abutments and five piers. Extensive modifications to the bridge were made in 1905 and 1926. Three of the original spans were replaced in 1905, and the other three were replaced in 1926. The piers and abutments date from the original 1881 construction, with cast-in-place concrete modifications as required to accommodate the new span beams from 1905 and 1926. The existing bridge is owned and maintained by Metra.

Based on field inspections conducted in 2009, the bridge is in overall poor condition. This means that some bridge elements have advanced deficiencies and that these weaknesses affect the overall structural capacity and serviceability of the bridge. The bridge's steel spans, which date from 1905 and 1926, have been significantly corroded by moisture and salt. In addition, the masonry piers and abutments need to be strengthened to bring them into compliance with current railroad design criteria regarding resistance to forces generated by train movement on the structure.

The existing land use in the project area, which extends beyond the project limits, is currently zoned as CF – "Community Facility" on the 2010 City of Elgin Zoning Map. Conditional land uses enumerated for CF zoning include both railroad tracks and railroad bridges. A zoning change is not expected, as the railroad bridge would remain a public transit facility. A small portion of the southern end of the Project area is currently zoned as CI – "Commercial Industrial" on the 2010 City of Elgin Zoning Map. This zoning district is noted as the least restrictive type of zoning, and allows railroad tracks as a conditional use. The Project limits are already occupied by the existing bridge and track alignment.

C. Project Purpose and Need

The purpose of the Project is to provide an improved railroad bridge for the Metra Milwaukee West Line crossing of the Fox River – replacing the existing bridge and adding a second mainline crossing. This Project is needed to improve the bridge condition, reliability and operations.

The existing bridge shows significant deterioration. Spray from deicing salt on the US Route 20 highway bridge above has contributed to steel corrosion on the railroad bridge.

Recent inspections have found that some of the beam flanges have lost up to 25% of their steel from rust and corrosion. There is a crack in the top flange, and holes have rusted through the beam webs. In the past few years, structural steel on the bridge has required repairs on several occasions. However, even with the repairs, the bridge is not compliant with current design standards and requirements.

The existing piers and abutments are made of stone masonry and were constructed in 1881. In 1926 and 1941, concrete encasements, or coverings, were added to protect the stone masonry of the piers below the river water line. Though tests show that the piers are in "fair" to "good" condition, they do not meet current AREMA standards for resisting the back and forth stresses generated by the braking and acceleration of trains on the bridge.

The reliability and operation of the Milwaukee West Line are constrained by the existing single-track bridge. A single-tracked bridge is not typical of most mainline river crossings. Most new rail crossings provide two mainlines, or double-tracked bridges, which improve bridge capacity, improve reliability along the line, and allow for greater flexibility in operations and maintenance activities. Additionally, except for the existing bridge, there are a minimum of two mainline tracks along the Milwaukee West line from Elgin's Big Timber Station to Chicago Union Station. The existing single-track bridge acts as a bottleneck; trains that approach the bridge at the same time, from either direction, need to wait for their turn to pass over the bridge.

Fifty-four Metra trains and up to eight CP freight trains per day cross the Fox River on the existing bridge. With only one track across the bridge, train service schedules are unreliable. The current demand cannot be met without delays. The unreliable train service schedules and delays result in wasted fuel and additional emissions.

Increasingly frequent delays and unreliable service schedules, primarily due to increased frequency of maintenance activities on the existing bridge, would discourage riders from using passenger rail as an alternative to the automobile, and businesses and employees in the Milwaukee West Line corridor would lose much of the economic benefit currently provided by Metra service. In addition to traditional suburb-to-Chicago commuting patterns, the bridge currently links many reverse commuters with jobs in Elgin. Nearly 20% of passengers using Metra's Chicago Street Station in Elgin during the morning peak period alight rather than board, as commuters travel to Elgin employers. Dependable transportation links between jobs and qualified workers are particularly important to the City of Elgin, which qualifies under federal guidelines as an Economically Distressed Area.

D. Alternatives Considered

The Project evolved through a multi-year planning process that began in 2010. Two alternatives were considered as part of the EA, the No Build Alternative and the Preferred Build Alternative.

No Build Alternative

The No Build Alternative would maintain the existing single track bridge, and repairs and maintenance on the existing bridge would continue. However, the nature and extent of the repairs would become greater, more frequent, and more costly. Detailed repairs would include rehabilitation of the existing masonry piers, including repair of spalled/damaged stone, tuck pointing masonry joints, and pressure grouting. The three western spans located under US Route 20 would be replaced in the near future due to accelerated corrosion caused by salt spray and drainage from the highway facility above. Other maintenance concerns are documented in the EA. It is important to note that as a result of these required repairs, some of which are extensive, the No Build Alternative does not mean no construction would occur on the bridge.

The No Build Alternative would be the least environmentally disruptive alternative; however, the No Build Alternative does not meet the Project's Purpose and Need. If the bridge is not replaced, the current bridge would continue to deteriorate. The condition of the bridge has reached a point where

further repairs are not economically feasible. The No Build Alternative is quite expensive, with a construction cost estimate of $14 million. If the bridge is not replaced, repairs would have to be made more frequently. Piecemeal repairs, especially unplanned projects, are an inefficient use of labor and may disrupt train schedules. Without replacement and upgrade of the existing bridge, future speed restrictions could be implemented and a critical point on the Line would continue to be vulnerable to blockage.

Preferred Build Alternative

FIGURE 2 shows the components of Preferred Build Alternative. Improvements under the Preferred Build Alternative would construct a new single-track bridge immediately west (downstream) of the existing bridge. This new bridge would be aligned with the existing inbound track (Track #2) and located between the existing bridge and the Union Pacific Railroad bridge.

The proposed new bridge would have four spans, three piers, and two end abutments. After the new bridge is constructed and the Track #2 connections are made at the ends of the bridge, train service would be transferred from the existing bridge to the new bridge. The existing bridge would then be demolished. Next, the three piers on the new bridge would be extended easterly to the location of the demolished existing bridge. These piers would support the spans (or beams) for the new bridge along Track #1, which adds a second track crossing. This second track would become the outbound track and would align with the existing outbound Track #1 on both sides of the Fox River.

The new bridge would have a ballasted deck, providing a superior ride, less expensive maintenance, and better protection from moisture and salt damage than the existing open-deck design.

In addition to the bridge structure, the Preferred Build Alternative would replace signal components near the bridge, including the wayside signal devices, switch machines, snow-melters and a backup generator. A new interlocking would be installed, sheltered in two new relay houses on either side of the bridge. New underground cable for the signal system would be installed and would be compliant with Positive Train Control standards.

The preliminary construction cost estimate for the Preferred Build Alternative is based on conceptual engineering and will be refined through ongoing preliminary and final engineering. The anticipated capital cost of the Project is approximately $34 million.

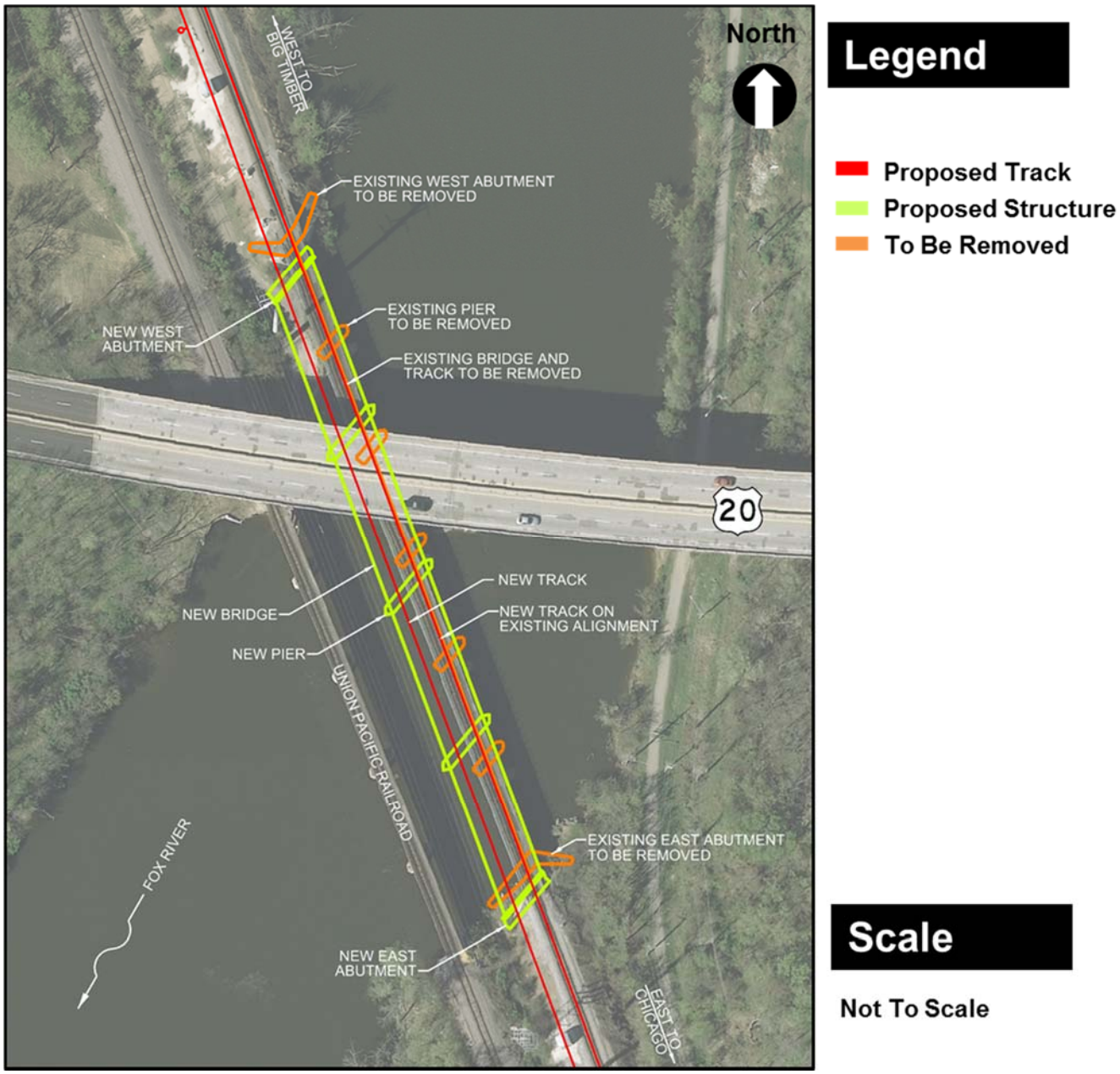

FIGURE 2: Preferred Build Alternative – Construct a New Double-Track Bridge on Existing and Downstream Alignment

E. Public Involvement, Agency Coordination, and Public Opportunity to Comment

The EA document was made available for public comment from February 10, 2017 to March 16, 2017. The legal Notice of Availability was published on February 10, 2017 in the Chicago Sun-Times, Elgin Courier-News and Daily Herald. Copies of the document were available for review online through the Metra website (in PDF format) and in hardcopy format during this period at the following locations:

Metra headquarters (547 W Jackson Blvd, Chicago, IL 60661), and Elgin – Gail Borden Public Library (270 N Grove Avenue, Elgin, IL 60120). Comments were accepted via the Project e-mail address, the Project phone number, and U.S. mail through March 16, 2017. Comments were also accepted in writing and verbally at the public hearing on March 2, 2017.

Metra held a public hearing on Thursday, March 2, 2017 at the Centre of Elgin Recreation Facility, Heritage Ballroom (100 Symphony Way, Elgin, IL 60120) from 5:00 p.m. to 7:30 p.m. The public hearing was publicized by directly mailing invitations to over 2,800 residents within a half-mile of the project limits. Email invitations were sent to staff at various state and federal agencies and to key stakeholders such as the City of Elgin, state and local elected officials, emergency services, Elgin Area Chamber of Commerce, Elgin Parks and Recreation, and special interest groups. Advertisements were also published in local newspapers and bilingual (English and Spanish) flyers were placed at the three Elgin stations and the Bartlett station. Over a dozen organizations and social media groups posted information about the public hearing, including Kane County Connects, Linked Local Elgin, City of Elgin, and Illinois State Senator Cristina Castro. A press release was sent to local media outlets and posted on the Metra Facebook page. Local media outlets published articles announcing the Project and the public hearing.

A total of thirty-four people, including one media representative, signed in at the public hearing. One attendee did not wish to sign in and only picked up a comment form. All attendees were provided with a project Factsheet (brochure) and a comment form at the sign-in desk.

The public hearing was held in an open house format. Six project exhibit boards were on display. The exhibit boards described the project area, the purpose and need, findings of the EA, the alternatives analysis, the public comment opportunities, the project cost and funding, the next steps and the schedule. Public hearing attendees were invited to view the exhibit boards, and speak with staff from Metra, FTA, and the consultant team to discuss specific issues and ask specific questions regarding the Project. Metra provided comment forms to all attendees at the sign-in desk and additional forms were available at the comment area tables. A court reporter was also available to take public comments verbally. A hardcopy of the EA with all EA appendices was available at the public hearing for attendees to review. Metra made the public hearing exhibit boards and comment form available on the Metra website after the public hearing.

Metra received a total of 8 comments from the public during the comment period, including an agency comment letter from the United States Environmental Protection Agency (USEPA). No comments were submitted verbally to the court reporter. No additional comments were received through the project email address, the U.S. mail, or phone number. FTA and Metra have addressed the comments received in this FONSI. **Attachment A** contains a summary table of the comments and responses, copies of the seven comments forms and the USEPA letter.

No changes to the EA were necessary as a result of the public comments. Five of the seven public comments generally stated support for the Project. Other comments included:

- Support for lessening the number of piers in the river.

- Concerns of dust control during construction and its impacts to the river.
- Requesting a bike path under the bridge to connect to the west side of the river.
- Requesting additional bicycle accommodations and amenities on Metra trains and stations, including 1st-Last Mile shuttles, and bike-share stations.
- An agency comment letter from the USEPA seeking additional clarification on water quality, mussels, and air quality.

As stated above, responses to comments received are included in **Attachment A**.

F. Mitigation Measures to Minimize Harm

The EA describes the proposed Project, its likely impacts, and potential mitigation measures to avoid or minimize those impacts. **Attachment B** describes the mitigation commitments that FTA requires of Metra as a condition of FTA's finding that the project will have no significant impact. These mitigation commitments are based on the mitigation measures identified in the EA, and presented at the public hearing on March 2, 2017. Satisfaction of the mitigation commitments will be a condition of any grant that FTA may make for the project.

G. Environmental Determinations and Findings

National Environmental Policy Act (NEPA) Finding

FTA served as the lead agency under NEPA for the Project. Metra will construct the Project in accordance with the design features and mitigation measures presented in the EA as well as this Finding of No Significant Impact. Metra prepared the EA with FTA oversight in compliance with NEPA, 42 U.S.C. § 4321, et. seq., and 23 CFR § 771.121. FTA has made an independent evaluation of the EA.

After reviewing the EA and supporting documents, including public comments and responses made thereto, FTA finds that the Project would result in permanent impacts on two resource categories: Displacements and relocations of existing uses (0.33 acres of permanent easement will be acquired from the UPRR), and flooding (fill will be placed in the floodway from permanent piers and abutments, but will be mitigated by providing compensatory storage). FTA finds that the Project would not result in any substantial permanent impacts on the following resource categories: neighborhoods, communities, and businesses; historic and archaeological resources; water resources; biological resources; noise; vibration; hazardous materials; environmental justice communities; air quality; land use and economic development; navigable waterways and coastal zones; geology and soils; energy; safety and security; visual and aesthetic conditions; indirect and cumulative impacts; and Section 4(f) resources.

FTA finds that the Project would result in temporary construction impacts on the following resource categories: displacements and relocations of existing uses; neighborhoods, communities, and businesses; water resources; flooding; biological resources; and hazardous materials. **Attachment B**

contains proposed measures to mitigate these impacts.

Pursuant to 23 CFR § 771.121, FTA finds that the proposed Project with mitigation, to which Metra has committed, will have no significant impact on the environment. The record provides sufficient evidence and analysis for determining that an Environmental Impact Statement is not required.

Section 106 Finding

In compliance with Section 106 of the National Historic Preservation Act of 1966 and in accordance with the Criteria of Adverse Effect described in 36 CFR § 800.5, FTA determined that there are no properties on, or eligible for, the National Register of Historic Places within the Project's Area of Potential Affect (APE). The Illinois Historic Preservation Agency (IHPA), acting as the State Historic Preservation Officer (SHPO), concurred with these determinations on October 30, 2015. Since there are no historic properties in the APE, the Preferred Build Alternative would not directly or indirectly result in adverse effects on historic and cultural resources. Therefore, no additional measures to avoid or minimize harm are necessary as no adverse impacts are present.

Based on the historic resources analysis included in the EA as well as the consultation with IHPA, **FTA finds, in accordance with 36 CFR § 800, that the Section 106 coordination and consultation requirements for the Project have been fulfilled.**

Environmental Justice Finding

Executive Order 12898 provides that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and/or low-income populations." A disproportionately high and adverse effect on minority or low-income populations is defined as an adverse effect that: (a) is predominantly borne by a minority population and/or a low-income population; or (b) will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low-income population.

Based on the analysis contained in the EA and the mitigation commitments made by Metra, the Milwaukee West Line Fox River Bridge Improvement Project (Metra Bridge Z-100) would not result in adverse environmental justice impacts. As a result, **FTA finds that the Project will not result in disproportionately high and adverse effects on minority or low-income populations.**

Air Quality Conformity Finding

The Milwaukee West Line Fox River Bridge Improvement Project (Metra Bridge Z-100) is identified in the FY 2016-2020 Chicago Metropolitan Agency for Planning's (CMAP) Transportation Improvement Program (TIP) under ID #18-16-0028 and was approved into the TIP on May 25, 2016. Funding for the Metra Bridge Z-100 Project is included in this constrained TIP endorsed by the Metropolitan Planning Organization Policy Committee of CMAP for the region in which the Project is located. As

this TIP is amended and TIPs for future years are developed, funding may be adjusted, if needed, to support construction of the Metra Bridge Z-100 Project. The Project is also consistent with CMAP's 2040 Regional Transportation Plan (*GO TO 2040*). On October 21, 2014, the Federal Highway Administration (FHWA) and FTA determined that the 2040 Regional Transportation Plan conforms to the State Implementation Plan (SIP) and the transportation–related requirements of the 1990 Clean Air Act Amendments. On June 5, 2015, FHWA and FTA approved the TIP for inclusion in the State Transportation Improvement Program (STIP) after determining that the TIP also conforms to the SIP and the Clean Air Act Amendments. These findings were in accordance with 40 CFR § 93, "Determining Conformity of Federal Actions to State or Federal Implementation Plans." The Metra Bridge Z-100 Project's design and scope are consistent with the project information used for the TIP conformity analysis; therefore, **FTA finds that the Project conforms to the existing SIP and the transportation-related requirements of the 1990 Clean Air Act Amendments.**

Section 4(f) Finding

Section 4(f) of the USDOT Act of 1966 (49 U.S.C. § 303) is a national policy which states that the Secretary of Transportation may not approve transportation projects that use publically owned parks, recreation areas, wildlife and waterfowl refuges, or any significant historic site unless a determination is made that there is no prudent or feasible alternative to using that land, and that all possible planning has been done to minimize harm. The requirements for treatment of these resources are codified in federal law in 49 U.S.C. § 303 and 23 U.S.C. § 138, and implemented through 23 CFR § 774.

Based on the evaluation in the EA, no public parklands, recreational areas, historic sites, or wildlife and waterfowl refuges that are afforded protection by Section 4(f) are within the proposed Project limits. **FTA finds that the Project is in compliance with the Section 4(f) regulations at 23 CFR § 774.**

H. Conclusion

Based on the EA and its associated supporting documents, FTA finds that pursuant to 23 CFR §771.121, there are no significant impacts on the environment associated with the development and operation of the proposed Milwaukee West Line Fox River Bridge Improvement Project (Metra Bridge Z-100). Preparation of an Environmental Impact Statement is not warranted.

for Marisol Simón
Regional Administrator
U.S. Department of Transportation
Federal Transit Administration

May 22, 2017
Date

ATTACHMENTS

A. Agency and Public Comments and Responses

B. Mitigation Commitments Table

ATTACHMENT A

Agency and Public Comments and Responses

Milwaukee West Line Fox River Bridge Improvement Project - Environmental Assessment
Agency and Public Comment and Response Log

#	Commenter	Source	Agency and Public Comments	Response
AGENCY COMMENTS				
1	U.S. Environmental Protection Agency Region 5 77 W. Jackson Blvd Chicago, IL 60604	Letter	[Comment letter provided at the end of this log.] Comments about Water Quality: - Identify Metra's commitments to protect water quality during construction and demolition - Consider including a drainage system to convey storm water to land for treatment to reduce long-term impacts to water quality	To minimize impacts to water quality during construction and demolition, Metra's Contract Documents would require compliance with the latest version of the Illinois Department of Transportation's (IDOT) Standard Specifications for Road and Bridge Construction, specifically Section 280 Temporary Erosion and Sediment Control and Section 501 Removal of Existing Structures (IDOT, 2016). Regarding bridge drainage, Metra would follow the appropriate Section 404 and Section 10 permitting processes, and would comply with requirements of the permitting agency, i.e., the United States Army Corps of Engineers (USACE). Metra has taken EPA's suggestion to include a drainage system to convey storm water to land for treatment into further consideration. However, our current analysis suggests that it would not be feasible given several constraints. Given currently developed land in the proximity of the bridge, this could involve the use of parklands or private property resulting in other impacts. Possible treatment options considered included bio-swales, retention basins, and other Best Management Practices (BMPs). In order for Metra to treat storm water before conveying it to a storm water system, land would need to be acquired. In the area west of the river and north of the tracks, the Fox River bank meets the bottom of the Metra embankment, so there is no room to fit a bio-swale or retention basin. West of the river and south of the tracks, there is an existing access road between Metra and UP's railroads leaving no room for a bio-swale or retention basin. East of the river and south of the tracks, the Preferred Build Alternative includes a retaining wall to avoid Union Pacific property and impacts to numerous electrical towers and poles. As a result, there is no room for a bio-swale or retention basin. The only possible quadrant for a bio-swale or retention basin is east of the river and north of the Metra tracks. However, the Metra embankment ends

#	Commenter	Source	Agency and Public Comments	Response
1 cont'd	U.S. Environmental Protection Agency Region 5 77 W. Jackson Blvd Chicago, IL 60604	Letter		at the right-of-way line. The existing embankment slope is already steep (1.5:1). The bio-swale or retention basin would have to be placed outside the right-of-way on Kane County Forest Preserve property, posing a potential Section 4(f) impact. There would be associated tree impacts as well. In addition, there are wetlands along the riverfront at this location; this storm water feature may impact those wetlands. It is estimated that approximately 5,000 square feet (0.1 acres) of potentially Section 4(f) protected property may need to be acquired. Additionally, removal of approximately 40 trees and relocation of a segment of the existing Fox River Trail bike path would be required.

#	Commenter	Source	Public Comments	Response
AGENCY COMMENTS				
1 cont'd	U.S. Environmental Protection Agency Region 5 77 W. Jackson Blvd Chicago, IL 60604	Letter	Comments about Mussels: - Identify Metra's commitments to protect mussels and coordination with IDNR in the NEPA decision document	Metra would apply for an Incidental Take Authorization (ITA) through the IDNR. Metra would implement the Conservation Plan to be developed as part of the ITA for the spike mussel. The Conservation Plan would state that Metra would perform mussel surveys prior to construction and take measures to avoid, minimize, and mitigate impacts. The goal of the mussel surveys is to identify and capture live native mussels in the construction area and relocate them to suitable, similar habitat in the Fox River.
			Comments about Air Quality: - Include all potential sources that may impact air quality - Identify Metra's commitments to reduce construction emissions - Address commitments related to impacts on children's health	Section 3.12.2 of the EA states "The Preferred Build Alternative could result in some adverse impacts on air quality during construction from construction equipment exhaust. Impacts during construction would be primarily associated with fugitive dust and emissions from on-road and non-road vehicles." Temporary incremental air quality impacts during construction may also occur from demolition activities, construction worker commuting, and truck trips for delivery and hauling of materials. Despite an increase in vehicular traffic, no increases in traffic congestion during construction would be anticipated. As such, no adverse air quality effects from increased traffic resulting from construction would be expected. The Project would comply with Illinois Environmental Protection Agency guidelines for controlling fugitive dust, diesel particulate emissions, and GHG emissions, so no impacts are anticipated. Potential impacts would be further controlled through implementation of appropriate construction BMPs. Because of the close proximity of the project site to sensitive receptors, such as residences, schools, and community facilities, diesel exhaust emissions will be minimized through the use of BMPs. These practices minimize air quality impacts by limiting idling times of trucks and equipment, maintaining equipment in proper working order, and reducing electricity consumption at the construction sites.

#	Commenter	Source	Public Comments	Response
AGENCY COMMENTS				
1 cont'd	U.S. Environmental Protection Agency Region 5 77 W. Jackson Blvd Chicago, IL 60604	Letter		To reduce construction emissions, Metra's Contract Documents would require the Contractor to comply with all applicable standards, orders, or regulations issued pursuant to the Clear Air Act, as amended, 42 U.S.C. §§ 7401 et seq. Metra's Contract Documents would also require compliance with the latest version of IDOT's Standard Specifications for Road and Bridge Construction, specifically Section 107.41 Construction Air Quality (IDOT, 2016). In regards to impacts on children's health, there are no schools or daycares within the project limits; however, there is a ballpark in the southwest quadrant of the project area and Gorlich Park in the southwest side of the project area. Three of the nearest elementary schools within the project area, are each located over a quarter mile away from the project limits. No significant construction or permanent air quality impacts would result from the project. To minimize any impacts on children's health, where feasible, Metra's Contract Documents would require compliance with the latest version of IDOT's Standard Specifications for Road and Bridge Construction, specifically Section 107.36 Dust Control (IDOT, 2016). Compliance with IDOT's Dust Control specification would reduce vehicle speed on unpaved roads, or on-site access roads or hauling routes, cover haul vehicles and minimize any track out of soil to nearby paved roads.
			Comments about Public Outreach and Input: - Update the public outreach section with current information and input received	Section E of the FONSI includes a description of Public Outreach and Input, including how the EA was made available for public review, methods used to promote the public hearing, and a summary of comments received within the comment period. A total of eight comments were submitted within the comment period, including this agency comment letter from the USEPA.

#	Commenter	Source	Public Comments	Response
PUBLIC COMMENTS				
1	Anonymous	Public Hearing Comment Form	Due to the traffic and the incredible lifespan, this bridge clearly needs to be replaced. I like the promise of less piers to lessen the impact on water flow. I am slightly concerned about the dust generated by the project and hope that great effort will be taken to reduce dust and contamination of the river.	Thank you for your comments. Metra would minimize the dust generated by the demolition and construction of the project by including specifications requiring the use of water sprayers and other BMPs in the design documents. BMPs would also be included to minimize contamination of the Fox River, including using a silt curtain, performing soils testing before excavation and working within a cofferdam or causeway to construct the bridge. These measures would minimize impacts to the river during construction of the Project.
2	Anonymous	Public Hearing Comment Form	Looks like a good thought out project, thinking about the commuters and the Elgin residents. Well planned project.	Thank you for your comment.
3	Anonymous	Public Hearing Comment Form	Very good presentation Information boards were well done Staff answered a couple questions I had Look forward to the project No concerns.	Thank you for your comment.
4	Karen Kase kasekaren@gmail.com	Public Hearing Comment Form	Can you put a bike path under the bridge & connect to the ballparks on the west side?	Thank you for your comment. Although Metra supports the development of pedestrian and bicycle connections, there is no plan to add a bicycle path under the bridge as part of this Project. As the river is used for boating and other recreational activities, there is not sufficient available clearance between the surface of the river and the underside of the bridge spans to add a bike path under the bridge. Adding a bike path to either side of the bridge would require a cost-prohibitive new bridge span with extended piers in the river, and would add substantial delays in design and construction schedules. Extended piers in the river could also create negative impacts to water quality.

#	Commenter	Source	Public Comments	Response
PUBLIC COMMENTS				
4 cont'd	Karen Kase kasekaren@gmail.com	Public Hearing Comment Form		Also, there is no existing connecting trail northwest of the bridge to the ball parks. A new trail would need to cross the railroad tracks (likely as a track-level separated tunnel or bridge) to connect from the ball parks, northwest of the bridge, to the existing trail, southeast of the bridge (see clearance issues above). This would require the participation of third party stakeholder(s) and/or land owner(s).
5	Glen Holland Metra Community Advisory Board Member 770 W. Highland Ave Elgin, IL 60123 224-325-8005 GlenRayHolland@live.com	Public Hearing Comment Form	It is outstanding to have such a complete and detailed plan shared with the riders and the public community at large. I have had many occasions waiting a few or more minutes on this bridge wondering how long a single track. Long time overdue. Very happy to see our government working well on planning and funding our future. Thanks.	Thank you for your comments. The goal of the project is to both replace the deteriorating bridge and eliminate the bottleneck caused by having a single-track bridge. Metra looks forward to improving commuter rail operations by replacing the Fox River bridge.

#	Commenter	Source	Public Comments	Response
PUBLIC COMMENTS				
6	Terry Witt Bartlett, IL 60103 terry@spindoctorcyclewerks.com	Public Hearing Comment Form	Overall Metra ridership can be improved in Elgin by supporting 1st-last mile shuttles to & from stations. Better bike parking at stations as well as bike share stations in the communities along the Fox River Trail would improve accessibility. Make bikes on trains 24/7 with new cars having better accommodations for bikes & passengers.	Thank you for your comments. Metra appreciates your suggestions and will consider them for future improvements to commuter rail services.
7	Joe Jastrzebski 550 W. Morse Ave Bartlett, IL 60103 630-841-8073 jastrzebski@comcast.net	Public Hearing Comment Form	Thank you for providing the information available at the public hearing. Glad to learn the Fox River Trail is outside of the construction zone, and will not be affected. Pleased to find the Environmental Impact Study online as well. I'm impressed to learn how much work & effort goes into this kind of project.	Thank you for your comments.

ATTACHMENT B

Mitigation Commitments Table

The mitigation measures and other features of the project that reduce adverse impacts, to which the Federal Transit Administration (FTA) and Metra committed in the Environmental Assessment (EA) and Finding of No Significant Impact (FONSI), are summarized in the following table. Implementation of these mitigation commitments is part of the approval and issuance of this FONSI.

This summary is provided in the FONSI to facilitate the monitoring of the implementation of the mitigation commitments; however, the EA provides the context and the full description of all mitigation commitments that are included in the project. Metra will establish a program for monitoring the implementation of the mitigation commitments as part of its project management oversight. FTA will oversee Metra's program for monitoring environmental compliance through quarterly review meetings or other means specified by FTA. Metra will report on environmental compliance in the quarterly progress reports.

Impacts Requiring Mitigation		Mitigation Commitments		Responsible Agency
Displacements and Relocations of Existing Uses - Construction				
1	Construction activities would require a temporary construction easement of approximately 0.97 acres from the Union Pacific Railroad (UPRR). The easement would be limited to the unused land located between the UPRR and Metra Railroad tracks on the west side of the bridge, both north and south of the Fox River.	A	Metra will coordinate with UPRR and provide just compensation for easements, measured by the fair market value of the property, as determined by Metra through an appraisal process.	Metra
Displacements and Relocations of Existing Uses - Permanent				
2	Approximately 0.33 acres of land or permanent easement would be acquired from the UPRR. Land acquisition would be limited to the unused land located between the UPRR and Metra Railroad tracks on the west side of the bridge, both north and south of the Fox River.	A	Metra will coordinate with UPRR and provide just compensation for easements, measured by the fair market value of the property, as determined by Metra through an appraisal process.	Metra

Impacts Requiring Mitigation		Mitigation Commitments		Responsible Agency
Neighborhoods, Communities, and Businesses - Construction				
3	Minor temporary construction impacts would include noise, vibration, dust, temporary utility disruption, negative visual and aesthetic changes from demolition and construction, construction vehicle emissions, and truck traffic throughout the project area. Improvements would be made to the grade crossing at Elgin Avenue.	A	During construction, Metra and their Project Contractors will undertake efforts to minimize community disruptions through coordination with the City of Elgin. Metra and their Project Contractors will limit construction activities to daytime hours where feasible, though night and/or weekend work may be needed during track cutover, piling, excavation, deep foundation work, or other activities. If any planned work conflicts with the City of Elgin's noise ordinance, Metra will coordinate with the City. Metra and their Project Contractors will ensure that truck traffic will be primarily present along major roads near the project area and will use a defined access path to reach the project limits, likely along the existing right-of-way.	Metra, Project Contractor
		B	Metra and their Project Contractors will provide a temporary track crossing to serve The Alphabet Group (300 Elgin Ave., Elgin, IL) while improvements are made to the crossing at Elgin Avenue near the south project limit.	Metra, Project Contractor
Neighborhoods, Communities, and Businesses - Permanent				
	None			
Historical and Archaeological Resources - Construction and Permanent				
	None			
Water Resources - Construction				
4	Temporary impacts to water quality related to cofferdams and causeways required to construct the bridge. Sediment within the Fox River is expected to be disturbed temporarily due to construction of the piers or through the construction of a causeway if required.	A	Metra and their Project Contractors will use Best Management Practices (BMPs) including dewatering, silt curtain, and working “in the dry” inside a cofferdam or causeway to limit the potential for sediment to be disturbed and released downstream. Refer to hazardous materials mitigation commitments, Item 8	Metra, Project Contractor

Impacts Requiring Mitigation		Mitigation Commitments		Responsible Agency
			below, regarding sediment and soil testing.	
4 cont'd		B	To minimize impacts to water during construction and demolition, Metra's Contract Documents will comply with the latest version of the Illinois Department of Transportation's (IDOT) Standard Specifications for Road and Bridge Construction, specifically Section 280 Temporary Erosion and Sediment Control and Section 501 Removal of Existing Structures (IDOT, 2016).	Metra, Project Contractor
		C	Regarding bridge drainage, Metra will follow the appropriate Section 404 and Section 10 permitting processes, and will comply with requirements of the permitting agency, i.e., the United States Army Corps of Engineers (USACE).	Metra, Project Contractor
Water Resources - Permanent				
	None			
Flooding - Construction				
5	Temporary placement of fill within the floodway for a temporary causeway.	A	Metra and their Project Contractors will locate compensatory storage for floodway fill on the west bank of the Fox River, adjacent to the existing Metra and UPRR bridges and at the east abutment of the bridge. Metra and their Project Contractors will create a total of 4,999 cubic feet of compensatory storage below the 10-year floodway elevation.	Metra, Project Contractor
		B	Metra and their Project Contractors will create a total of 3,419 cubic feet of compensatory storage between the 10-year and 100-year floodway.	Metra, Project Contractor

Impacts Requiring Mitigation		Mitigation Commitments		Responsible Agency
Flooding - Permanent				
6	Approximately 4,392 cubic feet of concrete would be placed in the floodway below the 10-year floodway elevation for piers and abutments. Approximately 3,096 cubic feet of concrete would be placed between the 10-year and 100-year floodway for piers and abutments.	A	Metra and their Project Contractors will locate compensatory storage for floodway fill on the west bank of the Fox River, adjacent to the existing Metra and UPRR bridges and at the east abutment of the bridge. Metra and their Project Contractors will create a total of 4,999 cubic feet of compensatory storage below the 10-year floodway elevation, creating an excess of approximately 608 cubic feet of compensatory storage.	Metra, Project Contractor
		B	Metra and their Project Contractors will create a total of 3,419 cubic feet of compensatory storage between the 10-year and 100-year floodway, creating an excess of 323 cubic feet of compensatory storage.	Metra, Project Contractor
Biological Resources - Construction				
7	Impacts may result from tree trimming/removal and the use of causeways or cofferdams for work in the river to demolish the existing bridge and construct the new bridge.	A	Metra and their Project Contractors will implement BMPs and an Incidental Take Authorization (ITA) for the spike mussel. Metra will implement the Conservation Plan developed as part of the ITA for the spike mussel. Metra will also commit to conducting annual monitoring of the trans-located mussels for up to one year after completion of the bridge project. Metra will forward the results of the monitoring to the IDNR.	Metra, Project Contractor
Biological Resources - Permanent				
	None			
Noise - Construction and Permanent				
	None			
Vibration - Construction and Permanent				
	None			

Impacts Requiring Mitigation		Mitigation Commitments		Responsible Agency
Hazardous Materials - Construction				
8	There would be the potential to encounter hazardous materials during construction.	A	Metra and their Project Contractors will follow federal, state, and local laws and regulations regarding hazardous materials before and during construction.	Metra, Project Contractor
		B	Metra and their Project Contractors will perform soil and sediment testing in the areas associated with the Metra Railroad prior to the start of work to further investigate soil conditions and the potential presence of chemicals. If hazardous materials are identified within the project limits, Metra and their Project Contractors will implement appropriate safety measures ranging from ambient monitoring to spoils management and/or additional personal protective equipment for on-site personnel, to protect human health and the environment.	Metra, Project Contractor
		C	Metra contractors will follow applicable laws and regulations concerning the proper certification and disposal of Clean Construction Demolition Debris (CCDD).	Metra, Project Contractor
		D	Metra and their Project Contractors will conduct surveys for lead-based paint and hazardous material before reconstruction or demolition of any property to identify any asbestos, lead-based paint particles, and hazardous materials, such as polychlorinated biphenyl or mercury-containing equipment. If any hazardous materials are identified, they will be abated and disposed of by Metra and their Project Contractors in accordance with federal, state, and local regulations.	Metra, Project Contractor
		E	Metra and their Project Contractors will develop a Construction Stormwater Pollution Control Plan if the Project encounters contaminated soil or other hazardous materials.	Metra, Project Contractor

Impacts Requiring Mitigation			Mitigation Commitments	Responsible Agency
Hazardous Materials - Permanent				
	None			
Environmental Justice - Construction and Permanent				
	None			
Air Quality - Construction				
9	The Preferred Build Alternative could result in some adverse impacts on air quality during construction from construction equipment exhaust. Impacts during construction would be primarily associated with fugitive dust and emissions from on-road and on-road vehicles.		To reduce construction emissions, Metra's Contract Documents will require the Contractor to comply with applicable standards, orders, or regulations issued pursuant to the Clear Air Act, as amended, 42 U.S.C. §§ 7401 et seq. Metra's Contract Documents will also require compliance with the latest version of IDOT's Standard Specifications for Road and Bridge Construction, specifically Section 107.36 Dust Control and Section 107.41 Construction Air Quality (IDOT, 2016).	Metra, Project Contractor
Air Quality - Permanent				
	None			
Land Use and Economic Development - Construction and Permanent				
	None			
Navigable Waterways and Coastal Zones - Construction and Permanent				
	None			
Geology and Soils - Construction and Permanent				
	None			
Energy - Construction and Permanent				
	None			

Impacts Requiring Mitigation		Mitigation Commitments		Responsible Agency
Safety and Security - Construction and Permanent				
	None			
Visual and Aesthetic Conditions - Construction and Permanent				
	None			
Indirect and Cumulative - Construction and Permanent				
	None			
Section 4(f) - Construction and Permanent				
	None			